Onlincolnshire Knowledge Base Collaboration

May 2014 – September 2015

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EUROPEAN UNION
Investing in Your Future
European Regional
Development Fund 2007-13

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Executive Summary

Introduction

This report outlines the Onlincolnshire Knowledge Base Collaboration project undertaken by Lincoln Business School between May 2014 and September 2015. Onlincolnshire is a Lincolnshire County Council-run project which is part-funded by the East Midlands European Regional Development Fund (ERDF) Programme 2007 to 2013. As well as improving the broadband infrastructure, Onlincolnshire delivered a range of support to Lincolnshire's Small and Medium Sized Enterprises (SMEs) through the "Business Connectivity in Lincolnshire and Rutland" (BCLR) strand of activities. This included short courses and one to one assistance covering topic areas such as social media, online marketing and web security. However a need was identified to enhance this provision to provide businesses with the opportunity to explore how digital know-how and ICT technology could be used to deliver significant growth benefits by working in collaboration with the University's knowledge base on a tailored project.

The University of Lincoln was felt to be uniquely positioned to carry out this initiative due to its access to staff with a range of expertise and knowledge of relevance to Lincolnshire's businesses and economy. During April 2014 it was therefore commissioned to design and deliver collaborative projects to 8 SMEs across Lincolnshire focusing on their exploitation of broadband to generate wealth and to promote the potential economic impact that enhanced broadband provision can generate. The specific outcomes required include 3 detailed cases studies of enhanced business activities facilitiated by Internet applications and 15 hours of consultancy with a minimum of 8 SMEs.

The remainder of this report provides some background on the importance of broadband for business development, outlines the methodology used to select and work with the chosen businesses and sets out an analysis of the main impacts and learning points from the overall project. Additionally, detailed case studies about each businesses are included in the appendices; these set out the business background, the aims, the collaborative activities and the observed and anticipated benefits from collaboration.

Literature Review

Introduction

Based on the principle that all regions and communities should have access to high-quality Internet connectivity, significant public investment has been made to upgrade telephone networks (Cambini and Jiang, 2009; Holt and Galligan, 2013). Today, accessing the Internet through telephone lines is only one of several technologies available. Cable Internet, fibre-optics, and mobile broadband are now all widely available. However, there remains a disparity with rural areas generally receiving poorer connectivity (Whitacre and Mills, 2010; Townsend et al., 2013; Salemink et al, 2015). Paradoxically, the problem of physical remoteness and the inadequate service provision could for a large part be solved by promoting digital connectivity as a substitute for many of those services (LaRose et al., 2007; 2011).

Opportunity: Rural firms can overcome problems of remoteness through Internet-enabled innovations and communication

The uneven spread of Internet technology applies across Europe where rural areas are dominated by "grey areas" (with at least one provider but limited competition) and "white areas" (with no market competition) as defined by the European Commission (2013). Even though government support is legally permitted in white and grey areas, improvements in digital connectivity in European rural areas continue to lag behind urban regions (Sadowski et al., 2009: 585).

More recent technologies which go beyond telephone lines have not (yet) been regarded as "utilities" in the same way that telephone lines have been and the roll out of infrastructure has been strongly market-led. Therefore, governments have not been able to promote their universal provision in the same way, and considerable investments are needed if this is to change (Ragoobar et al., 2011). Furthermore, in terms of speed and reliability, these forms of Next Generation Access are now rapidly developing in the areas where they are already available. Differences between the well-served, largely urban areas and the underserved, mainly rural areas are therefore growing, resulting in a spatial digital divide (Townsend et al., 2013). Linking this to a general lack of service provision in rural areas as compared to urban areas we see a "rural penalty" Malecki (2003: 201) where people in rural areas pay a price for living in remote areas. This in turn has wider economic and social impacts relating to accessing healthcare and government services, participating in digital entertainment and social networks, participating in on-line education activities and having access to key business information, networks and trading platforms (Woods, 2005; Stockdale and MacLeod, 2013).

It is not just the technologies that are rapidly changing. In addition to the material issues that rural communities face in the digital age, there are also issues of a social nature (Salemink et al, 2015). The adoption and use of the Internet and associated applications are becoming increasingly diverse, and digital inclusion is no longer regarded as a binary issue. In other words, the debate is no longer about "haves" and "have nots" (Kilpeläinen

and Seppänen, 2014; Mariën and Prodnik, 2014); instead, it has started to focus on the degree of usage and different usage patterns. There is increasing recognition of the complexity of digital inclusion (see also Gilbert, 2010; Helsper, 2012). In order to understand the impact of digital connectivity, one must also understand the actual usage. Providing the connectivity and technology is just one aspect of keeping up with developments; adoption and actual usage are the next steps that need to be taken in order for digital connectivity to have an impact (Hage et al., 2013).

CHALLENGE: Adoption of (faster) Internet technologies has been slower in more rural areas like Lincolnshire

The Business Case for Improving Broadband in Lincolnshire

Urban and rural areas are increasingly viewed as interconnected parts of networks in which both production and consumption takes place (Lichter and Brown, 2011). The flow of information is becoming increasingly important within these networks (O'Hara and Stevens, 2006; Malecki, 2010), making all forms of connections and communications increasingly valuable. From an economic development perspective, access to ICTs and the possibility to quickly produce and receive knowledge is regarded as a key factor for a competitive, knowledge based economy (Castells, 2000; Malecki, 2010). Information is increasingly being transmitted in digital forms. People, businesses and institutions are therefore become increasingly dependent on digital data infrastructure and internet connections are the common example of such data infrastructure (Castells, 2000).

Economic and social developments are under pressure due to a lack of digital connectivity, impeding innovation of production processes and certain forms of consumption, and in essence excluding less well connected, especially rural, communities from fully participating in the contemporary information society (Velaga et al., 2012; Kilpeläinen and Seppänen, 2014; Roberts and Townsend, 2015). Other inequalities have been identified including a lower proclivity for women, older people, ethnic minorities and disabled people to use the Internet as a source of information (Devins et al, 2008). In Lincolnshire, connectivity to SFB has increased to 80% coverage in 2015 and an anticipated 90% in 2016 highlighting the progress that has been made through the wider activities of BCLR but also highlighting the growing inequality experienced by the remaining 10-20% that are less well served.

Academic literature continues to show that economic differences between well-connected and poorly connected regions are growing, mainly due to a lack of (instant) access to information and the limited possibility for proactively taking part in the production of information. This is true at different scales from the national to the global and, in poorer regions, inequalities can be exacerbated by cumulative causality through the economic impacts of poor connectivity. These regions suffer from a lack of connections, constraining regional development and widening regional disparities (Lera-López and Billón-Currás, 2005). Thus, ICT is championed as a potential solution, connecting rural economies more strongly to urban centres and providing productivity advantages for rural businesses (European Commission, 2013). Furthermore, improved digital connectivity

can help attracting human capital into these rural areas as this is an increasingly important feature influencing housing choices among the professional classes who can contribute skilled labour and potentially launch new enterprises to boost local economies in the future (see also Roberts and Townsend, 2015). For example, websites like "Rightmove" are already listing broadband speeds among the key criteria to inform people's hosuing searches.

OPPORTUNITY: Firms can access the latest knowledge and innovations via the Internet

Literature concerning the measurable economic impact of digital connectivity indicates that advanced telecommunication technologies contribute to GDP growth through investment in the infrastructure itself and through productivity improvement (Ford and Koutsky, 2005; Van Gaasbeck, 2008; Capello et al., 2011; Greenstein and McDevitt, 2011; Forman et al., 2012; Kolko, 2012; Prieger, 2013). However, this growth is unevenly distributed between core and peripheral regions (Kirschner, 2005; Tu and Sui, 2011). Even if digital connectivity in rural areas improves and GDP grows, this does not automatically mean that economic cohesion is taking place; rural areas need to grow faster than urban areas in order for the gap to close.

In the case of entrepreneurial activity, the literature is inconclusive. Some argue that investments in broadband lead to more entrepreneurial activity in a region (Ford and Koutsky, 2005), benefiting traditional as well as hi-tec or creative sectors (Gallardo and Scammahorn, 2011). Additionally, the attractiveness of a local area to entrepreneurial in-migrants has also been found to increase with improved broadband connectivity (Mahasuweerachai et al., 2010) – good for the local economy but potentially a threat to established local businesses.

Cumming and Johan (2009) identify new external web-based competition as a threat to local entrepreneurs, reinforcing the need to stimulate entrepreneurs to continue to pursue new innovations to strengthen their businesses and their wider local economies.

Galloway et al (2011) also argue that the extended markets and service rationale has been overstated as a benefit of internet adoption for rural firms. Dissociation form local linkages can be particularly detrimental if too much emphasis is placed on Internet capabilities.

Internationalisation: Earlier research into the value of the Internet for SMEs identified that access to information about international competitors as well as the potential to build international networks were both positive (Loane and Bell, 2006). Even without significant changes in activity, the broader horizons that are opened up simply through the awareness of such opportunities can be a valuable stimulus for entrepreneurs. SMEs in high-tech sectors and those that used technology in other aspects of their business were found to be more capable of using the Internet to increase their internationalisation (Tseng and Johnsen, 2011).

CHALLENGE: Competition is increased from outside and local competitors are rapidly adopting new technologies to offer new goods and services in new ways

Not all businesses can be the most competitive in their sectors so in many cases alternative approaches will be required. Nevertheless, it is essential to understand the competitive environment in order to identify niche opportunities. For example, internet-based business opens up the possibility for different approaches to branding and identity creation (Galloway and Mochrie, 2005) but maximising face-to-face customer service in an increasingly digital world offers the potential for alternative entrepreneurial responses that will continue to suit a certain market.

OPPORTUNITY: Firms can take advantage of new on-line options to maximise their differentiation and marketing strategies

Therefore, in considering the requirements for SMEs to develop business models for the digital age, we cannot simply assume that everything will be done on-line, everywhere and some firms will be able to prosper through employing more traditional production and communications methods. Rather, we know that a lot of things will be done electronically and this will change the nature of information, competition and supply chains that shape the business environment. The rapid growth of mobile broadband, apps and the 24/7 world of cyberspace is already pointing towards a future where fixed line broadband could itself become obsolete – the vital investments in today's technology drive forward the innovations of tomorrow. For example, Kellerman (2010) explains: *"These and other innovations and applications will encourage further adoption of mobile Internet devices, culminating in an inability to lead personal and house-hold lives without the use of those devices. Early trends, notably among younger people, show that the focus of life, notably social life and service provision, may move from physical space to virtual cyberspace as the most obvious arena for their operation. The blurring of physical space into cyberspace".* What does this mean for businesses over the coming decade as these young people become tomorrow's employees and consumers?

Developing Business models for a Digital Age

The challenge for SMEs in today's global economy is to develop new business models that fully engage with international opportunities. The growth of new economic superpowers and the opportunities associated with outsourcing, supply chain innovations and information availability will be transformational (Friedman, 2006). Friedman continues to note that the rapid expansion in PC ownership was slow to make an impact on productivity statistics but so too was the invention of the light-bulb because it took time to introduce new electrical motors, replace steam engines and transform the whole way of doing manufacturing (Friedman, 2006, p206). This is a factor that we must take into account with the evaluation of short term collaborations within this project.

Earlier research in Lincolnshire highlighted that the adoption of new technology in a business can have different levels of impact, from efficiency gains at the basic level

through to the enhancement of activities and the transformation of business activities as illustrated in Figure 1 (Price et al., 2008).

Figure 1: The uses and effects of broadband technology for SMEs
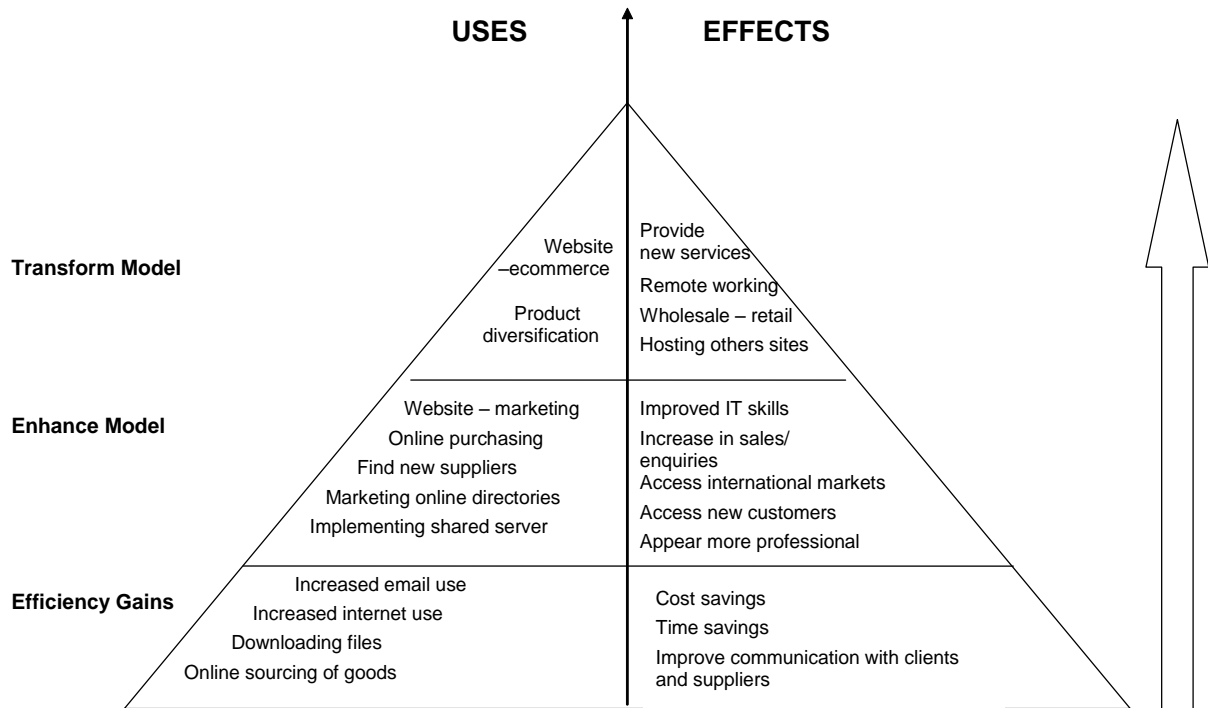
Not all business owners are so pro-active that they are seeking to climb the pyramid, often taking a more pragmatic approach to business investments. Jones et al. (2014) observed that among sole proprietor micro-enterprises, attitudes towards ICT adoption were dependent on its perceived value in providing business solutions. They suggest that this "short-termism" reflects the survivalist attitude of many SMEs, particularly microbusinesses, for whom a long-term growth strategy is consider to be either unrealistic or simply not part of their life-plans.

