

This is an Open Access document downloaded from ORCA, Cardiff University's institutional repository: <https://orca.cardiff.ac.uk/id/eprint/133685/>

This is the author's version of a work that was submitted to / accepted for publication.

Citation for final published version:

Henderson, Dylan 2020. Demand-side broadband policy in the context of digital transformation: an examination of SME digital advisory policies in Wales. Telecommunications Policy 44 (9) 10.1016/j.telpol.2020.102024

Publishers page: <http://dx.doi.org/10.1016/j.telpol.2020.102024>

Please note:

Changes made as a result of publishing processes such as copy-editing, formatting and page numbers may not be reflected in this version. For the definitive version of this publication, please refer to the published source. You are advised to consult the publisher's version if you wish to cite this paper.

This version is being made available in accordance with publisher policies. See <http://orca.cf.ac.uk/policies.html> for usage policies. Copyright and moral rights for publications made available in ORCA are retained by the copyright holders.



## **Demand-side broadband policy in the context of digital transformation: An examination of SME digital advisory policies in Wales**

### **Abstract**

Increasing attention has been paid to the potential for demand-side policies to stimulate use of broadband networks. Such policies form part of the increasing digitalisation of the economy and wider society. This is an area where governments are also facing challenges in their efforts to maximise the efficiency and effectiveness of their policies. The paper sheds light on the impact that the transition towards digital has had on demand-side policies supporting the adoption of broadband and digital technologies by SMEs, and draws out the implications for policy, using a case study of Wales in the UK over a ten-year period. It shows that digitalisation has seen policy mechanisms and messages evolving as policy makers have created a more integrated and multi-channel approach to the delivery of advisory support to SMEs, but that the emergence of multiple types of actors (large digital platform businesses) and ongoing digitalisation are adding complexity to policies and their interaction with other forms of public and private business support.

## 1. Introduction

There is growing evidence of business adoption of digital technologies as part of the wider digitalisation of the economy and wider society (Malecki & Moriset, 2008; OECD, 2017). These developments have created new opportunities for business processes and improved efficiency, but they have also had disruptive effects on markets and practices with new sources of competition and business models emerging (Brynjolfsson, 2011; OECD, 2018). In recent decades, policy makers have sought to respond to this challenge with an emphasis on supply-side measures aiming to improve the availability of broadband to businesses and citizens (Graham & Marvin, 1996; Grubestic & Mack, 2016; Tranos, 2013). Attention has been given to demand-side measures such as supporting small businesses to adopt and make use of digital technologies (Belloc et al., 2012; Price et al., 2018).

Digital transformation affects the technologies adopted and used within small and medium-sized enterprises (SMEs) and the wider society, but also the policies themselves (Falch, 2007; Falch & Henten, 2018; Van Der Meer & Van Winden, 2003). This is an area that has seen governments introduce digital technologies to improve their internal administration processes, and their delivery of services, and strengthen their reach and accessibility of services to citizens (European Commission, 2016). Examples here include the movement towards online business tax returns, procurement processes, online forms and information (Bhuasiri et al., 2016; Kochanova et al., 2016). While these developments reflect a broad transition towards online information provision by government, little is known about how advisory policies for SMEs aimed at digital technology adoption<sup>1</sup> are adapting to this context, nor how far the interactive processes of advice, and its bespoke content, could be digitised (Mole et al., 2014).

This paper argues that digitalisation presents an important challenge for policy makers in how best to manage SME advisory policies in this changing context, both in terms of the technologies they advise on, but also the mechanisms by which such advice is provided. To explore these issues, the paper develops a novel framework in which policies for SME digital advice are shaped by the work of policy makers and other actors in the context of digitalisation. While documenting digitalisation and its impacts, the paper teases out its effects and prospects for future policy development. It does so with the aid of a case-study of Wales (UK), highlighting the multilevel nature of the policy mix for demand-side digital advisory policy for SMEs over a ten-year period.

## **2. Literature review**

The focus of this section is to critically review what is known about demand-side policies targeting SMEs and their use of digital technologies. It does this with reference to the broadband and telecommunications literature and the parallel strand of research on SME support. The section concludes by considering the emerging literature on digitalisation and identifies a research framework for the study.

### **2.1. Demand-side broadband policies**

Broadband research has begun to give increasing attention to the role of demand-side policies in supporting businesses and the wider society to raise awareness of the benefits of connectivity and consequent use of digital technologies. Such policies provide incentives to businesses and raise awareness of the benefits of broadband access (Belloc et al., 2012;

Falch, 2007; Falch & Henten, 2018; King et al., 1994). Other researchers emphasise that demand-side policies may go beyond demand stimulation by assisting businesses in the use of broadband and associated technologies (Gillett et al., 2004; OECD, 2008). This points to the potential for broadband demand-side policies to work alongside supply-side policy measures in an interactive manner, strengthening the use of broadband infrastructure, and addressing low uptake and use in particular groups such as small businesses (Price et al., 2018). It may also suggest new opportunities for public and private actors to collaborate in the delivery of supply- and demand-side policies (Gómez-Barroso & Feijóo, 2010).

The rationale for demand-side policies rests on innovation diffusion and network effects (Belloc et al., 2012; Rogers, 2003). Researchers have argued that broadband use represents a primary differentiator of economic outcomes (Hauge & Prieger, 2010). SMEs have been identified as an important target group for demand-side policies, with Spurge & Roberts (2005: 522) arguing that while ‘SMEs have been equipped with the tools [they] are not equipped with skills to use them effectively’. Indeed, studies of SME adoption of digital technologies have shown that while such firms can often lag in their rates of access (Price et al., 2018), active usage can benefit their productivity (Haller & Lyons, 2015).

A wide range of broadband demand-side policies have been identified in the literature. Much of the research in this area has sought to establish typologies of policy measures. Table 1 provides a summary drawn from the literature. While studies such as Gillett et al. (2004) provide an overview of approaches adopted, there are few in-depth studies of particular demand-side measures. Indeed, such policies have tended to be viewed from an overarching perspective, alongside supply-side policies. In Belloc et al. (2012)’s study, for example, demand-side policies are found to be most relevant to later stages of broadband diffusion,

where the focus moves from infrastructure deployment to business usage. This leads them to conclude that studies on the nature and role of demand-side policies are underdeveloped. More specifically, others point to the lack of studies of 'business support designed specifically to assist SMEs' use of broadband-enabled technology.' (Price et al., 2018: 519).

**Table 1: Broadband demand-side policy measures directly targeting SMEs**

<b>Objective</b>	<b>Demand-side policy areas</b>	<b>Example mechanisms</b>
Capability formation	Skill formation measures	Training, mentoring, workshops
	Advisory services	Business advisor, telephone / online advisory portal
	Knowledge exchange	Demonstration centres, business networks
Incentive provision	Financial support	Grants, tax benefits, demand subsidies
	Information campaigns	Information campaigns, case studies, awards
Regulation	Government actions to support digitalisation in business	Mandatory platform use for business SME users

Adapted from: Belloc et al. (2012); Gillett et al. (2004); OECD (2008); Price et al. (2018)

For the most part, studies of demand-side policies tend to focus on assessing their rationale, categorising and outcomes (Belloc et al., 2012; Gillett et al., 2004; Price et al., 2018). While this has helped to shed important light on the emergence of demand-side policies, it has tended to give limited attention to the processes that underpin the policies, nor how they may evolve over time. Mainstream policy researchers, however, argue that policies cannot be studied adequately without attention to their underlying policy processes (Kay, 2006). Examining policy processes can also draw attention to the role policy makers in the development and implementation of policies over time. It may also provide further insights

into the reasons why policies are not always effective. This research problematises the processes of policy implementation, and examines how effective public and private management of policies can help to improve their outcomes (Gómez-Barroso & Feijóo, 2010). This can be seen, for example, in the challenge of managing multiple demand- and supply-side measures in a particular regional or national policy environment (OECD, 2008), and in the potential for tensions and trade-offs to emerge with respect to policy objectives in areas outside of broadband (Henderson and Roche, 2019).

