



Welsh Economy  
Research Unit  

---

Yr Uned Ymchwil  
i Economi Cymru

Superfast Broadband Business Exploitation Project: Research and  
Intelligence[Enter project name]

## **The potential of business model digitisation for SMEs in Wales**

**17<sup>th</sup> January 2018**



# Table of contents

---

1.	Introduction	2
2.	Overview of business model digitisation	3
2.1.	Customer-focused digitisation	5
2.2.	Digital selling through a store front	6
2.3.	Supply-chain focused digitisation	6
2.4.	Digitisation through service-product offerings	8
3.	Implications for businesses in Wales	10
4.	Likely scope and scale of impact on businesses	11
5.	Lessons for Superfast Broadband Support in Wales	12
6.	References	13

---

## List of figures

---

Figure 1 A stylised business model	4
Figure 2 With respect to supply chain strategy. Which of the following technologies are disruptive and important for your company?	7

# Introduction

---

Cardiff University is undertaking research in association with the Welsh Government's superfast broadband Business Exploitation (SFBBE) programme, over the period 2016-2020. This research examines the economic impacts associated with business adoption and use of superfast broadband enabled digital technologies.

The Horizon scanning series of reports are designed to raise awareness of challenges and opportunities associated with new and emerging digital technologies in Wales. They seek to inform the work of the SFBBE programme, and to stimulate discussion about the response of Wales to the emergence of technologies enabled by superfast broadband.

With the increasing digitisation of the economy, there is much talk about the evolving nature of business models to match this change in the way business is done. A business model describes the key components of a given business – how it operates, how it makes money, and how it interacts with the market. It is a term particularly used in the realms of e-business, where how the business operates is often as important as the 'product' that it sells. Indeed, business models are even patentable: Amazon has a patent for the 'one-click purchase' concept (Rappa, 2002).

This would suggest that in this increasingly digital world there are opportunities to be seized for all businesses, including SMEs, who can create a unique business model that contributes to growth. These changes in business model can come in a number of forms: servitisation, when value is added to a product by adding associated services, or replacing a product with a digital service; through e-commerce where commercial transactions are conducted electronically over the internet; or the creation of a digital storefront which is a website that offers goods and/or services. Furthermore, supply chain relationships can be transformed with digitised stock taking, delivery tracking, and other advanced processes.

This paper is the second in a series of Horizon Scanning outputs and will discuss the implications of the digitisation of business models. All such papers are available on the Cardiff Business School website: <http://www.cardiff.ac.uk/superfast-broadband-project>.

The author of this paper is Laura Norris

# 1. Overview of business model digitisation

---

In considering how business models may impact a business' interaction with digital technology and the internet more broadly, consideration must be given to what a business model entails.

Chesborough and Rosenbloom (2002) define that a business model:

- Highlights the value created for the user by the particular product, service, or business activities;
- Identifies the audience and market segment who will find this technology useful, and specifies how revenue will be generated from the product or service;
- Defines the process by which the product or service will be distributed and the complementary assets that are needed to support this. This can include such things as after-sales services or technical support;
- Details the tools the firm will use to be paid for the service or product: Paypal, direct payment system on website, or other e-commerce options;
- Includes an estimate of the cost of this structure and potential for profit;
- Describes how the firm links with suppliers and customers, and highlights the position of the firm within this network of organisations;
- Estimates the cost structure and profit potential;
- Formulates a strategy by which the firm, who has created the new product, will gain and hold an advantage over competitors.

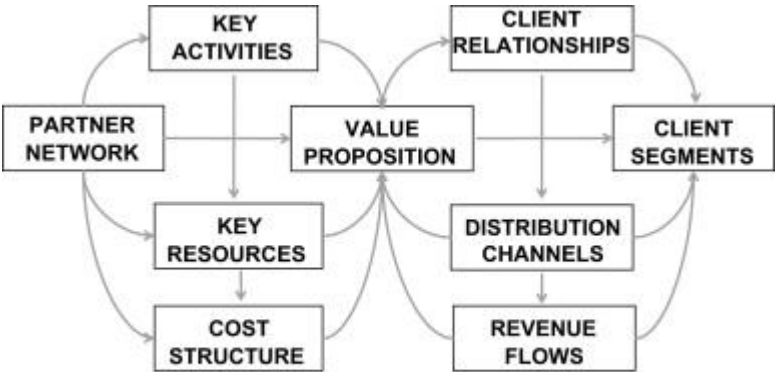
Significantly, a product or service has no true value until it is commercialised in some way via a business model. Indeed, the same item can be commercialised via two different business models and have two different outcomes and return on investment. Some assert that a mediocre technology backed by an excellent business model is likely to be more valuable than an excellent technology backed by a mediocre business model (Teece, 2010).