CHALLENGE: To identify where businesses are on the pyramid, how they can move up the pyramid and how they can develop more long-term planning

In order to develop new approaches to advise and inspire Lincolnshire's businesses, and to inform wider academic debates about the impact of broadband communications upon contemporary business models, a conference paper was presented at the Institute of Small Business and Entrepreneurship (ISBE) annual conference in Glasgow in November (attached as Appendix 4).

The paper uses a conceptual framework to carry out empirical analysis of the effects on rural enterprises of "the digital economy" linked to the imperative of sustainable development. Specifically, the aim is to identify ways in which rural enterprises are sustained in a digital age, for example by innovation. The focal point of the research is the notion of the 'business model' and the related influences that rural contexts and broadband may have on the capacity of an SME to sustain itself, either through competitiveness or in value captured (Chesbrough & Rosenbloom, 2002).

The ISBE paper suggests that some profound changes are taking place in the environment of rural enterprises, over which they have limited power. Opportunities for global contributions to sustainable development can be created but that the development of the agential anticipatory capacity should be at the heart of entrepreneurship education and business support. The framework is offered as a tool for researchers in this field in order to expand their analytical capacity. The concept of anticipatory capacity is introduced to link the informational aspects of the digital economy with the sense making and entrepreneurial behaviour of rural enterprise management.

Innovating the business model is about creating value from the inter-connectedness in innovation ecologies rather than just offering products and services more efficiently, and hence moves on from the 'pyramid model of the last generation of broadband policy (Figure 1). While the efficiency/enhance/transform model is appropriate, the way that internet technologies and online communications can be used to bring about improvements has increased. The changes in value creation are increasingly based on globally based networks of businesses and customers. The interchange and relationships between these organisations and people is largely internet based with value being more contained in electronic form, such as designs, printing instructions, service advice, and access to know-how. The business model approach reflects the ecological metaphor for business structures.

This changing world is challenging the core business of each of the firms interviewed. It is not simply about the products or services, but having to rethink and re-imagine the very nature of the business in which they are engaged. The evidence from our work with the SMEs indicates they in general they aware of this, but in some cases have difficulty in re-assessing their ways to create value and in other cases having insufficient knowledge to be able to explore possibilities or to implement their ideas. Online technologies are complex. Engaging with online activities is time-consuming. Larger companies employ technical teams and invest heavily in technologies and digital resources. In technology intensive locations, smaller enterprises have access to a wide variety of know-how. Although business is often done online, trusted relationships through personal connections are still important to business owners. In rural areas, there is less intensity. We observed from the case studies that access to the university increased this intensity of available technological and business expertise.

Summary

Through the review of existing policies and research, a number of challenges and opportunities have been identified and listed again below.

- Opportunity: Rural firms can overcome problems of remoteness through Internet-enabled innovations and communication

- Challenge: Adoption of (faster) Internet technologies has been slower in more rural areas like Lincolnshire

- Opportunity: Firms can access the latest knowledge and innovations via the Internet

- Challenge: Competition is increased from outside and local competitors are rapidly adopting new technologies to offer new goods and services in new ways

- Opportunity: helping business leaders to identify forms of business model innovation in specific industries to create value and to design these using online systems and services

- Challenge: To identify where businesses are on the pyramid, how they can move up the pyramid and how they can develop more long-term planning

- Opportunity: Firms can take advantage of new on-line options to maximise their differentiation and marketing strategies

These are incorporated into our strategies for working with businesses and inform the design of initial "strategic conversations" as well as influencing the publicity events that we stage throughout the project

With evidence indicating that Lincolnshire, as a predominantly rural county, is experiencing a number of the problems outlined in the review, this project is important for raising awareness of the potential of broadband and as a basis for business and policy groups to campaign for better broadband on economic grounds.

The Go-on.co.uk heat-map (http://www.go-on.co.uk/resources/heatmap/) illustrates that all parts of Lincolnshire are at a medium risk of digital exclusion, even the City of Lincoln district, thus, more action to raise digital inclusion – through the provision of infrastructure AND the upskilling of individuals to adopt the technology is clearly important. As part of this, we now set out the details of our OKBC project working with 12 businesses in the County.

Methodology

The project was initially promoted to as many businesses as possible. In order to achieve this a flyer was produced (Appendix A) and distributed via academic staff and business support networks, for example Chamber of Commerce, local business clubs and incubator units. These organisations, along with other members of the Onlincolnshire project team, were also asked to identify Small and Medium Sized Enterprises (SMEs) already using broadband which would be ready to make further developments to help

transform their business. Business events and conferences were attended and presentations were given including to the Institute of Directors and at a SUSTAIN Lincolnshire workshop.

A morning workshop entitled 'Creating Opportunities from Superfast Broadband' was also organised which aimed to provide SMEs with further information about how they could use broadband and the opportunity for joint working with the University (Appendix B). A total of 17 businesses signed up to attend the event along with 16 academics keen to work with businesses and to maintain a core "knowledge base" within the University. This "knowledge base" met 3 times during the project, initially with 13 members, but the diverse and changing nature of collaborative projects meant that the internal, academic members of the group also evolved as the business needs shifted. In the end, 11 staff members participated in different aspects of collaboration. We also had a closing workshop to showcase some of the local case studies as well as bringing in guest speakers with insights from other parts of the UK.

As businesses came forward to take part in the project their eligibility for the ERDF funding was assessed, including a *de minimis* check. If eligible, they were then offered access to 15 hours of funded support from an academic staff member within the University of Lincoln to help develop their use of broadband or associated technologies. In some cases these have been extended with additional student projects too.

Each business was visited and a face to face interview conducted with the SME owner or member of staff assigned responsibility for the project. During these in-depth interviews a range of baseline descriptor data for the company were obtained including business size, sector, location and GVA. The interview then followed a semi-structured format with a range of questions centred around a number of key business areas based on the business model of Osterwalder and Pigneur (2010) illustrated in Figure 3.

These key areas were discussed with particular emphasis on the current use of broadband and associated technologies. A total of 10 businesses participated. These are shown in Figure 2.

Following these initial discussions areas of the business where broadband technology could be used to make a difference to business performance, assist with key challenges, or provide competitive advantage were identified. A member of academic staff was then sought to assist the business to develop these areas further. These staff members undertook a range of consultancy or development work with the business for at least 15 hours. At the end of the project it is anticipated that the businesses will be visited again and a second semi structured interview conducted to examine what changes had been undertaken in the business and the impact of these interventions.

It is worth noting here that attracting businesses to participate was challenging as those that already felt confident with broadband-enabled technologies were not attending promotional events and others were more likely to cite poor Internet availability and thus feel that the programme could not help them. This is reinforced by a recent studies from

the CLA (2015) and Go-On.UK (2015), each indicating that Lincolnshire was more digitally excluded that many counties, based on a combination of infrastructure-based and socio-economic statistics.
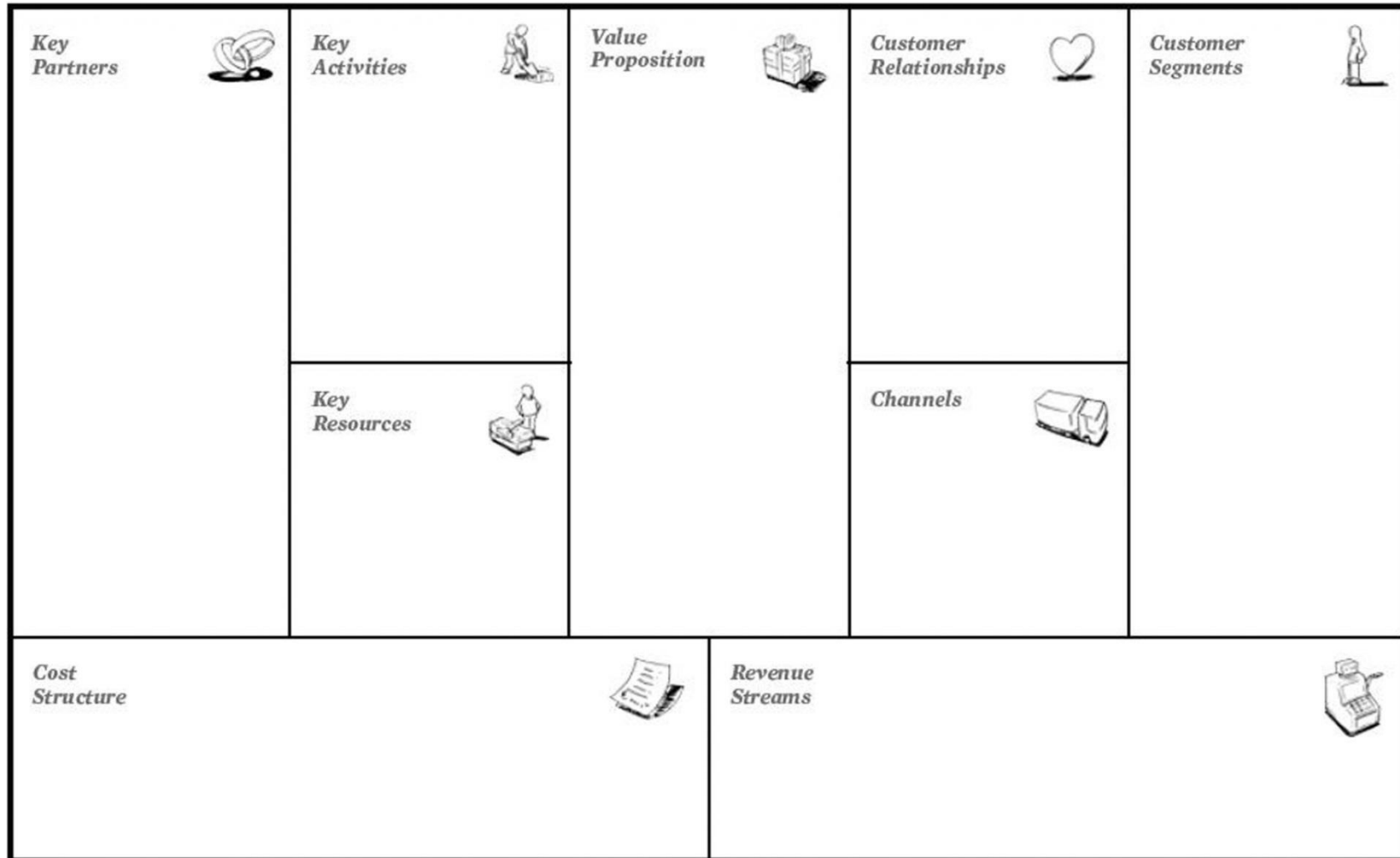
It was also challenging to engage with the larger SMEs because they had different departments with different applications of faster broadband and different decision makers that each had to agree to participate in the scheme.

Figure 2: Key information about businesses

Business name	Sector	Location	No. of FTE employees
A Little Luxury	Processing and preserving fruit	Sleaford	1
Caistor Arts and Heritage Centre	Multi use centre	Caistor	4
Friends of Chain Bridge Forge	Operation of historical site	Spalding	0
Copywriting Ltd (Sarah Lamballe)	Business support activities	Tealby	3
Fairy Glam	Wholesale trade	Lincoln	10
Growing Opportunities	Landscape services	Navenby	1.5
Hall Farm Conservation	Holiday and business accommodation	Thorganby	1
HK Timbers*	Manufacture of wooden containers	Gainsborough	23
Safelincs	Wholesale of equipment	Alford	28
Woldmarsh	Cooperative buying association	Louth	21

*This is not an SME under ERDF criteria due to Venture Capital ownership and therefore excluded from ERDF reporting. It is included as a valuable case nonetheless.

Figure 3: The Osterwalder Business Model Canvas

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
	Key Resources		Channels	
Cost Structure			Revenue Streams	

Business Summaries

This section provides a summary of each of the businesses involved in the project including background information, the challenges the business faced and the project proposal taken from the memorandum of understanding outlining how the university can help. We then present a tabulated summary of the diverse project aims that resulted from the collaboration activities.

A Little Luxury

A Little Luxury is a home based business specialising in jams and chutneys. They prepare an extensive range of preserves with the majority of produce being sourced locally from farmers and allotment holders. They supply to delis, farm shops and cafes and also catering tubs to tea rooms. In addition to this a large proportion of their stock is sold at local shows. During the past 4 years they have gradually gown in size and recently received their first order from English Heritage.

It is this growth which has led them to look at ways to manage their stock. They currently keep track of availability using an Excel spreadsheet which is updated each time an order is placed. However, with a vast range of preserves all available in 3 jar sizes this is becoming increasingly difficult. Their jar labels already include a barcode and they would therefore like to look at the possibility of using a wireless scanner and associated software to update their stock list.

Caistor Arts and Heritage Centre

Caistor Arts and Heritage Centre was developed 4 years ago using National Lottery funding and support from the Village SOS scheme. It offers a range of services to Caistor, and the surrounding villages, including library, café, meeting space, IT support, workshops and trips. The centre employs a Centre Manager, Café Manager, 6 part time café staff in addition to a number of volunteers.

The centre is constantly trying to improve its use of resources and has highlighted the need for improved use of digital technology. They currently have a static website, but feel more use could be made of this to increase footfall and ultimately increase income to ensure the centre remains sustainable. The Centre would therefore like support with a number of issues around their digital strategy.

Chain Bridge Forge

Chain bridge Forge is a small living museum based in Spalding, South Holland. They offer visitors the chance to learn more about being a blacksmith both through a small exhibition area and by demonstrating blacksmithing skills and techniques. Visitors, and local schools, can also experience taster days where they are able to use the forge.

In addition to blacksmithing the forge also has an Innovation Centre which offers 3D printing and scanning within the forge. This equipment is vital to their Virtual Craft Simulation project which uses virtual reality to give young people a taste of the craft of blacksmithing using 21st century technology. However, in addition to using the equipment for their own purposes, the forge has also identified a possible source of income by offering use of this equipment to local businesses. The forge were therefore looking for advice on identifying uses for this new equipment both to businesses and the local community.

Copywriting Ltd (Sarah Lamballe)

Sarah Lamballe runs a copywriting business partly from home and partly from new office space within her other business, Bricktree Gallery. She is keen to develop her web presence to market both sides of her business. In particular, the Gallery offers attached accommodation with training space and an en-suite bedroom with views over the Lincolnshire Wolds countryside. Marketing this outside of the region with online video-content requires faster broadband connections and the expectations of guests and training event organisers for faster broadband make this an essential utility for her business.

Fairy Glam

Fairy Glam supply children's toys, primarily aimed at girls aged 3-7. They have approximately 500 products, ranging from dressing up to music boxes and tea sets to fairy doors. They have traditionally traded business to business (B2B) with their goods being sold in high end department stores. However the internet is changing their selling patterns and currently about half of their trading is direct to the customer (B2C) both from their own website and through trading platforms such as Amazon. As direct selling increases it will become increasingly important for the business to ensure they have the right stock in the right place at the right time.