## **2.2. SME information and advisory services**

In order to provide greater analytical focus to demand-side policies this paper draws on the complementary literature on SME support policies (Bennett, 2012; Storey, 1994). This research area has identified the presence of SME support policies in most developed economies, with technology support identified as part of a range of measures including regulatory, financial and softer forms of policy such as information, advice and consultancy (Bennett, 2012; Storey, 1994). Such policies are targeted at smaller businesses, that are said to face a range of market challenges, with 'Small business...believed to be at a disadvantage relative to larger ones because of their limited ability to scan the environment and filter for information, delivered in a manner which can be quickly and easily absorbed and used...' (Bridge & O'Neill, 2018: 308).

Mole et al. (2011) argue that business support providers face a choice between intensive support such as face-to-face advice versus more extensive forms of advice and support targeting a range of firms, for example, workshops. Elsewhere, Thomas et al. (2015) find that businesses tend to value face-to-face targeted support over general or remote advice (Bennett

& Robson, 1999). Price et al. (2018), however, highlight the importance of mentoring and intensity of support as two key factors in the quality and success of business advice. This points to advisory support being a complex process of tailored information exchange rather than a one-off event, and at factors such as ongoing interaction, trust and information exchange at the heart of such processes (Ramsden & Bennett, 2005).

SME advice can include a wide range of partners such as local authorities, chambers of commerce, and universities, with a growing focus on signposting since the financial downturn (Bennett, 2012). Arshed et al. (2016), for example, point towards the growing complexity of the process of implementing enterprise policies. They argue that the nature of such policy is ‘...linked to the mandates of several departments, agencies and non-governmental organisations, covering areas such as trade, foreign relations, immigration and science and technology’ (p. 1587), as well as to the multi-level nature of such policies that are promoted at local and national levels. More generally, this complexity has also been found to reflect calls for greater attention to be paid to the role of context in shaping the effectiveness of policy (Smallbone, 2016), and the interactions produced between policies (Huggins & Williams, 2009).

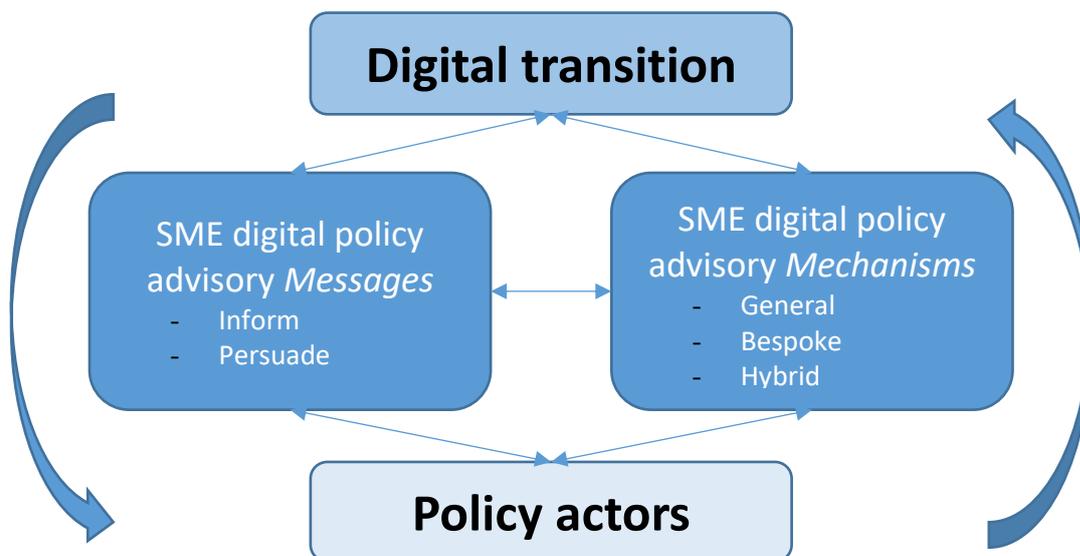
While attention has been given to the policy process and the role of actors (Arshed et al., 2014) literature on the policy process tends to view policy as a technocratic activity undertaken solely by government or its agencies. There is a growing appreciation in the wider telecommunications and mainstream policy literatures of the growing role of the public and private sector in the policy process, with a view to launching their own ideas (Gómez-Barroso & Feijóo, 2010; Kingdon, 1984/2003) and contributing towards implementation of

policy instruments, either by becoming partners in policy delivery, or launching their own instruments (Eliadis et al., 2005; Peters, 2005).

### 2.3. Framework for the research

The aim of this paper is to explore the implications of digitalisation for regional information and advisory policy addressing SMEs. It seeks to contribute towards the broadband policy literature by arguing that digital transformation has the potential to enable, as well as disrupt, traditional models of demand-side support for SME advice. It does so by outlining how policy actors may be able to manage these trends, and what such policies might look like as a consequence. Policies are considered as comprising both delivery mechanisms and advisory messages, and to as influenced by policy makers and other bodies in the wider policy context. The framework for the research, informed by the literature, is set out in Figure 1, and described in the remainder of the section:

**Figure 1: Broadband demand-side policy measures for SME advice – a framework for analysis**



Author's adaptation based on Belloc et al. (2012); Gillett et al. (2004); OECD (2008); Price et al. (2018)

*Policy message* – This refers to the content of advice provided to SMEs and its reference to digital technology adoption and use within their business (Mole et al., 2014). This represents the content that is communicated by policy makers to businesses (Crozier, 2007). Such messages can have recursive characteristics by which messages can be self-referential and repeated over time to secure an outcome. While there may be an assumption that information will be assimilated with ease, researchers have pointed to the potential for disconnect and distortion as messages are assimilated (or not) by recipients (Thøger Christensen, 2002). This highlights the outcome of messages, and their role in encouraging action (or inaction). Here, government agencies have increasingly sought to improve their reach of information messages through the use of online channels (Rey-Moreno & Medina-Molina, 2016). Messages tailored to an individual SME, however, may not only provide information, but also seek to persuade them to act in particular ways (Crozier, 2007; Hood & Margetts, 2007).

Broadband advisory support for businesses may, for example, include general advice around the adoption of broadband and associated digital technologies, through to deeper, more specialised consultancy advice targeting the specific problems faced by an SME (Mole et al., 2011). In this way the message content may be adapted to address businesses at different stages of adoption and use of broadband and enabled technologies, through to different levels of technical advice and reference to outcomes such as ‘competitiveness’, ‘efficiency’, ‘modernisation’. Indeed, in this respect previous SME research has highlighted the role of the business advisor to adapt content to the needs of SMEs and to provide bespoke advice (Bennett & Robson, 1999).

*Policy delivery mechanism* – This reflects the mechanism by which the support is delivered. It has traditionally taken the form of one-to-one advice by a business advisor in person or via telephone (Storey, 1994). Such advisors have often been funded by regional and local government policy (Gillett, 2006; Gillett et al., 2004). Mechanisms for provision of the support in the adoption of digital technology by SMEs are also found in the private sector with a multitude of local and regional ICT consultancy and service providers targeting SMEs (Gómez-Barroso & Feijóo, 2010; Storey, 1994). A growing feature of the delivery of SME advisory policy, in recent years, has been the growth of general forms of support such as online information and advice (Mole et al., 2014). In the UK such delivery mechanisms have, in part, been driven by the expensive nature of delivering SME advice and government cost-cutting (Bennett, 2012; Mole et al., 2014). In addition to these offline and online dimensions of delivery mechanisms for SME advice policy can be linked to particular geographical locations such as a business hub, allowing digital technology to be ‘tested’ in advance of adoption and skills to be developed (Price et al., 2018).

*Policy actors* – The framework adopts a policy network perspective to the processes of policy making (Kickert et al., 1997). This does not view policy as being developed and delivered solely by government actors, but may involve a multitude of public agencies, business support providers, firms and universities (Gómez-Barroso & Feijóo, 2010; Storey, 1994). Such networks are said to be an important aspect of governance, reflecting ongoing and shifting governing demands brought about by complex societal trends and issues (Kooiman, 2003). The broadband telecommunications literature has tended to underplay the role of such actors in the study of policies (Gómez-Barroso & Feijóo, 2010; Henderson & Roche, 2020).

*Digital transition* – This aspect of the framework captures the temporal dynamics of digital adoption within business and wider society. Here the rapid nature of this transition towards a digital society has been identified by researchers (Salemink et al., 2017). This has been enabled by the ‘General Purpose’ nature of digital technologies and their potential to impact across a wide range of sectors and business processes (Bresnahan & Trajtenberg, 1995). Incorporating these trends into the framework is intended to allow the research to capture the evolution of the digital agenda in government and business over the period of the study, and to consider future implications for support.