Business theory emphasises the importance of pursuing projects that fit within the business model and way of ‘doing things’. There is, however, an increasingly wide range of literature that emphasises that a business should be adaptive to the changing economy brought about by the advent of digital technology. Studies highlight numerous opportunities that were missed by businesses due to the digital technology or way of providing a product being outside their core business plan. Blockbuster Video is an example, once a staple of the high street offering videos and DVDs it was eclipsed by the online and digital offer of LoveFilm and Netflix, amongst others. So whilst it is important to know ‘what you do and how you do it’, a business model must allow experimentation and not remain closed to other opportunities.

“The question is: why don't more organizations conduct such experiments, to probe for potential new business models before the time comes when external [digital] innovations render their traditional ones redundant? The immediate answer is that businesses face significant barriers to business model experimentation” (Chesborough, 2010).

These barriers may be a lack of resource, a desire to ‘stick to what we know’, or insufficient horizon scanning, among others. It has been suggested that through the use of diagrams such as Figure 1, firms are able to assess new potential projects or products against their existing business model. This then allows them to question whether it does indeed fit in with the overall strategy of the business, and also where the business would then sit within the supply chain and its relationship with customers.

Figure 1 A stylised business model



Source: <http://business-model-design.blogspot.com/2005/11/what-is-business-model.html>

Much of the market is currently characterised by strong innovations in business models, this is largely due to the advent of new digital technology and levels of connectivity. Figure 1 highlights the two key foci of a business model that combine to make the value proposition: customer-focused activities, or supply-chain focused activities. Utilising digital technology it is possible to digitise the business offer by either focusing on what customers value, such as knowledge and specialised skills; or transforming the operating model and interaction with the supply chain – including digital stock taking among other activities; or, undertaking a combination of both approaches (Berman, 2012). This means that intangible goods such as specialised skills, knowledge, and the ability to implement new ways of operating have become more valued. The next section of this report will consider the implications of digitising the customer-focused and supply-chain focused activities within the business.

### **1.1. Customer-focused digitisation**

---

It is generally accepted that most businesses will not start at ‘zero’ within the digital economy - many will have web sites. It has been established that even businesses that are primarily in ‘physical’ industries have a lot to gain from introducing digital services as part of its online presence; increasingly customers and members of the supply chain will search first for suitable businesses online. Without a digital presence, a business is reliant on personal recommendations. However, the SFBBE case study of [Sean Carr Lining Technology Ltd](#) highlights how even for a business that relies on personal recommendations, a website provides potential customers an opportunity to fact-check and estimate the professionalism of the business.

*“In the new digital marketplace, consumers are using mobile, interactive tools to become instant experts on product and service offerings and their relative merits as they decide who to trust, where to make their purchases and what to buy. At the same time, businesses are undertaking their own digital transformations, rethinking what customers value most and creating operating models that take advantage of what’s newly possible for competitive differentiation (Berman, 2012)”.*

It is important to recognise that customers now have a range of choices that are not influenced by traditional marketing. Social networks, online reviews and blogs are all sources of influence for final purchase choice; these habits have become the choice of both private and business customers. Therefore, part of the development of a business' online presence could include features like a Facebook page which allows customers to provide reviews, and a weekly or monthly blog showing activities that have been undertaken. This could eventually progress to improved customer service with 'online conversations' and digital supply chain tracking. The addition of modular advice such as online quotations, or a 'virtual receptionist' where appointments can be made through online portals, could also be considered. This presents the possibility to change the way a business interacts with customers and offers much potential across many sectors (Johann et al., 2016).

## **1.2. Digital selling through a store front**

---

There are a number of ways in which a business can create a store front and trade digitally. One option is to offer products for sale such as parts or equipment, customers are then able to purchase through an e-commerce capability built in to the website. Another option is to utilise a trading website such as eBay to sell goods. A SFBBE case study – [Recycle Scooters](#) - advocates this option when the business' products are shipped worldwide and are not a standardised size, as the development of a bespoke e-commerce software package can be costly.