Fairy Glam currently use their ERP software to organise stock, demand and purchasing. This works most accurately with their dressing up items which have a short lead in time and are ordered in low volume. However, the majority of their toy products come from China and, as well as needing to be ordered in high volume, have a long lead in time. Fairy Glam therefore wanted to analyse their sales data to try and identify patterns of demand which could inform their sales planning. It is anticipated that this will help not only with stock control, but will enable them to more efficiently manage their warehousing.

Growing Opportunities

Growing opportunities provide independent grain market evaluation to help farmers achieve the best return on their grain. Traditionally virtually all grain trading is done via relationships built over a long period of time and farmers may be unaware that they are being offered is lower than that offered elsewhere. Grain prices also have a large

movement in price from season to season so it is important for farmers to have access to the most up to date information so they can get the best price. Growing Opportunities' online portal, XFarm, therefore uses real time data to provide farmers with up to the minute prices for rapeseed and wheat to ensure farmers can sell knowing the price they should be able to achieve.

The site currently has about 500 members across Lincolnshire, but needs more to ensure it is sustainable. The business is therefore looking for assistance to understand its current customers and to help with a targeted marketing campaign aimed at increasing subscribers as well as looking at other ways the business can make more use of broadband technology.

Hall Farm Conservation

Hall Farm Conservation is a farm diversification which runs and manages four self catering properties. These properties are aimed at a number of customer groups including families, large groups looking for retreat weekends and business people working in the local area. The properties are currently advertised on their own website and Facebook page, plus a range of pay per listing third party websites. Although occupancy levels are reasonably high the business is looking to increase this further using special offers, ensuring their reviews are visible on relevant sites such as Trip Advisor and making better use of other booking websites. Hall Farm Conservation therefore required some advice and guidance on the use of digital marketing and how this could be optimised to maximise occupancy.

HK Timbers

HK Timbers are already an interesting case study having developed their on-line presence over recent years and recognised new niche markets for the sale of their potato boxes outside of their traditional local agricultural markets. They are keen to strengthen their online database of clients and build new ways to communicate online with their community. Additionally, they are seeking support for some research into their core business sector –the potato industry which could provide a case study for a student dissertation.

Safelincs

Safelincs specialise in fire safety products and services. The majority of their business is done online and they have outlets across Europe (Germany, France, Ireland and Italy). They supply to some domestic customers either directly or through Amazon, but their primary market is to businesses including facilities management, nursing homes, schools etc.

One of their core aims is to ensure their customers have a positive experience as they believe this is key for getting repeat business. As part of this commitment to improving

customer service they would like to enhance their website by developing online video content through a YouTube Channel. This may be demonstrations of their products, step-by-step help guides or expert advice and tips on fire safety. New Media Lincs have therefore been engaged to work with Safelincs to discuss their requirements and film an initial short video clip as a tester, before potentially filming further products.

Woldmarsh Producers

Woldmarsh Producers are a non-profit making cooperative supporting those associated with the farming industry. They purchase goods on behalf of their 1,000 members and pass on the benefits of negotiated discounts to them.

During 2014/15 Woldmarsh moved to an online accounts system. Invoices from suppliers are now scanned into their accounts system using an OCR scanner and, following the initial set up the software automatically reads the information from the invoice. Members receive a statement each month which enables them to view their real time spend as well as past statements and invoices via their online account. For Woldmarsh this has led to a reduction in both costs and time.

However, there are a number of suppliers who provide data as either EDI or CSV files which can be imported into the accounts software, but Woldmarsh do not then have the ability to produce a picture (pdf) file for farmers' records. Woldmarsh would therefore like to explore the possibility of automating this process.

Aggregated summary of project aims drawn from the Memorandums of Understanding agreed with each of the partners

- *Provide guidance on the use of digital and online technology for stock control*

- *Offer guidance to [partner business] on their digital strategy, including redevelopment of their current website, to help them increase their customer base and income. This may include guidance on:-*
  - *Choosing the right platform and website specification*
  - *Improving and streamlining administrative processes online*
  - *Integrating online booking and donating*

- *To support [partner business] in identifying and realising opportunities through its recent investments in digital projects*

- *Provide support in the marketing of the [partner business'] and associated accommodation through advanced e-marketing and the development of video content for their new website.*

- *Provide support to develop their use of online marketing tools to raise the profile of Lincolnshire's corporate accommodation offering and establish a local cluster with the potential to develop through future personal, and on-line, collaboration.*

- *Analyse sales data for 2 key products and channels to identify patterns of demand that can inform sales forecasting and planning*

- *Provide guidance on approaches to sales forecasting by the business based on the results of the above analysis*

- *Provide support in the development of new product innovation which relies on broadband technology for real-time spectroscopy testing. This support includes advice on the engineering process, logistics and bid-writing as well as the specifics of how broadband can be used to maximise the viability of the business idea.*

- *A market research project to understand the user-base of the existing business to facilitate a targeted marketing campaign to boost subscribers. The results will also be used to provide information about the most important content on the site and the purposes for which visitors are accessing the company's website. This will all guide future business strategies.*

- *Offer guidance on digital strategy and the use of social media*

- *To provide support in the development of new video content for the [partner business] website to include product video filming and editing*

- *Look at the viability of importing Electronic Data Interchange (EDI) files from suppliers into the [partner business] accounting system. Offer guidance on how to achieve this.*

- *Look at the viability of producing electronic invoices (pdf files) after importing EDI files to enable [partner business] to continue to provide invoices to their members. Offer guidance on how to achieve this.*

RESULTS AND FINDINGS

We present a summary of the key business-related outcomes from our interventions with case study partners and then move to a discussion of our overall findings from the project in relation to the key opportunities and challenges drawn from the earlier literature review. These are then followed by some more general learning points that emerged from the project as a whole along with suggestions for future actions to continue to support the digital development of Lincolnshire and Rutland's economies.

Summarising the impacts of business interventions

The detailed case studies are set out in Appendix C, and with additional personalised content, these are available for use by Onlincolnshire to promote the potential for businesses adopting new broadband-led innovations.

The requirement to identify a specific project for business collaboration forced business owners to think hard about the potential values and uses of faster broadband in their businesses. This made the initial part of the engagement – the strategic conversation – very important as the academic's role was partly to foster new perspectives on business models, delivery mechanisms and marketing approaches that were made possible by faster broadband. Combined with the support of the wider BCLR activities to raise the profile of broadband technology for businesses, this has undoubtedly generated value for the business community – albeit hard to quantify.

Some of the projects were clearly self-contained and related to specific applications around financial management systems, stock control, online booking systems and QR codes. While these may not always be particularly innovative in themselves, the collaboration with the research base and the experience of introducing new web-based technologies all signified an important step for small business owners who gained confidence and knowledge, hopefully to support future innovations.

Marketing and customer-communications were also major areas where businesses recognised the potential that short-term projects could offer. Introducing video-content to websites, re-designing websites and making better use of client databases for digital communications were all areas where the project has delivered value to individual businesses. In the case of the potato box manufacturers, the ability to engage with different market segments where considerably higher values could be obtained for the same product, offers the scope for a significant re-focusing of the business and certainly adds resilience in the face of a declining market for the core product – potatoes.

Beyond this, once businesses are engaged in new web-based marketing activities, they become aware of new ways in which collaboration can offer benefits and this has initiated conversations to develop a new network of rural tourism businesses. Within the scope of the short project, this has not developed beyond the initial idea but, in drawing together link-minded businesses, it provides the platform for business-led innovations in their collaborative marketing, supported by web-based platforms.

Other examples of how the project has been a stepping stone for larger scale activities include the collaborative funding bid (Growing Opportunities), the continuing analysis of global supply chains (Fairy Glam) and the ongoing collaboration to help develop a small museum (Chain Bridge Forge). In each case, the 15 hours of consultancy have created personal connections between SME owners and academic researchers that make the research base of the University more accessible.

Addressing key challenges & opportunities

Opportunity: Rural firms can overcome problems of remoteness through Internet-enabled innovations and communication

From the businesses involved in this project, remoteness was not a significant problem. In fact, for serial touristic firms, it was an asset and faster Internet speeds provided the opportunity to showcase this with improved marketing approaches. Working with New Media Lincs to provide video content on website and starting to develop a network of "business tourism" firms in the Wolds are two examples of this in action.

For "Growing Opportunities" the rural location was not a problem for regular activities but exploring the potential for faster broadband links highlighted how the ability to work "real-time" with scientific laboratories on product testing and quality control is no longer limited by distance.

Challenge: Adoption of (faster) Internet technologies has been slower in more rural areas like Lincolnshire

The take up of Internet has been slower due to, often accurate, perceptions that provision in Lincolnshire is lagging behind other parts of the country. As a result, engagement in training programmes and more advanced collaborations such as this, have also been seen limited enthusiasm. This highlights the need for lobbying to improve infrastructure in conjunction with efforts to increase skills and innovative thinking across the economy.

In one example, the lagging use of new technology such as 3-D printing and scanning, has encouraged the business to establish a community hub allowing others to share the technology. The same business is introduce new technology into education through the use of "virtual reality" devices to showcase the history of blacksmithing so this too will help others to become more aspirational towards the use of technologies in the future.

Opportunity: Are firms accessing the latest knowledge and innovations via the Internet?

We have seen new approaches to providing information with the development of videos to showcase new products and services. We are also working on one project where a business owner is able to use the Internet as a means to gather more sophisticated customer details and feedback. Processing of information through new Internet-enabled

technologies has added to efficiencies within one business but we have not identified examples of businesses sourcing new ideas and developing innovations as a result of web-based knowledge accumulation. It is likely that firms are gathering this information through everyday on-line activities and where they have been carrying out strategic searches or building strategic on-line networks, these would have fallen outside of the ambit of the particular projects on which the University, through Onlincolnshire, have been working.

At Thorganby Hall, one of the aims of the collaboration was to review the different platforms available to tourism businesses for marketing. The growth of comparison sites and social media usage, especially where reviews and photographic content can be provided by guests, requires additional expertise to access the most suitable options.

Challenge: Competition is increased from outside and local competitors are rapidly adopting new technologies to offer new goods and services in new ways

We did not observe the threats among our projects but we did observe measures that businesses were taking to widen their own market reach and increase capacity to service wider areas. These spanned from a home-based firm using cloud technology to improve stock control – something that was essential to meet a national company order – to a global exporter developing a new logistics strategy to service growing demand.

Opportunity: helping business leaders to identify forms of business model innovation in specific industries to create value and to design these using online systems and services.

An analysis of the memoranda of understanding from all the projects indicates that the projects are relatively operational. The desire to have useful practical projects is understandable and the 'University as Resource' relationship is useful in this regard. The 2015 "ISBE" paper (appended) considered three of the 12 enterprises in more depth; what these enterprises were doing to anticipate the changing environment and adapt to these changes. The business model 'canvas' was used to focus the discussions with the owners. None of the three enterprises was aware of this particular approach and none of them was thinking in terms of 'business model innovation' as a concept. However, in practice they were working out innovations to their business model. Generally they were working on their business at two levels. Firstly at a day to day competitive level, concerned with pricing, efficiencies and reaching customers (similar to the pyramid approach), which the MOU projects reflect. Secondly at a more strategic level discussions about the business model revealed that they were able to articulate strong notions of what they would like their business to become with respect to the digital economy.   Reflecting more widely on all 12 cases, sometimes it was only through addressing the explicit short-term requests that the more strategic challenges were revealed.

We conclude from the analysis of the cases included in the ISBE paper that the changes to the business model linked with a greater use of technology were emergent and

dynamic. Innovation in these business models emerge from 'what works' through trial and error experimentation rather a clear blueprint or design of a (different) business model. The enterprises understand themselves as being embedded in a system of relationships and understand their role as providing (and exchanging) value. What they needed was exposure to a wider set of relationships; both in terms of markets and in terms of knowledge and know-how. The lack of available skills to implement their ideas, or even to experiment with the ideas, was a limiting factor.

Opportunity: Are firms using on-line options to maximise their differentiation and marketing strategies?

We saw a number of examples of diversification enabled by the Internet. One is provided by the manufacturer of potato boxes who, in the face of a declining demand from the agricultural sector, has been able to explore new retail outlets for wooden crates, largely facilitated through the on-line market. Alongside the expansion of local tourism networks that are positioning themselves to attract wider audiences and an innovative on-line platform for the trading of cereals, this has proven to be one of the more positive areas of activity among our examples.

Challenge: Where is your business on the broadband adoption pyramid? What are the long term implications of short-term planning?
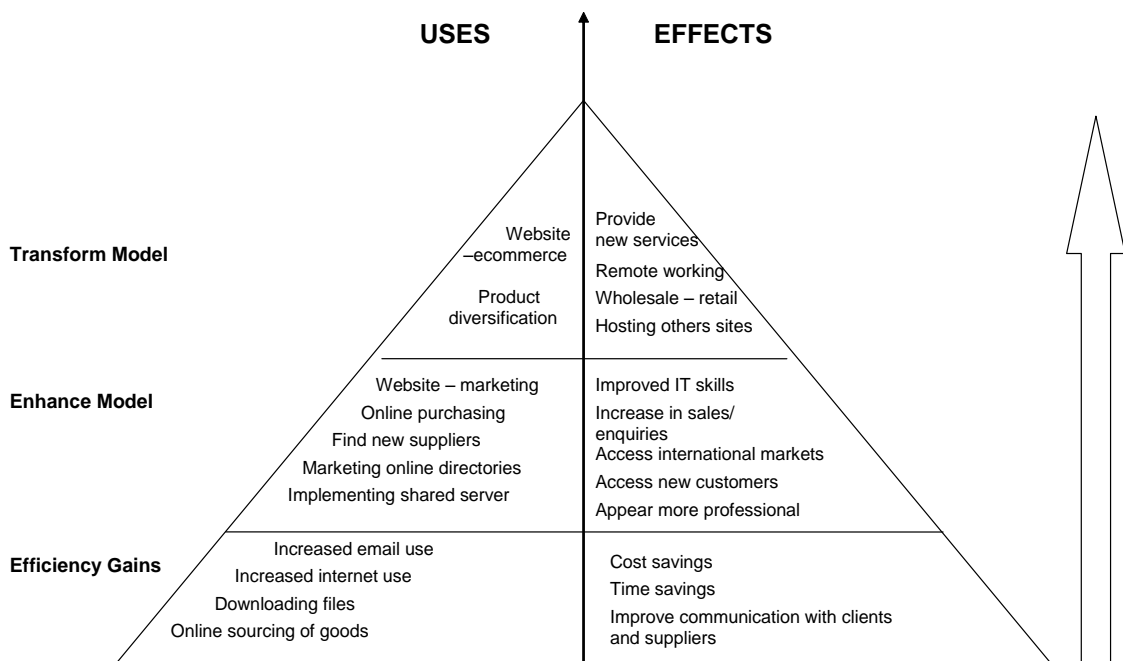
The majority of businesses began their involvement with Onlincolnshire at the bottom level of the pyramid with technology seen as a potential driver of effficiecy rather than as a creator of new market opportunities – with some exceptions in the ambitions to expand their marketing activities. Through the project, some remained at this level, focusing on

changes to stock-taking or accounting systems. However, through working with appropriate experts, the activity showcased the potential for growth and the initial, efficiency-saving adaptation enables the business to increase their capacity and to embrace future opportunities for change with added confidence provided by their increased knowledge and networks.