The framework introduces the potential for digital transition to influence both policy mechanisms and message content. It recognises, however, that policy messages and mechanisms may be shaped by the purposive role of actors and for these to be influenced by a range of motivations. This acknowledges that these actors may evolve over time in response to trends such as digital transition (Flanagan & Uyarra, 2016). This study casts light on the complex processes and interactions that shape policies and their potential outcomes over time. The actual outcomes of the policy instruments reviewed are outside of the scope for this paper due to the complexity of inquiry and associated space requirements, and represent areas for future research.

### **3. Methodology**

The research adopts a case study methodology comprising interviews with policy makers and SMEs, participant observation at advisory support events and document analysis. This method was chosen for its suitability to capture in-depth data on policy implementation processes, and to examine causal links with policy digitalisation and SMEs digitalisation in context (Yin, 1994). The single case study method selected for the research, allows for the complexity of policy processes and actor roles to be examined, alongside contextual factors associated with digitalisation (George & Bennett, 2005). This approach seeks to contribute towards theoretical advancement and understanding of causality in policy processes (Yin, 1994). A ten-year period (2008-2018) is adopted for the case study, to examine the evolution of SME advisory policies in Wales. This corresponds with two EU Structural and Investment programme periods - the principal source of funding for SME support in the region. In this period, while SME advisory policy persisted in Wales, other models in England have experienced turbulence with the removal of Business Link and introduction of enhanced online support (Mole et al., 2014). In recent years, however, efforts have been made to reinstate aspects of SME advisory support for digital at the Local Economic Partnership level in England<sup>2</sup>.

The main challenge faced by policy research is access to officials and stakeholders in the policy process (Cairney, 2016). Here, the research benefited from prior contact with Welsh Government officers responsible for business support<sup>3</sup>. A total of 16 interviews were undertaken with policy officials, businesses, representative bodies, and organisations involved in SME support. The sample included interviews with those officials with overall responsibility for policy (Interviews 1, 2 and 4) and officers engaged in delivering policy instruments (Interviews 7-12). Thus, an understanding of the policies, their mechanisms and messages, and operation could be formed. Additional interviews sought to examine the

perspective of business on policy mechanisms and messages (Interview 3), but also engagement in provision of digital business support (Interviews 5 and 13-16). Interviews included those actors that had sought to explicitly target Wales or its sub regions for advisory support through a physical presence. As a consequence, digital-only providers of support with no connection to the region were excluded. The sample further incorporated both public and private aspects into the analysis of digital business support policy (Gómez-Barroso & Feijóo, 2010). While direct beneficiaries of the policies were not interviewed as part of the research, the paper does draw on secondary evidence of effects.

Data was also collected at five advisory support events hosted by large digital platform businesses such as Amazon and Google (Kenney & Zysman, 2016), and banks, in order to observe delivery mechanisms and actor practices (Kawulich, 2005). Structured notes were taken at all events to capture details of the support mechanisms and participant engagement (See Table 2). This element of the fieldwork enabled the research to examine how policy mechanisms and messages were implemented and experienced by SMEs.

**Table 2. Fieldwork**

<i>Interviews</i>	<b>Organisation</b>	<b>Date</b>
1	Welsh Government, Programme manager, digital policy	13th July 17
2	Consultant to Welsh Government Programme advisor, digital policy	17th Dec 18
3	Small business representative body officer	11th Jan 19
4	Welsh Government, Assembly Member	15th Jan 19
5	Bank, Digital business manager	7th Jan 19
6	Business Wales, programme manager	13th Dec 18
7	Farming Connect, manager	11th Jan 19
8	Business Wales, digital manager	22nd Jan 19

9	Business Wales, digital coordination	1st Mar 19
10	SME innovation support manager	13th Feb 19
11	Business Wales, digital advisor	19th Feb 19
12	Business Wales, digital advisor	2nd Jul 19
13	Private SME support provider	22nd Mar 19
14	Former WDA manager	7th /15th July 17
15	Small business consultant and support provider	15th June 18
16	Small business consultant	10th April 2019
<b>Observations</b>	<b>Event</b>	
1	Superfast Business Wales Workshop, events in Cardiff, Swansea, Caerphilly and Llandudno.	Various dates 2017-2019
2	Amazon Academy, Newport Amazon Academy, Swansea Amazon Clicks and Mortar Store, Cardiff	11th Sept 2018 2nd July 2019 August 2019 (various dates)
3	Lloyds Bank / Google Garage Digital Know How event, Newport	2nd Oct 2018
4	Zokit / Google Digital Garage event, Cardiff	25th Oct 2018
5	Glyndwr University / Google Digital Garage event, Wrexham	4th March 2017

Documentary analysis was undertaken, including review of project websites, business plans and evaluation reports. Such information was analysed, alongside the interview and observation data with the aid of NVivo qualitative software analysis (Bazeley & Jackson, 2013).

#### **4. The research case – Wales**

Wales was selected for case study research based on its longstanding support of SME demand-side advisory policies. These policies form part of SME advisory support measures first established by the Welsh Development Agency (WDA) and Development Board for Rural Wales in the mid-1980s<sup>4</sup>, and later implemented by the Welsh Government. SMEs account for 99.3% of all firms in Wales (2019), with micro businesses (employing less than 10 people), accounting for some 94.9% of enterprises in Wales<sup>5</sup>. The rationale for SME advisory support policy is reflected in successive statements of the Welsh Government on economic development policy identifying the challenge of improving productivity growth and innovation in the small firms sector (Welsh Assembly Government, 2010; Welsh Government, 2012, 2018). As a devolved nation of the UK, Welsh Government has responsibility for enterprise and economic development policy. This devolved status, and access to European Regional Development Funds (ERDF) in the research period, enabled it to maintain face-to-face SME support, despite increasing funding constraints (Deaner & Phillips, 2013).

#### **5. Results**

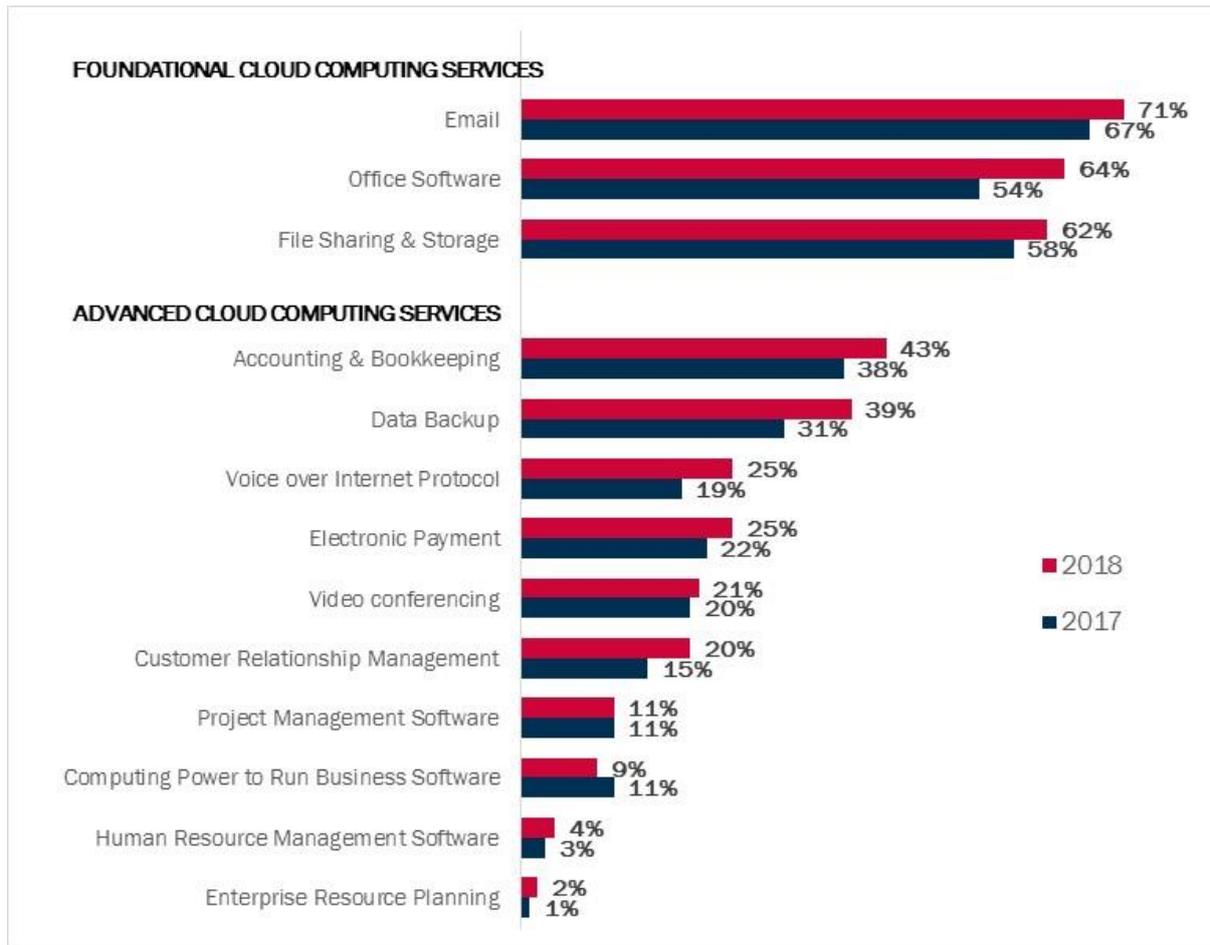
During the 2008-2018 period, SME demand-side policy in Wales, entered a period of flux following the election of a new Welsh Government in 2007 (Holden, 2007), and the subsequent launch of a Micro Business Task and Finnish Group report (Welsh Government, 2012). This report called for the reduction of one-to-one SME advice in favour of online provision and simplification of branding – a recommendation that was subsequently adopted as part of the Economic Renewal Plan (Welsh Assembly Government, 2010). While the