Furthermore, the business' digital storefront may not offer physical products, instead selling digital files such as books, 'how to guides', or music. One of the most successful and innovative online digital sale models was that of Radiohead. The band offered an album online with a 'pay what you want' model, and it is reported that the band made more money than any other album in this way. Likewise, there are examples of 'bloggers' who sell digital products through their blog, either directly embedding the store in their website or by creating a separate identity. This is found typically in the food, health and fitness industry, but it is a model that could be applicable if the business is able to offer expert advice in an area.

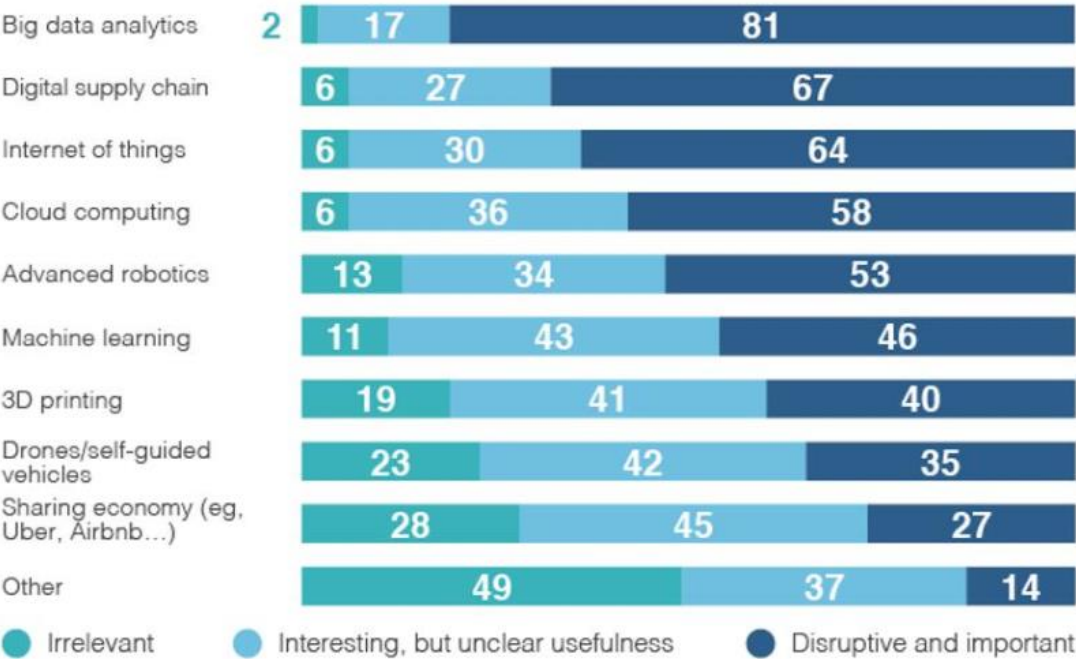
## **1.3. Supply-chain focused digitisation**

---

Digitisation of the supply chain essentially focuses on conducting functions of the business online; it can lead to improved communication and record keeping as data and information is shared digitally. Furthermore, it enables straightforward tracking of orders and deliveries and means that the supply chain is able to work more cohesively.



Figure 2 With respect to supply chain strategy. Which of the following technologies are disruptive and important for your company?



Source: SCM World Future of Supply Chain Survey 2016 % of respondents  
n=1,415

Figure 2 concisely highlights that alongside big data analytics, digital supply chain strategy is considered to be particularly disruptive. Supply chain management is the control of delivering and producing products or services within the value chain (Sherer, 2005). This goes beyond the activities of a single business and involves activities that has businesses considering how they can create value through a network of relationships with key firms (Kothandaraman and Wilson, 2001).

*“Firms work together in supply chains, but seek to maximize their individual power to capture greater value for themselves” (Peppard and Rylander, 2006).*

Forbes in particular has paid great attention to the digitisation of the supply chain, with a report entitled “Digital Supply Chain—Are You Leading the Pack? Lessons From Companies That Derive the Most Value From Their Supply Chains” released in May 2017. This is available for download online, but the key lessons that emerge are:

- Be comprehensive when digitising your supply chain, make sure all links are connected by technology that works together. Integrate relevant functions in to the supply chain to detail the data flows.