In a number of cases though, we have seen the top level reached with products being adapted for new markets and whole new business models being scoped for potential investment. Re-designing a small museum and re-thinking the way that people access the educational content is perhaps the most exciting of these examples.

POTENTIAL FOR SELF-DIAGNOSIS SYSTEM FOR BUSINESSES – in realtion to training needs?

Overall learning from the programme

"Selling" the programme to businesses was challenging as those with knowledge about the potential of superfast broadband felt they didn't need it while those without knowledge, or access, to faster broadband speeds did not see the value of participation. If consultancy were more clearly aligned to the visible roll-out of faster broadband, this could have attracted greater interest. We also learned from our events and marketing that the term "superfast broadband" was less attractive in relation to business support for SMEs. Branding our final event around "competitiveness for the digital era" appeared to resonate more closely to the everyday business needs across the local economy.

For very small businesses, it takes a lot of time to build a strategy for maximising the value of superfast broadband. As the outcomes are not definite at the outset, it is also viewed as a risky investment of time and/or money compared to other proven actions.

The closing event further highlighted the ongoing problem of unequal access to broadband, and to the speeds required for commercial activities. Positive case studies from this project, and from our guest speakers, can boost the appetite among businesses but if this is hampered by poor service provision, the frustration can be severely detrimental.

Looking Ahead...

Given that the drive for faster and more reliable ICT will continue, and with the likelihood that market-led developments will occur in urban areas first, it is essential to that Lincolnshire and Rutland's businesses have access to both business and innovation support as well as to the requisite infrastructure if the local economy is to keep pace with other regions.

Here we see the potential for the University to provide additional training and support as part of its ongoing commitment to the local economy. However, we also recognise that

the complexity of the change towards a "superfast" digital economy requires expertise from business, telecommunications and policy to come together. Therefore, we recommend that we maintain an expert network from the breadth of Onlincolnshire and beyond to reinforce the support offered to businesses. Such an organisation would have stronger lobbying power for the region, provide a forum for the exchange fo knowledge and best practice and support businesses to continue their digital developments through ongoing collaborations. Increasing the overall intensity of expertise and inter-communications will, it is suggested, provide a stronger overall resource to Linconshire's smaller enterprises to support growth and innovation.

Following Dr Leanne Townsend's contribution to the closing workshop, meetings have continued to explore new funding options including an Interreg "North Sea Region" opportunity relating to technology-driven regional innovation and growth, requiring continuing collaboration between public, private and University sector institutions: (http://www.northsearegion.eu/thinking-growth/). As part of the University's commitment to this agenda, activities are underway to build on the Knoweldge Base and develop closer links with the University's of Aberdeen and Groningen (Netherlands) who have a considerable track record of research into rural broadband.

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Appendix A

Are you an SME which is looking to grow?

Would you benefit from…

- Maintaining or improving your online competitiveness?
- Being part of a peer to peer network interested in sharing and developing their digital know-how?
- Receiving up to 15 hours free strategic consultancy support?
- Showcasing your business in a free online case study?

….if so then we are interested in hearing from you.

Through the onLincolnshire Knowledge Base Collaboration you'll be able to tap in to the expertise of academics and researchers working at the University of Lincoln to help realise the potential of superfast broadband and get up to speed with the latest advances in digital technology.

For further information please contact **Jane Deville on 01522 835562 or email jdeville@lincoln.ac.uk** for an informal chat or an expression of interest form.

Stay up to date with developments at :-

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Appendix B

Business Workshop

Creating Opportunities from Superfast Broadband

Tuesday 2nd December 2014 9:30am - 2pm
LLMC, University of Lincoln

An opportunity explore how the University of Lincoln can help support and develop your use of superfast broadband. Join us to discuss….

Superfast broadband access and capability
Onlincolnshire investment and support

The opportunities for business growth
Sharing the experiences of local businesses

Collaborating on opportunities
Support for competitive advantage from the University of Lincoln and partners

For further information or to book a place please contact
Jane Deville on 01522 835562 or email jdeville@lincoln.ac.uk.

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Appendix C – Case Studies

Chain Bridge Forge

Dr Chris Phelan, Lincoln Business School

Summary of the business

Chain Bridge Forge (CBF) is a former Blacksmith workshop in the market town of Spalding, Lincolnshire. Built in the early 1800's it sits on the banks of the River [name] and was in commercial operation up to the 1980's. On closing, the site was purchased by South Holland District Council, to be preserved for the community and as an important aspect of local heritage. However, after remaining vacant for many years and with declining public sector budgets it was unlikely to be restored or brought back to full use as either a working Forge of a community venue or heritage tourism attraction.

In 2012, a group of local business and community stakeholders came together to help realise this ambition and to restore the Forge to active use. These individuals reopened CBF as a 'Company Limited by Guarantee' and it now operates as a working forge, living museum and tourist attraction; offering a community digital hub, educational trips to see the forge in action, as well as taking on an increasing number of private metalworking and smithing commissions.

Challenges identified at the outset and reasons for participation

As a recently opened museum and attraction, CBF is competing with a range of established museum and heritage providers in the East Midlands region, articular in the education and school visits market. Moreover, the footprint of the forge itself is relatively small with only limited space within the main workshop in which to house visitors. This space poses obvious limitations for an atypical school visit. In addition the site needs to secure other target segments in order to operate as a sustainable business and further, as a community oriented business, would hope that footfall and venue use was reflective of the diverse community of South Holland. Thus, as outlined below, a range of digital technologies have been employed, both to engage with new audiences and to enhance the overall visitor experience.

Existing use of broadband, ICT and digital technologies

As outlined above, CBF has employed a number of digital technologies to increase visitor numbers and to help realise the site as a local community heritage and tourism asset. These developments include:

Digital Storytelling and Heritage Database: Having reopened, CBF recorded and catalogued its collection of tools and artifacts. This was important, both to record the history of CBF but also as an essential milestone in securing accredited museum status. Having achieved this milestone it was then possible to collate and present this information digitally, which in turn evolved into the collation and presentation of the wider geographic area, with the both CBF and South Holland history now recorded. This site archives images, maps, oral histories and archived copies of original documents.

Community Digital Hub: In seeking new community users and to further support education visits and align with national curriculum content, CBF has reinstated a mezzanine floor in the workshop that now serves as a community digital hub. This space is equipped with PCs, as well as 3D printers and scanners. A team of volunteers is on hand to support community users with the use of these technologies.

Virtual Reality (VR) Application: Having recognised the space limitations of the Forge in respect to school visits, CBF assembled and now operate a mobile Forge which can be transported by trailer to local schools and events. However, this still offers limitations and in 2014 they began development of a virtual Forge experience that they have labelled the 'Heritage Craft Simulator'. Developed in partnership with the School of Computer Science at the University of Lincoln, the VR application is fully immersive and utilises elements of gaming technology. Participants don an Oculus Rift headset, as well as bracelets that measure the position / angle / tilt of their hands. Through the headset, the user sees a full replication of the CBF environment and are presented with a virtual anvil and hammer. Actions by the user to work the metal in the virtual forge will see the item shaped and even the flame is presented at different colours, which to a trained Blacksmith's eye would indicate the heat of the furnace. The item worked or generated, within the virtual forge space can then be sent to one of CBF's 3D printers. The full virtual reality package is now in the final testing phase and will be on site at CBF in Autumn 2015.

Each of the digital technologies and projects highlighted above is dependent on a reliable Broadband access at the CBF site.

Our intervention

The Lincoln Business School (LBS) intervention, via the OnLincolnshire project, has been to support the business in the research for its next digital project: to develop an augmented reality application for visitors to both the museum and the greater Spalding area. In this sense, the digital innovations outlined above can be seen both as a facilitator and driver of the organisation's business model, in that the digital projects outlined above were developed to address initial business challenges, but have now in effect become essential elements of the business. Thus CBF is engaged in an iterative process of digital innovations as a business model driver (follow up with Ted here for a better explanation).

Specifically, CBF now wish to develop an augmented reality app to capitalise on the trend towards interaction and gamification in both the tourism and culture and heritage sectors. This trend sees visitors interact with museum and heritage sites using their own smartphone or tablet devices (known as BYOD or bring your own device), which, when focused on a specific museum object or location will present an overlay or augmented image on the user's screen.

LBS expertise, in the form of 15 hours of consultancy support, involved desk based research and telephone interviews with other heritage sites in the region who have successfully integrated augmented reality into their visitor experience. Two best practice comparator cases were identified in respect to the Museum of Lincolnshire Life in Lincoln, and the recently opened National Civil War Centre, in Newark. Benchmarking of these comparator sites and seeking to understand the main challenges of planning and commissioning such an app, as well as an understanding of how it facilitates the visitor experience, can now be incorporated into CBFs own development plans.

The LBS intervention has added to both the knowledge and competency levels of the CBF team, who now have a better understanding of what is required when developing and commissioning their own app, as well as the potential impact and benefits for the visitor experience. At the time of generating this OnLincolnshire case, CBF are seeking an appropriate developer for this project and have begun the process of historical research via the Lincolnshire archives, to source the materials and digital narratives with which to populate the application. Moreover, the LBS intervention has identified that the CBF development aligns with current Heritage Lottery Funding (HLF) opportunities and it is envisaged that a full application to this body can now be developed.

Impacts

Specific information in regard to business activity and GVA growth will require a longer project timeline, but it is clear that the range of digital technologies embraced is already leading to a more robust and sustainable business model. CBF have recently employed an apprentice blacksmith and are now benefitting from higher visitor numbers and longer dwell time on site. The presence of both the visual reality package and the proposed augmented reality app also offers the potential for significant competitive advantage within both the region and sector. What is more, these are developments that are more common to regional / county or even national scale heritage attractions and these projects present significant innovations in comparison to other small museum and heritage tourism sites at the sub-regional level.

As highlighted above, CBF has come to fruition thanks to a small dedicated team who wish to preserve the site and make an effective contribution to the South Holland visitor economy. The LBS / OnLincolnshire intervention has highlighted the importance of broadband connectivity, as well as enhancing the digital skills, knowledge and competencies of this team. Future aspirations are to bid successfully for HLF funding to help realise the augmented reality project, as well as to continue collaborations with the University of Lincoln and to act as an example of best practice and mentor to the wider Lincolnshire visitor economy and heritage sector.

For additional information on the work of Chain Bridge Forge and its digital innovations, please see: http://www.southhollandlife.com/

Growing Opportunities

Dr Gary Bosworth, Lincoln Business School

Summary of the business

Growing Opportunities was founded in 2010 by Joss Vincent on a farm outside Navenby, to the south of Lincoln. Joss employs his wife and one part-time member of staff and operates the business from offices on the family farmstead. The core focus business activity is the provision of grain trading data but new businesses opportunities relating to agriculture are also being developed. "the trading platform "X-farm" allows farmers, buyers and grain merchants to view live prices for grain, including prices on futures markets. For subscribers, there is also the opportunity to trade directly over the X-farm platform, reducing the commission charged by traditional grain merchants. More details are set out on the website: http://growingopportunities.co.uk/

Challenges identified at the outset and reasons for participation

For the purposes of this consultancy, the grain trading platform "X-farm" and a new innovation to recycle waste bedding from the equine industry were the two focal points. For X-farm there was a need to better understand the current website visitor profile in order to guide new developments in both the marketing and content of the website. As a conservative profession, the uptake of these types of trading models in the UK has been somewhat slower in agriculture than in other sectors hence the need for research to identify who are the more likely clients and how best to provide them with the information and confidence that they need to alter their supply chain behaviours.

For the new Waste Recycling idea, an opportunity was perceived whereby profits could be made from the recycling of waste bedding from horse stables into clean bedding for chicken farms and a by-product of organic manure for arable land.

Existing use of broadband, ICT and digital technologies

Being located on a farm some 10 miles south of Lincoln and not within a built up area, the farmstead previously relied on two different sources for Internet which offer variable speeds and reliability. One of these (SAY WHICH) has improved and this allows business planning to be able to rely on Internet facilities. The online grain trading platform suffes additional problems as many farmers have limited access to broadband and this requires the development of mobile-friendly versions to meet the needs of areas where this is the best means getting online.

Our intervention

1) X-farm

Our intervention involved a student working with the business owner to build a database of users and to design an online survey to capture information about who the users are and their purposes for visiting the website. The dissertation student will use the information to explore deeper theories about how price comparison website can build and change customer loyalty in different markets which the primary data will allow the business owner to target marketing towards key user groups and identify how best to generate value from the service provided to farmers, merchants and grain users within the supply chain.

The goal from this part of the intervention was to provide market research to understand the user-base of the existing business to facilitate a targeted marketing and to review the website's content. Together these will guide future business strategies.

2) Recycling Waste

The second activity saw the University of Lincoln's engineering school collaborating with the business owner to develop a funding proposal to Innovate UK. This developed an initial idea, to collect waste materials from equine bedding and turn them into chicken bedding and manure to spread on fields, into a realistic business plan. Although the £250K funding proposal was unsuccessful, the feedback was largely positive and new avenues for funding are being pursued.

More importantly, the collaboration has generated a fully developed business plan that now includes levels of safety testing that are required to enable the end products to be sold into the mainstream chicken industries. Broadband Internet enables these tests to be done remotely with data fed back in real-time to the University laboratories for spectral testing. Being able to guarantee a reliable level of bacteria-free produce through the recycling system developed could also offer a patentable technological application of spectroscopy in the future.

The business owner was initially over-awed by funding calls that were written in policy jargon and quoted figures that were considerably in excess of his anticipated investment. However, working through the process with experienced members of the university helped to break down these barriers and enable the business to explore other funding opportunities with greater confidence.

The target outcome from this part of the project was the provision of a funding bid and advanced plan for the development of a new product innovation which relies on broadband technology for real-time spectroscopy testing. This support includes advice on the engineering process, logistics and bid-writing as well as the specifics of how broadband can be used to maximise the viability of the business idea.