negative reaction of the business community and politicians to the withdrawal of one-to-one support did not see these changes fully implemented (one-to-one advice has continued in parallel to online support – Interview 6), a central brand and programme – Business Wales – was introduced in 2012, providing SME information and advice, alongside new and established SMEs. While support for digital technologies had increasingly begun to be incorporated into Business Wales (Bryer & Munday, 2016), separate specialist demand-side programmes of SME advisory support for the adoption of ICT had operated in parallel since the mid-1990s, following Wales’ participation in the European Commission’s Regional Information Society Initiative (Dabinett, 2002).

### **5.1. The context for SME demand-side advisory policy in Wales**

The transition towards digitalisation of the economy Wales has seen growing adoption of high-speed broadband (Jackson, 2018), and adoption of new cloud-based digital technologies (see Figure 2) by SMEs. There is also evidence of the impact of SME adoption in terms of increased turnover, employment and innovation benefits (Henderson et al., 2018). The adoption, however, has not been universal, with research finding that firms and sectors in different parts of Wales have benefitted unevenly from these developments (Jones & Henderson, 2019).

**Figure 2. SME adoption of cloud technology services in Wales 2017-2018 (% of SMEs)**



Source: Henderson et al. (2019)

Notes: N = 453 (2017) and 479 (2018). The table excludes non-cloud services.

The growing digitalisation of the economy has been reflected by similar trends in wider society and other countries (OECD, 2017, 2019; Ofcom, 2017, 2018). In Wales this saw internet access grow from 73% to 84% between 2013 and 2018, along with the increasing use of the internet amongst all age groups, and digital skills development of the wider population

(National Statistics & Welsh Government, 2018). In the same period, greater policy focus on digitalisation was also evident in the Welsh Government's delivery of public services, with the publication of a strategic plan – Digital Wales (Welsh Government, 2011) - and its goal to improve ‘...digital information and services and save money’ (Welsh Government, 2014: 3). The implementation of the plan was described by one interviewee, however, as being relatively piecemeal and narrow in focus (Interview 6):

‘It’s very much inward facing...focused on making sure that our internal systems are fit for purpose and there’s an awful lot of activity going on in terms of doing that, as well. So, it hasn’t really translated into external [business support] policy as yet’.

## **5.2. Delivery mechanisms for SME advisory support – Welsh Government**

Furthermore, in the research period, digital SME support was provided by the eBusiness and ICT (EBICT) programme 2008-2014 (CM International, 2013), and the subsequent Superfast Broadband Business Exploitation (SFBE) programme, 2016-2020 (Henderson, 2017) - both partly-funded by ERDF and managed by the Welsh Government.

The EBICT programme was designed to support SMEs at different stages of using digital technologies, including information and advice resources such as an Online Business IT Guide and one-to-one eBusiness Support. This delivery model was intended to provide specialist information and advice to SMEs in the early stages of eBusiness adoption (delivered by small business consultants<sup>6</sup>), as well as provision of grant funds to enable SMEs purchase of new IT. The budget for the programme was £4.3m, with a target to reach 1,224 SMEs across Wales<sup>7</sup>. Over the course of the programme the range of support was

simplified in line with the priorities of the Economic Renewal Plan (Welsh Assembly Government, 2010), resulting in the cessation of the online Business IT Guide, and the shift towards repayable finance for IT purchases. The final evaluation report for EBICT (CM International, 2013) noted that demand for the service had been lower than expected (p. 8), with concerns raised about potential distortion of the market as a result of the subsidy element of the support. It also pointed to the need for future programmes to take account of increased demand resulting from the introduction of ‘Next Generation Broadband’<sup>8</sup>.

SFBE was launched in 2016 and sought to respond to the issues raised in the final evaluation of EBICT (CM International, 2013). As a senior Welsh Government programme manager noted, it aims to:

‘...step away from potential for criticism for skewing the marketplace where businesses that have a requirement and a need should be engaging with the ICT sector directly as mature and grown-up organisations that know what they are asking for and that there are places – government was more about making sure that our business community was educated and informed and helped to be better buyers of services than to be providing that service as a government’ (Interview 1).

This was achieved by limiting advisory support to pre-implementation advice, rather than consultancy support. The programme provides workshop and one-to-one business advice to SMEs across Wales and is delivered by a team of 15 Serco advisors (Interview 8). Unlike EBICT, which was initially established as a separate programme, SFBE is fully incorporated in Business Wales<sup>9</sup>, with its delivery undertaken by an embedded team. SMEs are able to approach the service through multiple channels, including online, telephone and social media.

Initial registration, however, is conducted by telephone, with eligible SMEs offered the chance to participate in a workshop, and subsequent one-to-one advice.

Workshops are delivered by experienced business facilitators, with topics covering social media, digital marketing, cloud technology, websites, search engine optimisation, Office 365, LinkedIn for Business, Data protection and Customer Relationship Management (CRM) software, and live demonstrations of online tools<sup>10</sup>. One-to-one advice is subsequently available to address digital business issues and strengthening the digitalisation of SME business processes.

The SFBE programme has a target to support 6,600 SMEs, at an overall cost of £12.7m, and had supported 1,905 by the mid-term evaluation stage (ICF Consulting, 2018: 142). This supports the intention for SFBE to reach a much wider number of SMEs than EBICT (Interview 1). The nature of support available through SFBE has also evolved from advice on technologies and investment (for example, Enterprise Resource Planning (ERP) support available through the earlier EBICT programme), to give greater attention to off-the-shelf digital business technologies such as Microsoft Office, LinkedIn and so on. As one senior Welsh Government programme manager noted:

‘...I think one of the bigger differences between what we're doing now with Superfast Broadband exploitation support and what may have happened in the past with things like [EBICT] is that there's less of an emphasis on the need to help remove one of the bigger barriers that always existed historically and that was the cost barrier.’ (Interview 1).

The mid-term evaluation of SFBE noted increased business confidence, improved SME efficiency and customer growth as a result of participation. A consultant to the Welsh Government noted, however, that the ‘cliff edge’ nature of the advisory process was a concern shared by business and programme stakeholders, by which SMEs reached the end of the support process without further assistance to implement the actions identified in the one to one advisory session. (Interview 2).