Achieved Impacts

Through collaboration, a funding bid was prepared and submitted to Innovate UK for a £250,000 grant. Although unsuccessful, the development of the bid advanced planning and incorporated new technologically-enabled engineering processes to be incorporated into the design.

The business owner learned a lot about the processes involved in applying for grant funding, a new skill in itself. He also learnt more about specific technologies that can improve the design of his business process.

With regular contact with two departments in the Business School, the business owner now has access to information on future funding opportunities and can seek advice on matters of engineering, logistics or business management as necessary.

While the development of the recycling business continues, the live business, X-farm, is also benefiting from ongoing market research. A telephone survey is being carried out in January as part of a student dissertation project. There was not time to conduct all of this within the 15 hours of the ERDF funding, but through collaboration, this will generate mutual benefits for the student (who needs data for her dissertation) as well as for Growing Opportunities.

Hall Farm Conservation

Dr. Georgiana Ciuchete Els, Lincoln Business School

The challenges and thus, opportunities of digital media marketing are a common issue faced by small and medium tourism businesses around the world. Innovative solutions to address these challenges are being developed, trialled and implemented, some being specifically tailored to respond to local issues. However, the majority have transferable aspects that can be applied to tourisms business anywhere in the world.

Introduction

The discussed case study provides the real example of a tourism business based in Lincolnshire and the benefits it achieved through the Broadband Project from implementation to impact (still to be established), alongside the barriers handled along the way. Based on this, the Broadband Project can use the example provided to evaluate the implementation process and to prioritise future initiatives.

Summary of the business

Hall Farm Conservation is a family owned business whose main activity consists in providing accommodation in converted farm buildings. Being located in the north-east of the county, close to the Lincolnshire Wolds, a natural area of outstanding beauty, but still easy-accessible from Lincoln, Grimsby and Humberside airport, placed the business in an advantageous position due to location, surroundings and history.

The concept is developed by the Milligan-Manby family who activates in the farm business for decades and seized further opportunities in expanding its main farming function. The series of farm conversions (e.g.: stables, cottages) into guest houses and event venues (e.g.: yoga retreats) placed the Hall Farm Conservation on the map of rural tourism in Lincolnshire. The business expanded with the acquisition of funds from DEFRA which helped finishing its crown jewel property – the Marris Barn in 2012, a crucial moment for the business as it started playing in a different league and marketing became a key element.

Challenges identified at the outset and reasons for participation

Through the Broadband Project, I was contacted in June 2015 to give advice and guidance of the online visibility of the Hall Farm Conservation. In the initial meeting and discussion with the coordinator of the project, I was introduced to the business and a

number of objectives have been set. The strategy developed aims to achieve the following:

- Understand the background of the business;
- How is Hall Farm Conservation (Thorganby Hall) currently using social media?
- Identify challenges and issues;
- Assess and give recommendations by producing a report;
- Follow-up with the business for further clarification;
- Impact for the business.

With the set of initial objectives, I went to meet the owners of Thorganby Hall and visit the premises to decide if my ideas are in line with what the business needs and to establish the two main aims: what does the business want to achieve and how? It was established that the company has a professional website and uses several social media platforms, but without clearly knowing how and why.

Specific tangible outcomes:

At an initial discussion, it was recommended that a dedicated person should be in charge of the digital visibility of Thorganby Hall and allocate enough time to start, construct and adapt to the needs of the business. The platforms to be used, should only be selected and tailored after several months' trials as would have to fit the purpose and needs of the business. Platforms that aggregate user generated content directly from social media (e.g.: Twitter, Facebook, YouTube, Google, Instagram) were used and provided.

Social media platforms should help towards increased brand awareness, building the company's reputation, drive web traffic and improve relationships, but are the best means to achieve it? A set of recommendations and useful tools was provided to help with the future development of the business. The report produced for the Hall Farm Conservation encompasses an 'online surgery' of the company's website and of its afferent social media platforms. The information provided is fit for purpose, meaning that the desktop based-research, applications and platforms used were customised for the business. Moreover, all the online results, reports and websites were attached to continue following the online progress and establish the strategy. Also, it is important to mention that all platforms are provided as a recommendation and a further selection needs to be done after the trial to see what fits the business purpose best.

Whilst some of the initiatives recommended are particular to Thorganby, there are more generic issues and solutions which could apply to other local businesses as well.

Summary

This case study provides the example of a Lincolnshire tourism business that is seeking to implement the best social media strategies. The success of the analysis and implementation will be analysed at a later stage (*the impact for the business*).

Safelincs

Hazel Donnelly, New Media Lincs, College of Arts

I met with Harry Dewick-Eisele, Managing Director Safelincs Ltd at their premises at Farlesthorpe Road Industrial Estate, Alford, Lincolnshire, on the 2nd of June. Stuart Baxter, the Commercial Manager was also present at the meeting.

Reason for intervention

Safelincs sells its detection products from their online website and they have produced a number of in-house video guides to demonstrate how many of their products work. Stuart Baxter has produced these to a high standard but they require at least another 30 product guides created. This is a very time consuming process and the company would like to out- source this to enable Stuart to free up some space for other work.

They require a friendly, easy to understand presentation of the products and would like us to initially do a screen test to make sure all aspects of the video are to their specifications. All products to be on a white back-ground for continuity .Titling to remain the same as original video clips.

New Media Lincs Intervention

10th June –Script sent from Safelincs for the screen-test.

!9th June- Student recruited for filming. 3 Actors brought in for initial screen test.

19th-23rd June – Edit of presenters sent to Safelincs

25th June – None of the presenters chosen

26th July   Another presenter showreel sent to Safelincs, again not suitable

10th August – Another presenter showreel sent but Stuart on holiday until the 21st August.

Conclusion

The holidays season has had a delaying effect on the progress of this project but also the difficulty in attracting a large number of suitable actors to the role of presenter has been tricky at his time of year.

Once a presenter is in place we will endeavour to get the filming completed within three/four days and then there will be a few weeks required for the editing of the films.

Copywriting Ltd; Bricktree Gallery

Hazel Donnelly, New Media Lincs, College of Arts

Summary of Business

Sarah Lamballe is the owner of a small Gallery, workroom/holiday let accommodation in the Wolds located at Jim's Yard, Bully Hill Top, Tealby, Market Rasen, LN8 6JA. She has two other staff members. She also works part time as a copywriter, with office space on a mexxanine level above the gallery. This project, however, focused on the gallery and the lettable accommodation adjoining the gallery.

Reason for Intervention

Sarah has a successful gallery and copyrighting business that she runs from the premises but would like to specifically advertise the possibility of using the workshop space for potential arts workshops/corporate meetings etc. She also wishes to include the accommodation for holiday let or photoshoot location. To advertise this she would like a video created that can be imbedded into her existing website or could also be shown at business meetings and trade fairs.

The business is beautifully presented and Sarah is keen to sell this 'lifestyle' in the video showing   rustic but- stylised rooms, with artefacts and furniture made from natural or recycled materials. She wishes to sell the possibilities of this wonderful space for a range of different activities.

New Media Lincs Intervention

May 18th	The initial meeting with Sarah took place on at her premises where she first gave me a guided tour and a rundown of the businesses. We discussed the video content she would like, the style, music preferences, voiceovers etc. We looked at other websites, photographic content she would like to use, location shots to be included etc.
May 20th	A quote for the work was submitted and a timetable of work planned. The filming was carried out by one Lincoln University undergraduate and a Postgraduate that I screened and recruited for the job.
11th June	Students go to Bricktree Gallery for the filming and spend the day shooting the material.

23rd June	First edit of film complete and sent to Sarah. Awaiting a voiceover from Sarah in order to complete the edit.
2nd July	Second edit sent with changes that Sarah requested. Awaiting voiceover in order to complete.
19th August	Sarah no longer wishes voiceover so project complete.

Conclusion

The project has taken much longer that was expected due to the holiday season and the various parties being unavailable for a good length of time. Sarah had a very definite vision of what she wished the outcome to be and so we did require to be in constant conversation at each part of the process and there were quite a few changes made to the original edit. Sarah wished the voiceover to be done by her friend and that also delayed the finished product too.

In the end however Sarah was happy to sign off the project and has stated she is delighted with the outcome of the video.

It is hoped that Sarah will be able to engage a wider audience and retain them on her website for a greater length of time too.

Woldmarsh Producers Ltd

Anjum Sawhney, School of Computer Science

Summary of the business

Woldmarsh Producers was formed in 1961 and provides members of the agricultural community in Lincolnshire with a cost-efficient means of purchasing goods and services. The company uses a cooperative membership business model, which has seen growth of 25% over the past five years to its current 913 full member accounts, with a further 701 associate and sub-business accounts. Member business transactions over the same period have increased by 35%, and exceeded £120 million in 2014, and turnover is expected to continue to rise, with an anticipated 100 new members joining during 2015.

The volume of invoices passing through the organisation has increased by 24% since 2008. The increased invoice volumes have stretched processing resources to the point where Woldmarsh needs to consider adopting new processing methods, both to increase efficiency in the future and to minimise labour costs.

The company is situated in a rural location and has a localised workforce, with a below-average turnover in headcount, which has resulted in considerable levels of expertise being retained within the business. The organisation benefited from this while the business model remained relatively static, but the business continues to grow, and now wishes to streamline its operational model to take advantage of newer technologies to penetrate its markets further, and make the way its members conduct their business simpler and more efficient.

Challenges identified at the outset and reasons for participation

The memorandum of understanding drafted originally was for:

- Importing Electronic Data Interchange (EDI) files from suppliers into the Woldmarsh accounting system.

- Assessment of the viability of producing electronic invoices (as pdf files) after importing EDI files to enable Woldmarsh to continue to produce invoices for its members.

- Offering guidance on how to achieve the above.

Existing use of broadband, ICT and digital technologies

Woldmarsh already uses a dedicated line service purchased from Virgin, which meets network performance rates needed for the foreseeable future. However, if new technologies are adopted, such as more sophisticated Wi-Fi usage or more advanced internet marketing web-enabled applications, the current solution would need to be reviewed and upgraded. Nevertheless, as stated, their current service is fit for purpose for the time being.

Woldmarsh currently uses an older set process and OCR products to capture and process orders into their legacy architecture, as outlined below:
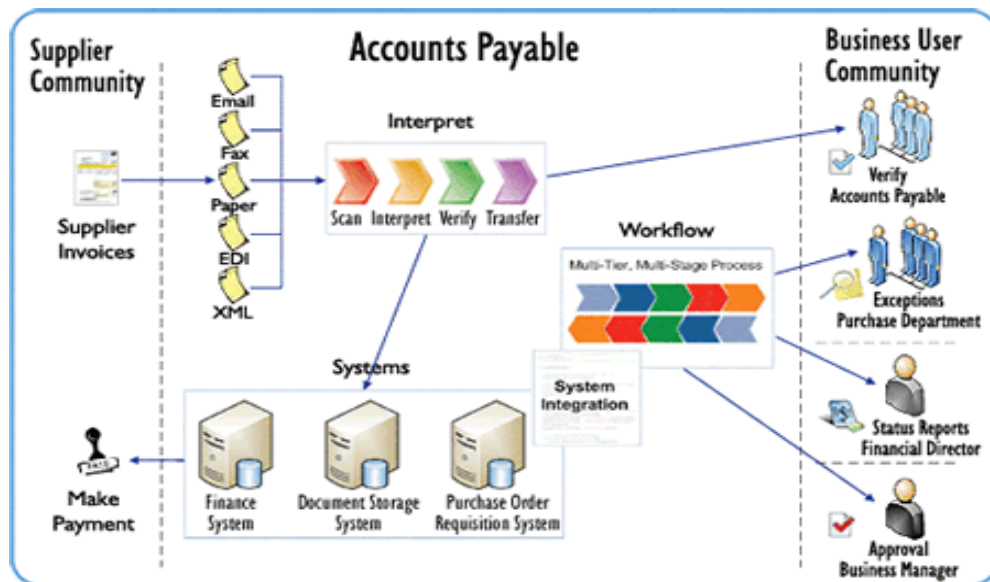
Review of the current process has shown that it is slow and labour intensive. Taking into account the membership growth already achieved, together with the future projected growth, and the fact that its members are now tending to be younger and more IT-literate, Woldmarsh will need to review its current strategy.

Onlincolnshire intervention

How can digital technologies play a strategic role?

A two-phase strategy needs to be adopted to address short term and long term visions.

Short term strategy needs to fix key issues identified, such as the Customer Relationship Management (CRM) solution. There are technical issues, such as the way Microsoft

Dynamics NAV (Navision) has been implemented, in that there are currently functional deficiencies in how the product has been set up, and this will need further work by the suppliers. Woldmarsh would benefit from a business review with its supplier, and a level of customisation must be achieved to allow the product to reconcile between delivery and orders in their documentation and supporting processes.

It appears that the implementation is very close to being a vanilla 'out of the box' concept, with little adjustments having been made to suit its actual conditions of use. It is recommended that the supplier offers consultation from a Navision Subject Matter Expert (SME) to examine how the product is used today, followed by a discussion about the business model Woldmarsh wishes to adopt over the short term and long term. A process and migration model needs to be developed which allows the ability to grow with the changes now being considered.

The anticipated outcomes (See Memorandum of Understanding)

- Look at the viability of importing EDI files from suppliers into the Woldmarsh Accounting system.

- Look at the viability of producing electronic invoices (as pdf files) after importing EDI files to enable Woldmarsh to continue to provide invoices to their members.

- Offer guidance on how to achieve the above.

The expertise provided and nature of delivery/interaction

Woldmarsh was initially offered consultation on EDI and how to achieve importation of EDI from suppliers to its accounting systems, but during this phase a more urgent requirement was identified. With high volumes of orders it was apparent that there were problems in scanning orders into the system and reconciling them with related documents. The existing system often failed to capture scanned images efficiently and, although an OCR system was in use, it was often unable to read orders to an acceptable standard. As a result, a high percentage of the orders needed to be keyed in manually.

This fundamental problem severely handicapped the ability to automate the capture process, since a hard copy always needed to be retained to support any transaction, in case it is needed to be queried in the future. This has necessitated the use of a pool of staff, required to follow a somewhat archaic solution to enable the retention of accurate documentation.

By mapping the process and technologies used it was possible to see that a more advanced OCR system would benefit and improve the business process. However, this product would need to interface with the existing Navision system, which is also in need of upgrading.

Our recommendation was that Azure, Woldmarsh's current supplier, should consult again with the company before carrying out the Navision upgrade, by reviewing how the current solution is used, to identify changes needed and modifying how the new feature could be utilised to meet business processes and finding the best 'fit for purpose' OCR system to enhance the current methods of working. It seems that, up until now, the supplier have simply sold point-based solutions in a largely 'off the shelf' manner. In retrospect, it seems fair to say that more thought should have been given to the potential positive benefits of adapting available packages to give a 'tailor-made' solution which would take into account the specific business processes followed by Woldmarsh Producer*s*. By taking advice from a number of different SMEs (Navision, OCR, Scanning technologist, Database and accounting experts) a better solution can be reached, more closely aligned to Woldmarsh's needs.

By doing this and ensuring that future needs such as EDI and web enablement are factored in, Woldmarsh will be able to satisfy its future growth and market and sales strategies.

The learning process observed

Through these consultations the Woldmarsh management team, from CEO to CFO and COO, has been able to see that independent consultation has given insights, not previously available within the existing organisation. It has been demonstrated that the current online solution is fit for purpose at present, but once the adoption of web enablement is achieved there may be a need to improve the broadband infrastructure. Of necessity, this will be driven by the strategy and timescales which Woldmarsh decides to adopt.

Specific tangible outcomes

We have specified a review of the Woldmarsh OCR system, but the solution needs to be reviewed by the company's trusted Navision partner as, until now, Woldmarsh has simply bought available products without necessarily factoring in many key issues, such as future strategy aligned to growth targets and market changes, especially as it has an unusual business model of being a cooperative, run as a service to paying members.

Impacts

Impact on the business model and changes in the nature of the business activity (including specific details on GVA growth and employment for ERDF funding criteria)

As outlined earlier in this business case study, Woldmarsh Producers is a cooperative which offers support to anyone associated with the farming industry. Simply put, the company purchases goods on behalf of members and passes the financial benefits of quantity negotiated deals on to its customers. It is a non-profit making organisation. Currently it employs 21 staff, with a total Gross Value Added (GVA) of approximately £900,000. It has around a thousand members who predominately join the scheme through recommendations. There is a membership fee, which is the source of the company's operational income.

Understanding how the process works helps us to understand the impact of the changes the company is seeking.

When a farmer wants to purchase an item, he states that he is a member of Woldmarsh Producers and that triggers a discount.

During the last financial year Woldmarsh moved to an online invoicing system, which is due to be upgraded next month by Navision. Previously, paper copies of all invoices were supplied to members. The whole process is now online, and members now receive a statement each month which they need to access via their online accounts. The benefit of this solution is that members can view all their transactions together, and see their spending as well as historical statements and invoices. The clear gain for Woldmarsh is a reduction in time spent in the preparation of invoices, together with savings in stationery and postage costs.

Currently Woldmarsh receives invoices, which are scanned manually into the existing system. The original invoice from a supplier is scanned, an OCR package captures the image and, where these are clear enough, fields are identified and added to the financial software. However, some invoices have to be processed manually and entered into the same financial system. This is because in many cases the quality of the image is poor, does not follow a standard format or is not complete. It has been seen that the OCR product V1 is an older product, which will need to be upgraded, preferably at the same time as the Navision upgrade.

Hence Woldmarsh Producers needs to look for more efficient way of conducting its business, taking costs out of its operations through investment in future technologies. Processes need to be streamlined, and ways identified of increasing membership through emerging technologies such as web centric marketing, together with improved ways of informing members of new products and services via social media. Finally by the use of EDI to suppliers for submitting bills electronically, so that Woldmarsh can generate invoices automatically in pdf format which they will be able to send to members through their online accounting system. This information is needed by members for accounting and tax purposes.

Generally this system works satisfactorily, but with a few suppliers, such as mobile phone providers and energy suppliers, there are higher volumes of invoices containing separate bills for every member, and these can be several pages long. These large documents require more manual effort in scanning and recording. However, these same suppliers can provide EDI files for the bills, and Woldmarsh wishes to move to a process model where files can be imported automatically into its financial package and an invoice created (in pdf format) which can be supplied to members via their online accounting system.

Impact on the individual in terms of skills and competencies

Currently the Woldmarsh workforce consists largely of lower-skilled data entry staff, some of whom work part-time. This cannot change at present, because of the high volumes of invoices and transactions that have to be manually captured. If Woldmarsh can invest in better, more modern systems, savings can be made by a reduction in headcount.

Alternatively, a more radical solution can be considered, of outsourcing the entire invoicing/EDI process to a third party supplier, such as an offshore provider or managed service provider. This could generate savings and remove the need to continually invest in an area of its operation that is not a core part of its business. The cost savings of such a solution can, on average, amount to 27% year on year, assuming that the most appropriate model and organisation was to be identified. If the latter solution was to be considered, the skills within Woldmarsh's current capabilities would need to be reviewed, as the company would need the capability to manage contracts with third parties for technical support, and employ people with the skill to assess how support and services were provided to meet its current and future needs.

Impact on the networks and outlook of the business owner

Woldmarsh has already recognised the need to invest in an internet centric world and has already created web-enabled marketing to attract further membership and promote its business model. Through this relationship the University of Lincoln has used its web design expertise from its media faculty to discuss and demonstrate what follow-up projects might be initiated to help enable a new and different offering for Woldmarsh's web enablement. These suggestions were met positively and would be a fertile area for the university to develop under this umbrella. The co-operative has a strong membership and looks likely to expand its service and geographical reach into neighbouring counties, which is in line with its business strategy.

Appendix D – ISBE Conference Paper

Business model innovation in a global digital economy, an anticipatory perspective to researching rural enterprises.

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Keywords: rural; business model; responsibility; anticipation; anticipatory capacity.

Abstract

Objectives
A conceptual framework for the empirical analysis of some effects on rural enterprises of "the digital economy", linked to the concept of *an anticipatory system*. The superficial context is the expansion of 'superfast' broadband into rural areas through public subsidy. The more significant research objective is to explore ways in which rural enterprises are sustained in a digital age, for example by innovation and what processes are employed in achieving such sustainability. How does being enterprising include anticipation and to what effect?

Prior Work
The focal point of the research is the notion of the 'business model' e.g. (Amit & Zott, 2001; M. Morris, Schindehutte, & Allen, 2005; Alexander Osterwalder, Pigneur, & Clark, 2010) and the related influences that rural contexts and broadband may have on the capacity of an SME to sustain itself, either through competitiveness or in value captured (Chesbrough & Rosenbloom, 2002). The work also builds on Fuller and Warren's programme of research on complexity and emergence in small and medium enterprises, e.g. (Fuller, Warren, & Argyle, 2008; Fuller, Warren, & Norman, 2011; Warren & Fuller, 2015)

Approach
The conceptual framework is built from the literature on complexity, emergence and anticipation. It is used experimentally on three case studies of rural enterprises, where the focus is broadband and internet technologies and globalisation.

The object of study is a range of rural enterprise business models; firstly through a descriptive lens of business model structures as they relate to each firm's global and local contexts, secondly through an analytical lens of value creation/capture and a thirdly through a methodological lens of anticipation (Poli 2012) as a precursor of responsible innovation, e.g. (Bocken, Short, Rana, & Evans, 2014; Stilgoe, Owen, & Macnaghten, 2013; Yunus, Moingeon, & Lehmann-Ortega, 2010).

Results
The usefulness and limitations of the framework are discussed, as is the extent to which enterprises' anticipatory capacity (Ahlqvist et al., 2012; Poli, 2010) relates to digital technologies. Indications of early findings from empirical case-based research are included.

Implications
The implications of this theory-building from extant literature is that some profound changes are taking place in the environment of rural enterprises, over which they have limited power. Opportunities for value creation exist but the development of the agential anticipatory capacity should be at the heart of entrepreneurship education and business support.

Value
The framework is offered as a tool for researchers in this field in order to expand their analytical capacity. The concept of anticipatory capacity is introduced to link the informational aspects of the digital economy with the sense making and entrepreneurial behaviour of rural enterprise management.

Introduction

The broad research question underlying this study is 'What forms of anticipation are manifest in specific organisational contexts, and to what effect?" This question forms part of a wider programme of study on Responsible Anticipation within a broader theme of responsible management research. In this particular case, we are interested in the way that a selection of small firms based in rural areas prepare for their futures in a more digitally symbolised and interconnected world (M. Castells, 1996; Manuel Castells, 2005).   The context for our investigation is a programme of university-business collaboration, mainly funded by European structural funds and related to a central government response to the market failure of telecommunications companies to provide adequate broadband technologies in rural areas that are more sparsely populated (with customers and competitors) than urban areas. The purpose of this collaboration is to provide stronger links between a university and local enterprises, and In this case with a focus on economic sustainability,

Within this context therefore, are a number of specific areas of interest, such as how the small enterprises are using or planning to use digital technologies, how this is changing their businesses, and what effects access to a wider range of knowledge and skills might have on the enterprise. These latter points have both evaluative and formative aspects; evaluative in terms of the 'added value' that faster broadband technologies might provide and formative in terms of how small enterprises can develop in the digital economy.

This working paper gives a brief report on work in progress in a small empirical study of small enterprises with regard to the responses to the digital economy. The paper investigates the extent to which a central concept in strategic shaping in the digital economy, the business model, is apparent in the thinking of the principals (leaders, owners etc.) of these enterprises. Our analysis of the way that these small enterprises are dealing with the environmental changes uses a central question of the ways in which they are anticipating the effects of the digital economy. For this purpose we extend previous work on innovation and emergence (Fuller et al., 2008; Fuller et al., 2011; Fuller, Warren, Thelwall, Alamdar, & Rae, 2010; Warren & Fuller, 2015) to consider the role of anticipation in entrepreneurial processes.

Context

Even the most regionally remote of small businesses in the UK are engaged in the global economy, and this economy is mainly mediated through the internet. "'The Internet" is used here as an umbrella term for online, interconnected relationships and transactions, including web sites, social media. Even when such technologies do not reach the individual small enterprise, they are used by their customers and competitors and this changes the landscape for the 'unconnected'. The digital economy as Tapscott (1998) called it, is ubiquitous. The literature connecting ICT and small enterprises, rural firms and the issues of broadband access is not extensive and that which exists is well summarised by Townsend et al. (2013). The significance and shortcoming of internet access is certainly a policy issue at the present time with strong advocates for ubiquitous

high speed internet connections for businesses in business organisations[1] and government (House of Lords, 2015).   The assumption that high speed internet access is necessary for innovation and growth in businesses, as well as in the provision of public services is widely held (Salemink, Strijker, & Bosworth, forthcoming). The premise is a general form of anticipation that high speed internet access is a strong element of 'the future' of social, economic and cultural life and that not being fully 'connected' disadvantages firms and people.

The ecology surrounding any form of digital enterprise is complex, dominated by larger firms, highly volatile because of the ease and speed of new entrants and requiring high levels of ongoing investment in "being present" online. How then, does a small firm compete, when somewhat disconnected or with low levels of connectivity because of slow broadband speeds (Townsend et al., 2013), and frequently with low relative levels of skill in both online communication and in the technical management of online business? Our research set out to discover the ways in which the principals of the enterprises (owner managers/entrepreneurs etc.): were preparing for their digital futures, were considering their competitive position, were reconceptualising their enterprises and what kind of resources they were enlisting to achieve this. These questions, in simple terms are a way of accessing the anticipatory practices of the enterprises and to reveal the limitations, or perceived limitations, experienced by the firms.

Methodology

Our approach to this study is grounded in an emergence perspective (see for example (Fuller & Moran, 2000; Fuller & Warren, 2006a; Fuller et al., 2008; Benyamin B. Lichtenstein, 2014; Benyamin B. Lichtenstein, Dooley, & Lumpkin, 2006; Sawyer, 2005). This perspective takes the position that entrepreneurship and innovation are linked, such that entrepreneurial actions generate novelty (innovation); that such innovation is generated through the inter-relationships between actors and, while it may be planned to some extent, is largely unpredictable in its outcome because of the inter-subjectivity or the actors and the multiple interactions that take place. The perspective is informed by complexity and constructionism. The unit of analysis in this study is the business model, in particular the emergent business model. If an enterprise is responding to changes in its environment created by the digital economy, then how does the pattern of doing business (i.e. the business model) change? How does a new business model emerge from existing practices, modified by the influences of a digital economy?

The "Business Model" is a description of the main set of relational interactions that creates and captures (appropriates) economic value. (Teece, 2010; Zott, Amit, & Massa, 2011). The concept of a business model is more aligned to networked value creation than a simple value chain or value creation by the individual firm. The business model "mediates between technological development and economic value creation" (Chesbrough & Rosenbloom, 2002, p 532). For the individual enterprise business models

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[1] See for example the 2013 report from the Institute of Directors stating that rural business leaders are dissatisfied with download speeds (60% mobile and 45% fixed line)
http://www.iod.com/Influencing/Press-Office/press-releases/new-iod-poll-faster-broadband
(accessed September 2015)

are a way of distinguishing competitive strategies, i.e. the formation and operationalization of a business model is relatively strategic. It is also a site of innovation; i.e. by innovating the business model (Chesbrough, 2010) or reshaping the structure through which value is added in a particular market context. Arguably business model innovation is different from product or process innovation, requiring a different strategic orientation (Bock, Opsahl, George, & Gann, 2012). Business Models can be used as a framework for analysis of a particular enterprise and also as a construct for design. Used for joint purposes, a business model framework can be used to structure a strategic conversation by managers about the structure, capabilities and strategies of a particular business.

The premise of a business model approach is that value can be quantified and that the quality of one particular structural form or model over another can be assessed. Used as a design device, a further premise is the possibility to identify alternative possible structures and to align necessary resources to achieve the desired design. From the entrepreneurship perspective, this teleological premise does not sit comfortably with the more bricolage oriented theories of entrepreneurship, such as effectuation (Sarasvathy, 2001). A bridging concept in this respect is that of emergence (the emergent business model). The innovation of a business model in a smaller enterprise has been shown to be largely process oriented, emerging over time and in constant adjustment as conditions, technological capability and stakeholder responses change, see for example: (Fuller et al., 2008; Lehoux, Daudelin, Williams-Jones, Denis, & Longo, 2014).

An analysis of business model innovation is consistent with the effects of the internet and the speed and density of communications. The concept of The Business Model has been much amplified by its relation to e-business (Amit & Zott, 2001; A. Osterwalder & Pigneur, 2004). Innovations in communication and technology enable changes in patterns of business activities and can change the extent and location of value being created and value gained (appropriated or captured). It is an empirical question therefore, rather than a theoretical question, whether the business models of rural small firms (to select a particular type of firm) have been influenced by the digital economy and in what ways. Online technologies are complex. Engaging with online activities is time-consuming. Larger corporations employ technical teams to operationalise online business and invest heavily in technologies and digital resources. More strategically, online economies are dominated by a few large-scale firms who have created new spaces and systemic economic ecologies that enable small scale enterprise: small firms acting as retailers, service providers, software developers and fulfilment services, to name but a few. Engaging in such economic ecologies is likely to require changes to (and innovations in) the business models of the firms concerned.