The Welsh Government, in line with the objectives of Digital Wales (Welsh Government, 2011), increasingly adopted digital technology in its own delivery model for business support programmes such as SFBE. This has seen digital technologies integrated into both promoting the programme through social media, providing information and training videos on its website, and enabling online registrations for its workshops and events (Interview 9). In many respects, however, traditional technologies and offline activity continue to play an important role in SFBE’s delivery model (telephone sign up, face-to-face advice and workshops), resulting in a ‘blended’ model combining online and offline elements for SME advice. Welsh Government officers expressed caution, however, about full digitalisation of the SME advice process given SMEs perceived preference for face-to-face advisory support (Interview 6). The benefits of such face-to-face advice were described by one business representative body:

‘We know that there are incidental conversations which happen with advisors when it’s face-to-face. Two things. A, you’ve got the interpersonal element, relationship generation. A lot of our members will know, well, business advisors. Business advisors have, then, a second sense as to what businesses are feeling. You lose the

ability to gather in that sentiment that can help someone make a professional recommendation.’ (Interview 3).

Other interviewees, however, believe such concerns are overstated, and point to the potential for user input into programmes and wider system design to better improve delivery of online services to help particular groups (Interview 4), and that this could lead to more flexible advisory services enabling businesses to access online content. Such sentiment highlights the contested nature of digitalisation and its role in SME advisory policy.

### **5.3. SME advisory support actors**

While Welsh Government represents the major body responsible for SME mainstream and digital advisory support in Wales, a range of new providers have entered the landscape in recent years (See Table 2). The focus on SMEs amongst these organisations reflects the importance of smaller firms to large digital platform businesses such as Amazon and Google, but also to banks, and smaller digital service providers<sup>11</sup>. While platforms such as Amazon and Google are primarily online businesses, they, like Welsh Government, also deliver advisory support through a blended approach, including ‘offline’ physical events such as workshops. Google’s Digital Garage, for example, has content available online that mirrors elements of its workshop content.

As well as introducing greater diversity to the landscape of SME support the emergence of new actors has also brought about new forms of interaction in the provision of advisory support. In this respect the large digital platforms and banks often work in partnership to deliver support at a local or regional level. Such partnerships reflect the need to tailor the

support to a local audience, and add to the support available (Interview 5). In this respect the large digital platform businesses and banks noted in Table 2 have widespread recognition amongst businesses and workers, and a profile that is able to attract greater participation in SME advisory support measures (Interviews 2, 3 and 5).

**Table 3. The emerging landscape of actors supporting digital adoption in Welsh SMEs**

<b>Agent / advisory support</b>	<b>Nature of support provision</b>	<b>Target audience</b>
Google Garage	Online eLearning modules and face-to-face provision: Temporary Google Garage locations providing workshop support and individual advice. Delivered in partnership with local, regional and national organisations, including Superfast Business Wales, local authorities and smaller private business support providers.	SMEs and individual entrepreneurs
Amazon Academy	Online eLearning modules and face-to-face provision: Conferences including workshops and business networking, delivered in conjunction with local and regional organisations such as Enterprise Nation, Superfast Business Wales. Specialist support for authors (focused on Kindle)	SMEs and authors
Lloyds Digital Academy	Workshops and events in conjunction with online eLearning, in association with organisations such as Welsh Government, local authorities, Google Garage.	SMEs and charities
Various private business support providers	Including independent national business support providers such as Enterprise Nation, alongside localised advisory support from a range of business-facing organisations such as accountants, lawyers, IT consultants.	Various, including SMEs and individual entrepreneurs.

Sources:

<https://www.aboutamazon.co.uk/empowering-small-businesses/amazon-academy>

<https://learndigital.withgoogle.com/digitalgarage>

<https://business.facebook.com/>

<https://www.lloydsbankacademy.co.uk/#/>

Author's own observation data (see Table 4 for further details)

Concerns about these developments, however, were raised by interviewees:

‘We get collared by Google and Amazon and others to try to get members along to these events, NatWest being another one. I think there is a lot of duplication there. I don’t think there is a lot of read-across. These are commercial entities. One of the benefits of Business Wales is that it does help collate and coordinate activity because it’s not commercially driven in the same way as those actors. They can come in and give the same offering at the same time, without any regard for each other. That can confuse the marketplace.’ (Interview 3)

This, again, points to the tensions that have arisen by the growing complexity of the policy landscape for SME advisory policy in Wales<sup>12</sup>.

#### **5.4. SME demand-side advisory support messages**

Over the course of the research period the advisory support messages delivered by the Welsh Government for digital technology adoption have evolved from informing businesses about complex digital technologies (such as ERP) and network connections, towards presenting use and exploitation of digital technologies in ‘everyday’ business language. This was evident in SFBE, where the emphasis was on persuading SMEs by presenting technologies as suitable for implementation in a small business setting without recourse to expensive new purchases (e.g. servers) or IT consultancy services (Interview 9). Such emphasis included greater focus on the adoption of existing technologies aligned to business processes, including well known applications such as social media and cloud storage. Here, the focus was on messages to persuade and build ‘confidence’ to act on and adopt them in their business (Interviews 8 and 9). The persuasive nature of these messages was further supported in the recruitment process for advisors and workshop facilitators, with emphasis placed on selection based on prior

experience in small business management / ownership, over specialist digital consultancy skills (Interview 8).

A similar emphasis on persuasion and confidence building was evident in the workshop provision of large digital business support providers. This, like SFBE, informed SMEs of the range of digital technologies available to assist their business processes, and tried to persuade them of the usability of these technologies and their potential to make business more competitive. Examples include Amazon's emphasis on offering services that make sales to the UK and internationally accessible, while Google events emphasised promotion of, 'smart working', personal efficiency and market growth for SME owners. An important distinction between the types of message promoted by larger digital platforms and SFBE relates to latter's focus on persuading SMEs to adopt their own services and products, rather than those of the wider market (Observation evidence: Amazon Academy, Google Digital Garage). The large business providers did, however, embed messages from their collaborators in the advisory events, including information about other forms of support such as SFBE. Such efforts, as one Amazon Academy contractor noted, reflected the potential for regional partners to help raise the profile and demand for the events (Interview 13).

Table 4 summarises the principal messages identified in the research. This highlights the distinction between public and private actors in their 'informing' messages (the focus on multiple versus specific messages), and the importance of 'ease of use' messages for business).

**Table 4. Public and private policy messages in demand-side SME advisory support in Wales**

<b>Agent / advisory support</b>	<b>Advisory messages</b>
SFBE	<i>Informing</i> – Multiple ‘off the shelf’ digital applications <i>Persuading</i> – Stories from advisor’s business experience – save time and money, including live demonstrations of selected digital technologies (cloud, CRM, social media)
Google Garage	<i>Informing</i> – Google applications - digital marketing, websites, social media, international business <i>Persuading</i> – Smart working, expanding reach of business
Amazon Academy	<i>Informing</i> - eCommerce, marketing, exporting, business loans, publishing <i>Persuading</i> – Ease of use, entry into new markets, scalability of services
Lloyds Digital Academy	<i>Informing</i> – Digital banking, Google social media <i>Persuading</i> - Building digital skills and confidence, including ‘Try out digital technologies’ (on Lloyds and Google applications)

Sources:

<https://www.aboutamazon.co.uk/empowering-small-businesses/amazon-academy>

<https://learndigital.withgoogle.com/digitalgarage>

<https://business.facebook.com/>

<https://www.lloydsbankacademy.co.uk/#/>

Author’s own observation data (see Table 3 for additional details)

The growing digitalisation of Welsh SMEs led some interviewees to query whether the distinction between mainstream, and specialist digital advisory support is needed (Interview 2). This highlights a further dimension of blending, with demand-side SME advisory messages concerning mainstream business support issues, integrated with those of digital technology. As the same interviewee put it: ‘it’s important for a business advisor to get the message pitched at the right level across the SMEs at this advisory level...I don’t see the point of a digital advisor that only understands digital technologies’ (Interview 2).

The research further highlighted responses to the evolution of advisory messages over time.

In this respect the Welsh Government and other providers have regularly reviewed the messages used in SME advice for digital technologies. As one bank argued, this review process needs to look ahead to a time when SME digital capabilities might be more advanced:

‘As [digital business skills and] standards rise, that baseline rises and that becomes the norm, we need to look at how do we support businesses and charities to grow and take that next step. You start to look much more around the data analytics and how businesses and charities can use that as insight to help them drive their businesses and organisations forward. You then start to look at AI [artificial intelligence] and elements around there, how can they support organisations moving forward.’