It is also the case that applications of new technologies, such as 3-D printing, genomics, robotics and software services, create opportunities for new business models, and the effects of those changes is unpredictable. The causal connectedness of technologies, connections and practices is complex – meaning a) the effects are difficult to understand or anticipate consequences and b) the connectedness generates novelty at a faster rate than can be perceived by those outside the immediate site of the innovation. All of the above aspects of the digital economy have a tendency to increase uncertainty, increase

rates of change and decrease the longevity of a particular business model, requiring ever greater agility and anticipatory capacity.

Before turning to the empirical aspects of the question of effect on small enterprises, let us give some critical consideration what underlies the business model idea. Primarily a business model is designed or produced to carry out or achieve the purpose of its host enterprise. A second aspect relates to value creation: What is the nature of the value pursued by the enterprise. In a corporate plc, 'value' is primarily economic; frequently manifest as high salaries for senior executives, a competitive return on shareholder investment and relative growth in equity value. In smaller enterprises, what is taken to be valuable may be less clear-cut or a mix to complex of value types; social, personal, economic, familial etc. Two further aspects that underpin the notion of a business model relate to dynamics. Firstly, what motivates or triggers changes to the business model and secondly the set of processes by which business models form, evolve and reproduce.

Furthermore, in the same way that a singular enterprise cannot be understood simply in terms of its own characteristics, but only with reference to the context in which it exists (industry, market etc.), (M. H. Morris, Shirokova, & Shatalov, 2013) so a business model can only be made sense of as part of a wider ecology of interdependencies. For example, if the main motivation of the actors in a particular business is mainly a social purpose (Yunus et al., 2010) (such as a social enterprise), but the business model is part of an economic ecology, then its survival will depend on generating economic value. Thus what underlies the business model is perhaps a more explicit sense of interdependencies than is embedded in the concept of an enterprise.

The absence of explicit multiple values in the language of business models is a shortcoming if used to analyse, explain or design the organising patterns of a small enterprise, given the personal nature of small enterprises. The language tends to dehumanise enterprises. Human endeavours in the world of business models are taken as entirely instrumental with no difference between what is automated, what is undertaken locally by people and what is provided by other assets. The question of what might comprise a 'business model' for designing a small enterprise and how value and values are inscribed within this design or set of practices is open to further research. The evidence that business models are changed through process and practices rather than by design informs such research.

It seems reasonable to assume that for the entrepreneur or business owner or principal, a business model is a tool for them to use as an instrument of agency, such that the key personal aspects, so important to small enterprises, stand outside this design device but are inherent in the process of constructing the model. The overall process of shaping and reshaping practices in a small business is human agency, and human agents can use the 'tool' of a business model. A research question in relation to this is how the concept of business model is 'used', if at all, by the entrepreneur. It is a similar question to asking how a 'business plan' is used by the entrepreneur. Lehoux et al (2014) suggest that one use of a business model by entrepreneurs is to explain to stakeholders the value creation logic of the forming enterprise. In that sense it is prospective and

provisional, and not unlike a business plan, it is a device that provides a capacity to make explicit the anticipation of future value.

We suggest that the central point of 'value creation' – a well-used phrase in entrepreneurship literature, is certainly important. A key analytical question is what is taken as being valuable (to the entrepreneur), and hence what shapes the business model, within its wider context. This question has at least two purposes, first, with respect to the enterprise itself, is to attempt to make explicit what is valuable to the enterprise and to set a design criteria for the business model. Many assumptions about purpose and the sustainability of the enterprise may be challenged in the process. The second set of criteria or analytical questions about value is to establish a much wider sense of value within which this particular model operates and to ascertain which actors in this ecology benefit from this value. This type of analysis takes a more critical perspective with a concern for power, value appropriation and sustainability. Thus with regard to 'value'; we need to understand what is valuable to the enterprise, what is valuable to the significant set of stakeholders in the 'ecology', how value is created with respect to this multiple set of values and finally how the enterprise is sustained by appropriating and capitalising value from the process, relative to other actors in the ecology.

Business model as an anticipatory system

Given our 'emergence' approach, and the unit of analysis being (broadly) business models, we introduce into the study the anticipatory aspects of the process of business model dynamics. We consider anticipation to be important to users of theory because of the complexity and unpredictable dynamics of the environment. Anticipation does not mean accurate prediction, nor does it mean 'long term' forecasting. Rosen (1985), theorised that natural, living, self-reproducing systems are anticipatory. "Each system contains an internal predictive model of itself and of its environment, which allows it to change state at an instant in accord with the model's predictions pertaining to a later instant" (p341). This very concise, parsimonious theory presents the idea of an anticipatory system and its models as an abstract concept. It says something of the relationship between the 'living thing' and its environment. In social science terms explanations of the workings of such a system are much more likely to be put in terms of inter-subjectivity, dispositions and critiques of power, to mention but a few. However, although explanations may be found through interpretative methodologies, the idea that sense is made of the environment, and that sensing triggers actions and consequences, some of which are a matter of forethought, seems consistent with the basic process of monitoring and adapting behaviour in relation to beliefs and perceptions of the environment. Our main argument is not whether accurate predictions can be made, nor whether highly dynamic environments require more complex forms of anticipation. Our position is simply that anticipation, as a process, is prior to emergence (of some novel form of behaviour), and has causal effect on that emergence.

We thus consider the role of anticipation in entrepreneurial actions from which emerges 'innovation'; meaning some novel form of performance via, for example, new combinations(Schumpeter, 1934) . In our studies of emergence in entrepreneurial

contexts the entrepreneurs' "capacity of seeing things in a way which afterwards proves to be true, even if it cannot be established at the moment"(Schumpeter, 1934, p85) is not quite how foresight is done by entrepreneurs, but we would accept that a futures orientation and the anticipation of possibilities is consistent with how entrepreneurs practise innovation and produce emergent novelty.

Rather than a simple cognitive explanation for foresight, we suggest that the modes of anticipatory coupling of the actors need to be understood. Fuller and Warren (2006b; 2008) identify that foresight is situated practise by entrepreneurs as a combination of processes, guided by a sense of producing both regularity and value, for example as a 'business model' which, when formed, is relatively stable and creates exchangeable value. They draw attention to combinations of intersubjective processes relating to (1) Experimenting, (2) Reflexive Identity formation, (3) Organising and (4) Sensing (responses to perceived environmental change) (Fuller, Argyle, & Moran, 2004; Fuller et al., 2008). The processes are inter-connected and if one is missing, emergence of novelty is unlikely to occur because of their inter-dependence. These processes are part of the anticipatory coupling between the enterprise and its environment, mediated by intersubjective interpretation of the actors in the enterprise and of course, the other actors with whom they inter-act.

Very briefly, these four processes relate to the following domains: (1) *Experimenting*: trial and error, "let's see if it works" attitude, is the creative process of assemblage, requiring considerable competence (Barney, 1991; Nicholls-Nixon, Cooper, & Woo, 2000). (2) The *Identity work*: of the entrepreneur and the business is a powerful stabiliser (Down, 2006; Fletcher, 2003; Warren, 2004) and, as Flores and Grey (2000) suggest, a motive force. (3) *Organising*: is the everyday allocation and use of resources and the connections between them in patterns so as to be able to replicate and reproduce useful activities; (4) *Sensing*: is, in short, the coupling with the environment mediated through many connections and senses, without which actions may not lead to increased fitness of the enterprise in its environment, which one case study entrepreneur referred to as "enforced agility" (Fuller et al., 2008, p7). Through these combined actions emergence occurs in material forms, including routines, narratives, artefacts, images.

We do not consider that these processes offer a complete description of anticipatory coupling or the ontology of an enterprises' anticipatory system. For example, often an entrepreneur has a 'vision' or particular models of the world which informs this 'coupling' but many other mechanisms or influences may be at work in producing the emergent properties. It will take further research to understood and explain anticipatory coupling, including the analysis of the data gathered in this particular study, some of which is presented below. However, we can offer further explanation of the importance and role of anticipation.

An emergent business model, developed interactively within a changing environment, is unstable. If it fails to create or deliver value, it will not be supported or sustained within that ecology. The persistence of emergent material forms, (Sawyer calls these 'Emergents' (Sawyer, 2005)), is not assured. Indeed, in general we consider them unstable and ephemeral (after Sawyer). We observe that the entrepreneurial teams

involved in bringing about a new business model (or similar) are highly concerned with its value; its value to them as profit generating and its value to others (e.g. as benefits to customers). Value: created, captured, destroyed, or missed is a central idea to the explanation of the stabilisation or sustainability of ephemeral and emergent 'business models', though still only part of the explanation as to how emergence of such models occurs. If a business model is perceived as likely to produce value for its stakeholders at a future date, these stakeholders will tend to accept the legitimacy of its continuation, making attendant judgements about risk. A collective anticipation of value by the actors concerned stabilises this emergent form. Fuller and Warren (2011) suggest that the dynamics of emergence in the volatile environment of creative industries require anticipations of multiple forms of value amongst the actors.

The question arises as to how a nexus of anticipations are formed or are manifest. We suggest that value is anticipated through the interactions between the actors and mediated by the materiality of the ephemeral emergent. Thus even short-lived emergents can be causal or have effect on the behaviour and beliefs of the actors, i.e. they have ontological status; they are meaningful. Thus in observing the creation of a new business model we have observed a set of interactions which produce in communicable forms a set of expectations about some future state. This imagined future state will include a range of assumptions by each actor, for example about their performances, obligations and rewards. Thus the future as a state of being and knowing is causal; it has effect on the present through these interactions. The process of constructing, evaluating and enacting a business model is, at least in part, guided and motivated by its expected relationship with the future, i.e. the process of anticipation. Such a process and interpretation is not by one person or one firm, but a nexus of interpretations. The anticipatory processes engaged in the production of an emergent business model are intersubjective.

Seligman et al (Seligman, Railton, Baumeister, & Sripanda, 2013) report that "a wide range of evidence suggests that prospection, the representation of possible futures, is a central organizing feature of perception, cognition, affect, memory, motivation, and action" (p119). We suggest that our observations of entrepreneurial contexts indicate that such prospection affects emergence, but that to create a sustained emergent, some way of co-ordinating the prospections of the actors involved is necessary. This might be done simply through a shared idea of economic value that a proposed business model might create. However, given the experience of most innovations, the path to a final relatively stable form is long with many twists and turns. It is far more than a rational view and teleology of economic value that attends emergence in this context. According to Seligman et al (2013, p 126) generating simulations of the future can be conscious, but it is typically an implicit process— not requiring conscious initiation or monitoring, often not accessible to introspection, and apparently occurring spontaneously and continuously. Indeed, even when individuals engage in conscious prospection, their intuitive sense of the value of alternatives may be underwritten by unconscious simulation (Railton, 2014).

Appadurai adds an anthropological argument to the significance of the future as acting on the present, which focusses firmly on "three notable human preoccupations that shape the future as cultural fact, that is, as a form of difference. These are imagination,

anticipation and aspiration" (Appadurai, 2013, p286). He also reminds us that the future is "not just a technical or neutral space, but is *shot through* with affect and sensation" (p287). He also discusses the ethics of thinking, feeling and acting in relation to [future] possibilities (increased horizons of hope) and [future] probability (where he refers to amoral behaviour, profits from catastrophe and corruption).

The above perspectives lead to a conclusion that anticipation, as a set of relationships with the future, has a causal role in the creation of emergence in entrepreneurial contexts.   These contexts are taken as being volatile and complex – with many interacting actors, multiple systems, multiple levels and multiple values.   The causal power of anticipation comes from the motivation it generates amongst the actors to fulfil an absence, to address disharmony, to create, capture value or consume value. The interpretation by actors is *'shot through'* with emotional and sensational experiences and actions and, in some way, guided by particular ethics. If as researchers, we wish to understand more clearly the practises of emergence in complex environment, these ontological properties are salient and worthy of description.

In summary, anticipation and emergence inform our methodology. They direct our gaze as researchers on the process of constructing a response to the digital economy by small enterprises. Empirically we are interested in the use of the notion of a business model, either explicitly by the firms as a design / narrative device or implicitly as a helpful unit of analysis. We are also interested in the perceived and anticipated effects of the digital economy and the internet on the particular businesses and take an interest in the particular geographical effects and access to high speed broadband in this respect.

Method and findings

To gather empirical data about forty small enterprises were contacted through various networks and co-nomination processes. The context for this recruitment was as part of the university-enterprise collaboration programme. Of these twelve were selected for further contact. The criteria for selection was that they were SMEs (as defined by EU) and that, through conversations with the principals of the enterprise, they might benefit from engaging further in internet and digital aspects of their business. The data set is a non-representative selection and no claims to statistical representation are made. As elaborated above, the methodological research question concerns manifestations of anticipatory processes, .i.e., an intensive method, rather than extensive (Sayer, 1992, p243), after Harré (1979).

The initial research contact with the firms involved discussion with their principals (owners or chief executives). The artefact of a conceptual 'business model' was taken as a guide for a conversation with the principals about their enterprise and the relationship with 'the digital' in that context. Each interview lasted between one and two hours. A set of descriptions from Osterwalder et al (2010) was used (Appendix 2), along with the concepts of value creation and value capture (or appropriation). The guiding questions are shown in Appendix 1. The twelve initial interviews were followed up in two ways. In some cases, further discussions took place with regard to specific aspects of the business model and in other cases university staff with relevant expertise provided direct guidance to the enterprises. Of the twelve firms, nine continued with some

further engagement after the initial interview. This paper, which is more methodologically focussed, draws on interviews with three of the enterprises, profiled in Table 1. Data from the other cases is still work in progress at the time of writing; these three are treated as 'pilots' herein. Key points from the discussions with the principals of the enterprises are listed in the table in relation to 'the digital economy' and 'business model innovation'.