(Interview 5)

SFBE officials are similarly beginning to consider that it might need to adapt its advisory messages to digital transformation. This has already seen its officers and wider stakeholders debating the need for SME advisors to ensure their knowledge keeps pace with rapid changes in technologies and the associated requirements of business’ (SFBE Advisory Panel Minutes, March 2019). This saw officials inform businesses about more advanced forms of digital solutions in the latter stages of the programme including AI and internet of things (IoT). These developments, however, are in the early stages of roll-out, and concerns remain that it may prove difficult for important policy messages around usability to be reconciled with such emerging technologies such as AI and IoT due to their complexity (Interview 2).

## **6. Discussion and policy implications**

The findings add to the growing consideration of demand-side policies for broadband, by examining the role of SME digital advisory policies. In doing so the study examines how such policies are adapting to the ongoing digitalisation of the economy and wider society, and analyses the role of digitalisation of policy messages and mechanisms. This has the potential to gain greater insight into how policies are evolving and adapting to digital transition and the role played by actors (Flanagan & Uyarra, 2016). In this respect it challenges static accounts of demand-side policies by highlighting their temporal development and the importance of digital policy makers to adapt their policies in response to technological change and SME needs. This shows that policies should not be viewed as stable constructs, but policy messages and mechanisms, as well as underlying objectives and rationales need to evolve over time.

The case-study results show demand-side SME advisory policy messages moving away from informing SMEs of the benefits of advanced digital technologies such as ERP, towards messages that stress the ‘user friendliness’ of digital technologies and their opportunities for promoting competitiveness. Such messages relate to the efficient operation of the business and build confidence by highlighting the usability of digital technologies. This can also be seen in the recruitment of skilled advisors capable of emphasising practical applications of these technologies, rather than purely offering technical expertise. In this respect the results reflect the growing availability of cloud applications for many business processes, and the movement away from up front capital expenditure on digital technology, toward subscription based models and services (Rogers, 2016). The emergence of new technologies such as blockchain and AI in mainstream business applications (OECD, 2017) may, however,

provide future challenges with respect to ensuring policy messages are adapted to businesses. In addition, any new generation of technologies requires the skills of business advisors to be maintained and advanced. It may, however, be difficult to recruit such skills in the open market, where skills shortages could be present (Mearian, 2019).

Demand-side policy mechanisms are evolving, with traditional one-to-one advice and workshops increasingly complemented by online provision addressing a wider audience. Here, the findings point to a growing integration of online and offline forms of support policy. This highlights the multidimensional blending of mainstream and specialised digital advice for SMEs, as well as blending in delivery models (for example, Welsh Government's integration of SFBE into Business Wales). An important feature of the landscape of SME support is the integration of digital platform providers and other players (for example, integration of this kind of support into that of public providers). This also affects the messages delivered - with advisory messages increasingly emphasising general business problems and solutions. These findings may, however, bring into question the nature of demand-side support for business digital adoption as a separate form of support, and point to the emergence of blended forms of SME advisory support.

The findings cast light on how policies are shaped by actors from both the public and private sectors (Gómez-Barroso & Feijóo, 2010). That is, public policy making can incorporate a multitude of organisations designing and delivering support (Flanagan et al., 2011), with the potential for policy instruments to mix in order to achieve objectives (Henderson & Roche, 2020). Indeed, while the presence of localised actors such as accountants, lawyers and consultants has long been recognised in the general SME policy literature (Storey, 1994), the results highlight the presence of digital platform providers and other large businesses,

offering both physical and online advice to SMEs, thus introducing complexity into the deployment of demand-side broadband policies. By emphasising such policy processes and their complexity, the findings add to current approaches to demand-side policy in the broadband telecommunications literature, which has given limited attention to topics such as policy interaction.

In addition to the growing range of public and private sector actors evident at the regional level, the results highlight growing partnership-based mechanisms to the delivery of SME demand-side advisory support and business support messages focused around proprietary technologies. Another emerging feature is the integration of national and regional organisations such as banks, specialist support bodies, and consultants as providers of support to SMEs. Such partnerships reflect the potential synergies between different partners' aims to access and support businesses, and sell services. Here the results show that this can help to diversify the profile of existing government support; digital platforms and banks can more easily adapt their offers to regional markets. Indeed, such partnerships have similarities with SME advisory models emerging at the national level, where localised Digital Skills Partnerships have been created (Good Things Foundation et al., 2018). Such developments highlight the potential for synergies in SME advisory support, but also raise potential issues of future coordination, particularly where there is no centralised provider.

The findings show the ongoing challenges for SME advisory support providers to respond to wider digitalisation trends taking place within society, but also in SMEs themselves (Thomas et al., 2015). This highlights the dynamic nature of digitalisation and the importance of continuing professional development amongst advisors.

The findings raise concerns, however, about the extent to which digitalisation of support can replace traditional face-to-face advice, not least through the absence of trust and relationships built through interaction. This is reflected in the blended models of advisory support with less complex information provided online, alongside bespoke one-to-one advice. The results do, however, caution against viewing digitalisation as the sole driver of policy (and SME) change (Edgerton, 2008) by highlighting parallel government priorities such as reduced public spending. This tension between the priority to support SMEs to adapt to digitalisation, and parallel policies represents a further dimension of policy interaction (Huggins & Williams, 2009), and one that many regions and countries are likely to be facing (Howlett et al., 2017).

Four main policy implications emerge from the results. First, they highlight the importance of continuous learning and adaptation on the part of SME policy advisors in the context of digital transition. In this respect recognising the evolving nature of digital technologies and their use by business will help to ensure policies continue to meet the needs of SMEs and wider economic development. Digital transition further implies the need for regular updating of capabilities in delivering policies (implementation capacity). This includes delivery mechanisms and funding arrangements. The necessary adaptation capabilities will ensure that policy messages continue to target needs and to be sufficiently persuasive.

Second, the results highlight the need for policy makers to engage in horizon scanning to ensure that policy messages are able to respond to new technological developments in a timely manner. This should not only consider technology transition affecting policy messages, but also policy mechanisms. This is an area where policy makers need to keep pace with both the changing need for SMEs to access their services, but also changes taking place in wider society associated with digital transformation. These aspects emphasise the

importance of responding to trends most evident in the private sector such as omni-channel approaches to the customer interface. Business support providers should be able to interact with SMEs across multiple channels seamlessly, and make use of emerging technologies such as AI and IoT (Mcafee & Brynjolfsson, 2017). It may also require policy makers to consider their use of digital technology in both the provision of general and bespoke advice.

Third, the success of adapting policy mechanisms to digital transition relies on the availability of funding and investment. While funding shortages may increase the push towards online (only) advisory provision, the results suggest care is needed here. In particular, it is argued that such moves may be detrimental to the overall goals of a programme (Mole et al., 2014). In this respect policy makers may be able to benefit from horizon scanning and responses developed by other parts of their organisations. Indeed, digital transition represents a challenge facing all aspects of public services, and calls for government-wide responses. That is, SME digital support does not exist in a vacuum and may contribute towards and draw strength from the wider digital transition facing eGovernment.

Fourth, the complex nature of specialised and mainstream business support identified in the research, as well as the emergence of private sector actors, points towards the importance of policy interactions. Here the findings suggest that policy makers need to consider the possibility of mixing concepts when designing new policies, and include the possibility for this mix to evolve over time. This may include horizontal interactions from other business support providers (e.g. business support providers targeting their generic needs, beyond IT), or vertical interactions in the form of multilevel support from other levels of government (Flanagan et al., 2011). Such mixing processes are important factors for policy makers to consider as they may affect the outcomes achieved by policies and their overall efficiency.

## **7. Conclusion**

This paper contributes to the telecommunications policy literature on demand-side measures for SMEs, by presenting a novel framework to examine the implications of technological change on advisory policy. The findings show that this framework captures interactions between policy models, the wider context, and their evolutionary underpinning in digital transition. The findings show that over a ten-year period changes have taken place in the nature of public SME support for digital technology adoption, highlighting blending processes that have seen such advice becoming integrated within mainstream business advisory support, with messages refocused away from technology advice to usability, and supported by an online and offline landscape. These developments show that the emerging frontiers of business support are becoming increasingly complex, with changes in delivery mechanisms and messages, and in interactions with other forms of government and private sector support.

By focusing the case study on Wales, as a devolved region of the UK, the research recognises that the precise model adopted has properties not found in all regions, for example its continuation of pan-Wales face-to-face advice. In this respect using the framework to study other regions may help shed further light on the nature of digitalisation in SME advisory support, as would research into other types of demand-side support mechanisms. Similarly, the growing partnership-based approaches to the delivery support for SMEs currently being explored at multiple levels in the UK is an area where further research should be focused in the coming years, to better understand synergies, tensions and trade-offs, as well as the outcomes. Additionally, the coronavirus pandemic and its role in driving policy makers to

introduce greater online delivery of policy instruments (and business activity), and reshaping the mix of policies, are fruitful areas for researchers to consider in future.

With respect to policy implications, the research suggests that policy makers should seek to be aware of how the context for their delivery mechanisms and messages is evolving over time, alongside corresponding changes in digital capabilities of SMEs and the need for SME advice to adapt. They further suggest that government policy for SMEs needs to reflect how it can best interact with the emerging landscape of providers, and whether it should both deliver support, but also adopt a coordinating role.

## **Funding**

*This research was supported by the Welsh Government Superfast Broadband Business Exploitation Programme, part-funded by European Regional Development Funds.*

## **Acknowledgements**

*The author acknowledges the assistance provided by Neil Roche, Cardiff Business School, in the collection of data for this paper, and the constructive comments of the two peer reviewers.*

## **Endnotes**

<sup>1</sup> The term digital technology is used throughout to capture ICT hardware and software aspects.

<sup>2</sup> See <https://www.gov.uk/government/news/boost-for-small-business-through-new-government-investment-in-tech-project-trials> [accessed 18th February 2020]

<sup>3</sup> This research forms part of a study of SME broadband use and impacts for the Superfast Broadband Business Exploitation programme in Wales.

<sup>4</sup> Personal communication, Small Business Consultant (See Interview 16), 9th April 2019.

<sup>5</sup> <https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/Businesses/Business-Structure/Headline-Data/latestbusinessstructureinwales-by-sizeband-measure> [accessed 18th February 2020]

<sup>6</sup> EBICT was delivered by a panel of ICT service providers. In contrast SFBE is delivered by Serco, a UK-based international public service provider.

<sup>7</sup> EBICT aimed to assist 1,224 SMEs across Wales, but had achieved 604 by the 2013 evaluation (planned completion was 2014) (CM International 2013).

<sup>8</sup> Defined as download speeds in excess of 24 Megabits per second (Mbts).

<sup>9</sup> Business Wales is a Welsh Government programme, part-funded by ERDF. This paper focuses on its Core and Growth Service (ICF 2018).

<sup>10</sup> <https://businesswales.gov.wales/superfastbusinesswales/events> [accessed 18th February 2020]

<sup>11</sup> Amazon's 2018 Letter to Shareholders, for example, notes that third party sellers ('mostly small- and medium-sized businesses') accounted for 58% of its total sales – up from 3% in 1999 (Bezos, 2019).

<sup>12</sup> The number of SME advisory providers active in online space only further adds to this support landscape but is outside the scope of this research.

## References

- Arshed N., Carter S. & Mason C. (2014) The ineffectiveness of entrepreneurship policy: Is policy formulation to blame?, *Small Business Economics* 43(3), 639-59.
- Arshed N., Mason C. & Carter S. (2016) Exploring the disconnect in policy implementation: A case of enterprise policy in England, *Environment and Planning C: Government and Policy* 34(8), 1582-611.
- Bazeley P. & Jackson K. (2013) *Qualitative data analysis with NVivo*. Sage Publications Limited, Thousand Oaks, California.
- Belloc F., Nicita A. & Alessandra Rossi M. (2012) Whither policy design for broadband penetration? Evidence from 30 OECD countries, *Telecommunications Policy* 36(5), 382-98.
- Bennett R. J. (2012) Government advice services for SMEs: Some lessons from British experience, *Government SMEs and Entrepreneurship Development: Policy, Practice and Challenges*, 185-98.
- Bennett R. J. & Robson P. J. A. (1999) The use of external business advice by SMEs in Britain, *Entrepreneurship & Regional Development* 11(2), 155-80.
- Bezos J. (2019) *Amazon company news - 2018 letter to shareholders*. Retrieved from <https://ir.aboutamazon.com/static-files/4f64d0cd-12f2-4d6c-952e-bbed15ab1082>
- Bhuasiri W., Zo H., Lee H. & Ciganek A. P. (2016) User acceptance of e-government services: Examining an e-tax filing and payment system in thailand, *Information Technology for Development* 22(4), 672-95.
- Bresnahan T. F. & Trajtenberg M. (1995) General purpose technologies 'engines of growth'?, *Journal of Econometrics* 65(1), 83-108.
- Bridge S. & O'Neill K. (2018) *Understanding enterprise: Entrepreneurship and small business*. Palgrave, London.
- Bryer H. & Munday M. (2016) *Stage 2 final evaluation of the customer engagement and new business start up support projects - business Wales, social research number: 64/2016*
- Brynjolfsson E. (2011) *Race against the machine : How the digital revolution is accelerating innovation, driving productivity, and irreversibly transforming employment and the economy*. Digital Frontier Press, Lexington, Mass.
- Cairney P. (2016) *The politics of evidence-based policy making*. Springer, London.
- CM International (2013) *An evaluation of the ebusiness and ICT support programme*
- Crozier M. (2007) Recursive governance: Contemporary political communication and public policy, *Political Communication* 24(1), 1-18.

- Dabinett G. (2002) Reflections on regional development policies in the information society, *Planning Theory & Practice* 3(2), 232-7.
- Deaner B. & Phillips D. (2013) *Scenarios for the Welsh government budget to 2025-26*. Retrieved from <http://www.walespublicservices2025.org.uk/files/2016/03/David-Phillips-Wales-Public-Spending.pdf>
- Edgerton D. (2008) *Shock of the old: Technology and global history since 1900*. Profile books, London.
- Eliadis P., Hill M. M. & Howlett M. (2005) *Designing government : From instruments to governance*. McGill-Queen's University Press, Montreal, Quebec.
- European Commission (2016) *European egovernment action plan 2016-2020*. Retrieved from <https://ec.europa.eu/digital-single-market/en/european-egovernment-action-plan-2016-2020>
- Falch M. (2007) Penetration of broadband services – the role of policies, *Telematics and Informatics* 24(4), 246-58.
- Falch M. & Henten A. (2018) Dimensions of broadband policies and developments, *Telecommunications Policy* 42(9), 715-25.
- Flanagan K. & Uyarra E. (2016) Four dangers in innovation policy studies – and how to avoid them, *Industry and Innovation* 23(2), 177-88.
- Flanagan K., Uyarra E. & Laranja M. (2011) Reconceptualising the ‘policy mix’ for innovation, *Research Policy* 40(5), 702-13.
- George A. L. & Bennett A. (2005) *Case studies and theory development in the social sciences*. MIT Press, Cambridge, MA.
- Gillett S. E. (2006) Municipal wireless broadband: Hype or harbinger?, *Southern California Law Review* 79, 561-93.
- Gillett S. E., Lehr W. H. & Osorio C. (2004) Local government broadband initiatives, *Telecommunications Policy* 28(7–8), 537-58.
- Gómez-Barroso J. L. & Feijóo C. (2010) A conceptual framework for public-private interplay in the telecommunications sector, *Telecommunications Policy* 34(9), 487-95.
- Good Things Foundation, Tech Nation & Department for Digital Culture Media and Sport (2018) *Local digital skills partnerships: A playbook for local partners*. Retrieved from [https://www.goodthingsfoundation.org/sites/default/files/v0.3\\_local\\_digital\\_skills\\_partnerships\\_a\\_playbook.pdf](https://www.goodthingsfoundation.org/sites/default/files/v0.3_local_digital_skills_partnerships_a_playbook.pdf)
- Graham S. & Marvin S. (1996) *Telecommunications and the city : Electronic spaces, urban places*. Routledge, London.
- Grubestic T. H. & Mack E. A. (2016) *Broadband telecommunications and regional development*. Routledge, Abingdon (Oxon).