Type of enterprise	Size: Employees	Focus of discussions on digital economy	Business model innovations
Ent A:Trade and wholesale specialist equipment mainly B2B Strategy of always 'trying new things ("If its thinkable we try it")'	28	• Dominance of Amazon/Google that encouraged transaction (price) based customer relationships • Use of (over 40) product micro sites for representing OEMs • Importance of Branding • Use of online to drive phone-in enquiries (keeping control of customer conversation) • Current partnership with online small scale retailers/order fulfilment as distribution channel	• Greater focus on service value and less on 'box shifting' • Development of circa 100 videos to add service element online (Online asset creation) • 3D printing of easily lost/broken components • Building their own-brand
Ent B: Own products for niche consumer market. Designed locally, manufactured internationally, distributed mainly in Europe to retailers, though expanding coverage and e-retail of own products.	10	• Dominance of Amazon • Keeping control of the customer relationship • Channel conflict between wholesale and direct e-retail • Fine tuning pricing for online retail	• Use of 3D printing for prototypes • Creation of online environment for adding value to product use • Sales forecasting • Distribution logistics

| Ent C: Arts and Heritage visitor centre with semi-rural location. Footfall essential to business. Offers multiple space-based local services (café, gift shop, meeting rooms, events, library), promotes historic significance of region to tourists. Range of partners and about 75 volunteers | 6 plus 75 volunteers | • Opportunities for use of online resources for efficiency, responsiveness and service, e.g. booking systems, promotion of events to email lists of selected types of client.
• Challenge of setting up systems because of general lack of technology skills amongst the active volunteers
• Knowledge of most appropriate approach to develop useful systems for the enterprise. | • Development as a global presence as representation of and gateway into the local regional culture, heritage etc., i.e. greater focus on tourism alongside the current 'local' services.
• Establishment of technological resources on which to base further developments |

Table 1 Profile of pilot firms

Reflections on the interviews

The principals of the businesses had not used the concept of a business model as a guiding device, at least not explicitly. It is the case that the popular form of business model description covers common aspects of everyday business practice. Therefore although not explicitly experienced in the use of business models the principals were able to relate easily and readily to the format as presented in Appendix 2. There was no clear sense of business model innovation as their focus for innovation, i.e. this approach was, understandably, not part of their language.

The areas of their business that they identified as a focus for innovation were linked to the use of communication and internet technologies. This is unsurprising because these issues were the premise of particular intervention; i.e., that is why the enterprises were engaged with the programme of research and support. The enterprises were self-selected. The types of innovation they were pursuing were consistent with their understanding of themselves as existing in a wider market/sector context, not based specifically on business model design.

Two of the three example enterprises had well-developed e-business, with a significant proportion of sales being generated from online business. For these enterprises, the technology majors, such as Amazon (marketplace) and Google (search / click through /analytics) were dominant in the discussions about e-business. The sense of the possibility of innovation in this context was very operational in its focus, i.e. a co-evolutionary perspective of remaining competitive in a continuously changing environment: pricing patterns, competitive products and Amazon's and Google's listing

algorithms. The main issue for these businesses was keeping a strong relationship with their customers. Hence tactics to move the customer closer, e.g. from (say) Amazon's marketplace to a direct relationship (e.g. via phone-in enquiries), were prevalent.

However, at the same time in all three cases were more visionary perspectives. These were less well articulated. In this respect, the principals had a good idea, if not completely specific, about what they wanted and hoped for. They were able to articulate strong notions of what they would like their business to become with respect to the digital economy.

For Enterprise A, the focus was on 'service and brand'; the value creation coming from greater service to customers and the value capture from a trusted brand. This was in effect building on the identity of the existing business. It was simple in conception, even if implementation was an everyday challenge.

For Enterprise B, the innovations were pragmatic, but implicit was a growth strategy that maintained the core identity, target market and product ideas of the business and extended these geographically and virtually.

For Enterprise C, the focus was more difficult, because the enterprise itself was diverse, with the core aspects of 'the building' and 'the volunteers/trustees'. In the context of a digital economy, digital manifestations of either of these core resources (virtual presence and automation and online information) were the opposite to present identity of the enterprise. In C, therefore a re-establishment of identity was forming, guided by its sense of value provided and its anchor point in a particular location. The principals, understandably, were not able to articulate a new business model at such an early stage of consideration. Their uppermost concerns were key skills and current services being enhanced by digital processes, and the establishment of a technology platform on which to develop.

What then can we establish, from this brief synopsis, with regard to the anticipatory capacity and anticipatory process inherent in the enterprises' relationships with their futures? Superficially at least the business model, or indeed business plan, in practice does not appear to be a mechanism for anticipation. The principals were not sketching out multiple business models with alternative value creating and value capturing mechanisms. Or at least, their discourse on the futures of their enterprise was not grounded in this conception.

In each case the existing business model was at the centre of their anticipatory practices. The 'business model' being the everyday practices and the meaning of these to the principals. The business model in this sense is an interpretation of their practices and their relationships with their 'ecology' of inter-connected actors, rather than an abstract notion. Given the content of the discussions in the interviews, they appeared most sensitive to their important relationships. They continuously assessed the dynamic of these relationship and formulated patterns or modes to maintain power in those relationships, for example by creating and narrating greater value or service. From the admittedly limited evidence at this stage, it is possible to hypothesise that the areas of relational dynamics and power-related practices are the locus of their 'anticipation' of

their future businesses. These are consistent with the underlying concept of the 'business model' as an expression of the flows of inter-relationships and the core 'value proposition' that generates value through those flows. However, they are not quite the same things, i.e. anticipating relational dynamics and anticipating power imbalances provide a much clear explanation of what needs to be managed, than descriptions of flows and propositions.

Enterprise	Focus of anticipation on relational dynamics	Focus of anticipation on formulating new patterns or practices.
A	Monitoring and attempting to influence the behaviour of key customer types, OEM suppliers and small scale online retailers.	Experimentation "If its thinkable we try it"
B	Attempts to establish better understanding of temporal dynamics in their business model, i.e., to speed up and make more efficient transactions. Longer term development on extending the connection with their customers and increasing the depth of experience as part of the value proposition	Continuously sourcing external ideas about e-retailing, e.g. peer exchange group Modifying specialised family roles (it's a family business) in different areas to keep focus on changing environment
C	Concern on the use and capability of essential volunteer network – who were also clients, Maintaining clarity of 'purpose' to encourage philanthropic giving (i.e. constructing meaning) Reconceiving identity from a 'virtual' perspective.	Focus on efficiency (streamlining) for greater service (in regards to technology). Constant search for new services and new clients

Table 2 Examples of focus in anticipatory practices

Conclusions

This research is of course "work in progress" at this stage. Empirically, we are concerned with the way that small enterprises in a rural area are dealing with the growing digital economy while being somewhat disadvantaged by a lack of connectivity and perhaps a lack of density of available skills and local exemplars. Conceptually we are using this changing environment to understand the ways in which local enterprises anticipate the effects of such changes and how they respond i.e., how their process of *being enterprising* constitutes an anticipatory system.

We infer from the analysis of the cases included in the paper that the changes to the business model linked with a greater use of technology were emergent and dynamic.

Innovation in these business models emerge from 'what works' through trial and error experimentation rather a clear blueprint or design of a (different) business model. The enterprises understand themselves as being embedded in a system of relationships and understand their role as providing (and exchanging value). The nature of that value is inherent in the network of relationships. One set of networks for one enterprise will generate entirely different forms of value than the network of another enterprise. Of course, some of that value is appropriated as economic value. We have not elaborated on value types in this paper, but rather kept the focus on what is being anticipated by the leaders or principals of the enterprises concerned. Their dependency on value being created and appropriated through networks of relationships was their key concern.

Their anticipatory focus was on the conditions that framed their current practices. As these conditions changed, they were able, conceptually at least, to practice or perform in different ways. Giddens suggests that in social science theory, boundary conditions include a basic set of knowledge about the circumstances of the agent and their actions (Giddens, 1979, p243). The practical response of these small enterprises to anticipated changes in their relationships, or the premises of those relationships, was to explore ways in which changes to boundary conditions enabled them to practice in different ways. Boundary conditions is a general term for the background circumstances, such as the current operating environment with its constraints and enablers, and might include those internal to the enterprise, such as habits, practices, skills, knowledge etc., and external influences including powerful stakeholders, market lock-in and technological capacity (including access speeds)[2]. The anticipatory process used by the enterprises appears to involve actively testing and expanding boundary conditions, experimenting with practices within these and reshaping the enterprise and its core identity as modified practices become established. Within this small study, we see a glimpse of the particular significant boundary conditions that were of chief concern to the principals and which guided their anticipatory focus.

The continued study of the data will further clarify the anticipatory processes and what anticipation is inherent in the practices of the actors. Also worthy of further investigation is the degree to which the stretching of boundary conditions, as a mode of anticipation, has an affective influence on the enterprise principals or owners. By affective, we mean the domain of senses, feelings and emotions, Cf. Appadurai (2013). The cognitive, analytical knowledge-oriented, visionary aspect to of anticipation can to some extent be captured in descriptions of business models, but the excitement, expectation, and 'fun' , or indeed fear and anxiety of anticipation may be important in explaining behaviour and choices..

Further related with both the cognitive and affective aspects of anticipation is the question of value. It is quite evident that economic value is important to the enterprises included in this analysis, and to most if not all others. However, a range of other forms

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[2] Giddens refers to 'laws' (Cf physical laws) as boundary conditions, we adopt a wider meaning in the context of open social systems. Also Layzer 1975 Laws and constraints are complementary aspects of the physicist's description of nature. Laws describe the regularities underlying phenomena; they are few in number and each applies over a wide domain. Constraints serve to select from the set of all events governed by a given law the particular phenomenon of interest. The laws define what is possible, the constraints what is actual or relevant. (p. 58-59)"

of value and values also exist within the context of the business model. With owner managed firms such value often relates to the personality of the owner. In the case of enterprise **A** the sense of personal success seemed evident in the discussions. In enterprise **B**, family values were highly evident, and in enterprise **C**, the quality of life of local citizens and volunteers was important. As Fuller and Warren have suggested in previous research (Fuller et al., 2011; Warren & Fuller, 2015), anticipation of value has causal effect. In particular, when a business model is emergent, and unstable, the anticipation of value by the nexus of stakeholders produces stabilising conditions such that the emergent forms of practice persist, even if modified through experience. Part of the entrepreneur's leadership role is producing narratives of value for the stakeholders in order to establish or maintain stability.

Reflecting on the above analysis, the enterprises are concerned with the boundary conditions that influence their value-creating relationships. Their anticipatory focus is on the ways that such changes may manifest and how they have influence over this. The enterprises seek increases in value and so when anticipated conditions appear to produce or promise value, they shape and stabilise new practices in relation to these conditions. This may result in a new business model.

Anticipation, we tentatively suggest, mediates between knowledge and action. The *anticipation of value* is a filter or evaluative construct to guide the interpretation of knowledge and to design, perform and evaluate actions and their effects. Multiple aspects of this process influence what emerges from changes in boundary conditions and what stabilises and persists to be recognisable as an entity or phenomenon (in this study, a business model.). These aspects include the nature of the value sought, the actual knowledge available, the resources and capacity to act and the sensations (affect) generated. The judgments enacted through the anticipatory mediation are guided by values. These aspects are not simply from one perspective (i.e. the enterprise or its leaders), but a complex of anticipations by multiple actors, modified reflexively through interactions. The mediation between knowledge and action as anticipation, and the connections between knowledge and action as an anticipatory system can be further studied. We will continue to probe the use of the dynamics related to business model (re)construction as an empirical source, which should lead to a better understanding of business model dynamics and the nature of anticipation.

Value in use

What does the above tentative analysis offer to practice or policy? We suggest that the main purpose of the analysis is methodological – helping to understand what should be considered, analysed, given empirical form etc. in order to explain, in this case, the effects of a growing digital economy on the behaviour and sustainability of small enterprises? We conclude that the anticipation of changes in boundary conditions, which includes attempts to change boundary conditions, and the narration to other stakeholders of anticipated value arising from modified practices are important entrepreneurial practices. The more precise nature of the mediating quality of anticipation between knowledge and action in entrepreneurial contexts, including the rural enterprise in a digital economy, is open to further research based on these methodological principles. We suggest that analysis of the process of business model

innovation will reveal inherent dominant values and dimensions of responsibility. Assistance in identifying the changing boundary conditions and the experimentations in business model re-design would be of benefit to these enterprises as they do not have all the knowledge they require to do that.

Summary

This paper utilises an 'anticipatory' perspectives to the analysis of the actual and potential influences of the technologies, markets and work practices of the digital economy on small rural enterprises. This preliminary analysis suggest that the exploratory testing and expanding of practices beyond current boundary conditions is an important mode of anticipation and provides a focus for entrepreneurial action to maintain the sustainability and development of these enterprises. It is also clear from the evidence provided that the small enterprises are disadvantaged relative to larger ones, and to those located with a greater intensity of technological resources and knowledge. Increasing this density, through collaborative and infrastructure means is likely to help the enterprises.

Appendix 1. Guiding questions for discursive interviews
Strategic Broadband Questions

Talk us through your Business Model – Where is broadband critical in this? How does it make a different to your business performance?

The key areas of the business to consider: from Osterwalder et al (2010):
- Key partners
- Key activities
- Key resources
- Value propositions
- Customer relationships
- Channels
- Segments
- Costs
- Revenue streams

Where are the key challenges within the business model? And could technology provide advantages (or is it creating the challenges if others can have better internet access than you?)

What innovations have you carried recently – did it rely on the Internet?
What are your next ambitions/ideas/projects? Are there any barriers to pursuing these?

Other sources of funding and opportunities for innovative projects and partnerships?
(e.g. KTP, European partnership projects, student placements)

Appendix 2. Business Model Platform
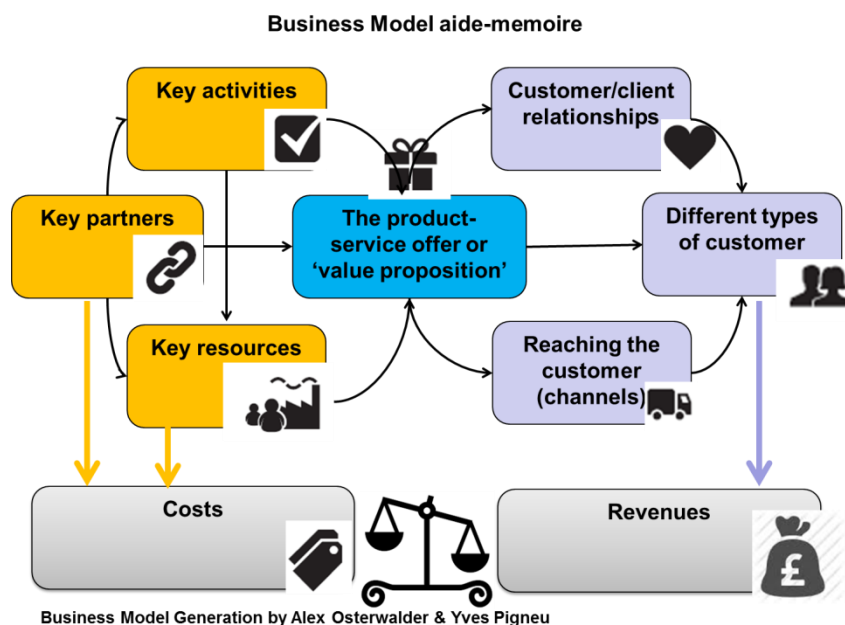
(Alexander Osterwalder et al., 2010)

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