- Gupta S. (2018) *Driving digital strategy: A guide to reimagining your business*. Harvard Business Review Press, Boston, Mass.
- Haller S. A. & Lyons S. (2015) Broadband adoption and firm productivity: Evidence from Irish manufacturing firms, *Telecommunications Policy* 39(1), 1-13.
- Hauge J. A. & Prieger J. E. (2010) Demand-side programs to stimulate adoption of broadband: What works?, *Review of Network Economics* 9(3).
- Henderson D. (2017) Assessing the impact of business broadband use on the Welsh economy, *Welsh Economic Review* 25, 28-36.
- Henderson D., Jones C., Munday M., Norris L., Roberts A., Roche N. & Xu C. (2018) *Digital maturity economic impact report for Wales 2018*. Number Cardiff University, Cardiff. Retrieved from <http://www.cardiff.ac.uk/superfast-broadband-project/economic-impact-research>
- Henderson D., Jones C., Munday M., Norris L., Roberts A., Roche N. & Xu C. (2019) *Digital maturity survey for Wales 2018*
- Henderson D. & Roche N. (2020) Examining the policy mix for broadband deployment in Wales: The role of informal coordination in the last mile, *Local Economy* 35(1), 48-67.
- Holden H. (2007) *The Welsh assembly elections may 2007: The formation of the Welsh assembly government and recent developments in the assembly*. Retrieved from <https://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN04407>
- Hood C. C. & Margetts H. Z. (2007) *The tools of government in the digital age*. Palgrave Macmillan, New York.
- Howlett M., Vince J. & Del Rio P. (2017) Policy integration and multi-level governance: Dealing with the vertical dimension of policy mix designs, *Politics and Governance* 5(2), 69-78.
- Huggins R. & Williams N. (2009) Enterprise and public policy: A review of labour government intervention in the united kingdom, *Environment and Planning C: Government and Policy* 27(1), 19-41.
- ICF Consulting (2018) *Mid-term evaluation of business support services in Wales: A report for the Welsh government, GSR report number 67/2018.*, Cardiff. Retrieved from <https://gov.wales/docs/caecd/research/2018/181213-evaluation-business-support-services-midterm-en.pdf>
- Jackson M. (2018) Welsh government issue statement on broadband roll-out progress, *ISP Preview*.
- Jones C. & Henderson D. (2019) Broadband and uneven spatial development: The case of cardiff city-region. *Local Economy* 34(3): 228-247.
- Kawulich B. B. (2005) Participant observation as a data collection method, *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*.

- Kay A. (2006) *The dynamics of public policy: Theory and evidence*. Edward Elgar Publishing, Cheltenham.
- Kenney M. & Zysman J. (2016) The rise of the platform economy, *Issues in Science and Technology* 32(3), 61.
- Kickert W. J., Klijn E.-H. & Koppenjan J. F. (1997) *Managing complex networks: Strategies for the public sector*. Sage, London.
- King J. L., Gurbaxani V., Kraemer K. L., Mcfarlan F. W., Raman K. S. & Yap C. S. (1994) Institutional factors in information technology innovation, *Information Systems Research* 5(2), 139-69.
- Kingdon J. W. (1984/2003) *Agendas, alternatives, and public policies*. Longman, New York.
- Kochanova A., Hasnain Z. & Larson B. (2016) *Does e-government improve government capacity? Evidence from tax administration and public procurement*. Retrieved from <http://documents.worldbank.org/curated/en/334481468193734893/pdf/WPS7657.pdf>
- Kooiman J. (2003) *Governing as governance*. Sage, Los Angeles.
- Malecki E. J. & Moriset B. (2008) *The digital economy: Business organization, production processes and regional developments*. Routledge, Abingdon, Oxon.
- Mcafee A. & Brynjolfsson E. (2017) *Machine, platform, crowd: Harnessing our digital future*. WW Norton & Company, London.
- Mearian L. (2019) *Blockchain jobs remain unfilled, while skilled workers are being poached*, Computer World, 8th April. Retrieved from <https://www.computerworld.com/article/3387441/blockchain-jobs-remain-unfilled-while-skilled-workers-are-being-poached.html>
- Mole K. F., Hart M. & Roper S. (2014) When moving information online diminishes change: Advisory services to SMEs, *Policy Studies* 35(2), 172-91.
- Mole K. F., Hart M., Roper S. & Saal D. S. (2011) Broader or deeper? Exploring the most effective intervention profile for public small business support, *Environment and Planning A: Economy and Space* 43(1), 87-105.
- National Statistics & Welsh Government (2018) *Statistical bulletin - national survey for Wales, 2017-18: Internet use and digital skills*. Retrieved from <https://gov.wales/sites/default/files/statistics-and-research/2019-01/national-survey-wales-internet-use-digital-skills-2017-18.pdf>
- OECD (2008) *Broadband growth and policies in OECD countries*. Organisation for Economic Co-operation and Development.
- OECD (2017) *OECD digital economy outlook 2017*, Paris. Retrieved from <http://dx.doi.org/10.1787/9789264276284-en>
- OECD (2018) *Bridging the rural digital divide*. Number OECD Publishing, Paris. Retrieved from <https://www.oecd-ilibrary.org/content/paper/852bd3b9-en>

- OECD (2019) *Vectors of digital transformation*. Retrieved from <https://www.oecd-ilibrary.org/content/paper/5ade2bba-en>
- Ofcom (2017) *Connected nations 2017: Wales*
- Ofcom (2018) *Communications market report*.
- Peters B. G. (2005) The future of instruments research, in Eliadis P., Hill M. M. & Howlett M. (Eds) *Designing government : From instruments to governance*, pp. 353-64. McGill-Queen's University Press, Montreal, Quebec.
- Price L., Shutt J. & Sellick J. (2018) Supporting rural small and medium-sized enterprises to take up broadband-enabled technology: What works?, *Local Economy* 33(5), 515-36.
- Ramsden M. & Bennett R. J. (2005) The benefits of external support to SMEs: “Hard” versus “soft” outcomes and satisfaction levels, *Journal of Small Business and Enterprise Development* 12(2), 227-43.
- Rey-Moreno M. & Medina-Molina C. (2016) Omnichannel strategy and the distribution of public services in Spain, *Journal of Innovation & Knowledge* 1(1), 36-43.
- Rogers D. L. (2016) *The digital transformation playbook: Rethink your business for the digital age*. Columbia University Press, London.
- Rogers E. M. (2003) *Diffusion of innovations, 5th edition*. Free Press, New York.
- Salemink K., Strijker D. & Bosworth G. (2017) Rural development in the digital age: A systematic literature review on unequal ICT availability, adoption, and use in rural areas, *Journal of Rural Studies* 54, 360-71.
- Smallbone D. (2016) Entrepreneurship policy: Issues and challenges, *Small Enterprise Research* 23(3), 201-18.
- Spurge V. & Roberts C. (2005) Broadband technology: An appraisal of government policy and use by small- and medium-sized enterprises, *Journal of Property Investment & Finance* 23(6), 516-24.
- Storey D. J. (1994) *Understanding the small business sector*. Routledge.
- Thøger Christensen L. (2002) Corporate communication: The challenge of transparency, *Corporate Communications: An International Journal* 7(3), 162-8.
- Thomas B., Miller C. & Simmons G. (2015) An examination of regional policy implications pertaining to SME e-business adoption in south-east Wales, *Strategic Change* 24(5), 429-46.
- Tranos E. (2013) *The geography of the internet cities, regions and internet infrastructure in Europe*. Edward Elgar, Cheltenham, UK.
- Van Der Meer A. & Van Winden W. (2003) E-governance in cities: A comparison of urban information and communication technology policies, *Regional Studies* 37(4), 407-19.
- Welsh Assembly Government (2010) *Economic renewal: A new direction*, Cardiff

Welsh Government (2011) *Delivering a digital Wales the Welsh assembly government's outline framework for action*, Cardiff. Retrieved from <http://gov.wales/docs/det/publications/101208digitalwalesen.pdf>

Welsh Government (2012) Micro-business task and finish group report.

Welsh Government (2014) *Digital action plan*. Retrieved from <https://gweddill.gov.wales/docs/det/publications/161128-digital-action-plan-en.pdf>

Welsh Government (2018) *Size analysis of active businesses, 2018*. Retrieved from <https://gov.wales/docs/statistics/2018/181129-size-analysis-welsh-business-2018-en.pdf>

Yin R. (1994) *Case study research: Design and methods*. Sage Publishing, California.