- Getting the most value from your supply chain does not solely centre on efficiency and cost savings, be sure to build a supply chain as the foundation for a new business model. “Start your digitization with the desired business outcome – and build your supply chain accordingly”.
- Becoming focused on your customer is the most desired outcome of supply chain digitisation. When the core efforts of supply chain digitisation are taken care of, then become customer-centric – this will require agility, visibility, and data and analytics.
- Ensure that the CEO is a supply chain digitisation champion – high profile support will help ensure success.
- Remember that supply chain digitisation is a long-term project, those companies that were particularly advanced in their digitisation within the report had a two-year action plan.

There are a number of key opportunities and threats with supply chain digitisation. Principally digital technologies allow the entire supply chain to “attain situational awareness and context-sensitive decision making” (Vendrell-Herrero et al., 2017). Firms can then use this awareness to change their position and power within the supply chain. In particular, improved communication with customers and other organisations can help contribute to dominance (Stabell and Fjeldstad, 1988) as firms that control the access to customers have bargaining power (Porter and Heppelman, 2014). This presents a great opportunity for many businesses, however, a cautionary tale if you are slow to act as non-dominant firms may be forced to adopt the same technology as a dominant firm, ultimately locking them in to a relationship and making them technologically dependent (Hart and Saunders, 1997)

#### **1.4. Digitisation through service-product offerings**

One of the most disruptive forms of digitisation comes in the form of servitisation where manufacturers are offering digital services that are directly linked to their products (Baines and Lightfoot, 2014). Servitisation from the perspective of the customer can lead to a customised overall experience that is more suitable for their needs (Baines, et al., 2007; Bettencourt and Brown, 2013) and provides an excellent opportunity to build loyal customer relationships (Tukker, 2004).

Servitisation is not only a new business model but a system of change within the business: strategic and operational processes must be changed to suit the new digital way of working. It is essential that the responsibility for this change is designated to specified staff with sufficient authority, a strong decision support system is needed to manage the transition to this new type of working. Decision-makers must anticipate and manage the new ways of operating; this could lead to an evolution in workforce skills and a need to predict how sensitive this new way of working is to customer demands or misuse. Effective organisation of human resources to deliver the service is a fundamental element to customer satisfaction (Kowalkowski, 2011; Barquet et al., 2013). The skills and competences of the business' employees can create a competitive advantage that can be hard for other firms to replicate.

In particular, decision makers will need to consider the 'frontier' between back and front office and the development of multi-skilled individuals, this is a requirement to have sufficient flexibility to meet workload variations (Chalal et al., 2017). For example, manufacturing staff may need the capability to act as front office service agents; this flexibility is needed to meet demand for high quality service offer. The business will also need to consider the training needs of its employees in order to be able to do this new kind of working.

It is, however, important to remember that a service-based business is labour intensive, and without proper consideration of its implementation can be difficult for SMEs to execute. Furthermore, customers may be reluctant to pay for extra services or have a 'service for free attitude' - this is often considered the first barrier for servitisation in an existing firm (Witell and Lofgren, 2013). In depth studies have been conducted of firms who achieved this change without taking on new staff, but the change was conducted through a highly planned process (Chalal et. Al, 2017).

## 2. Implications for businesses in Wales

---

It is apparent that designing a business model that effectively takes advantage of the digital revolution has the potential to offer a great source of competitive advantage to firms in Wales. Indeed, SFBBE has found that 70% of surveyed businesses in Wales with access to superfast broadband have introduced new or significantly improved products in the last 2 years, it is not known if this was linked to a new business model. In comparison to 54% of businesses with standard broadband activities, it would seem that the speed of broadband is in itself a source of competitive advantage. However, SFBBE's case study research suggests that the reliability of connection is more important than 'top speed' in using digital technologies and packages. This would imply that a positive step is to consider business model development and implementation irrespective of the business' current broadband speed. Indeed, when considering the mix of business model development type, 25% of businesses innovated in products, 49% innovated in services and 22% in a mix of both. 45% of these new products and services were new to the market.

As highlighted previously, the first steps towards a firm's digitisation is an online presence, 88% of surveyed firms in Wales have a website, with a relatively even distribution across all sectors, firm size, and broadband type. Some 69% of these websites are managed in house, but there is, however, a tendency for medium firms (25 to 249 employees) to outsource this activity. Again, broadband type made little impact. Academic research has found a strong interaction between digitisation and servitisation, this perhaps suggests that following these first steps businesses in Wales may be likely to servitise. However, studies also indicate that the addition of services does not guarantee improved firm performance.

Businesses in Wales must remember that customers now have a range of mediums through which they can access digital media. Indeed, smartphone and tablet shipments surpassed PC shipments at the end of 2011, so in creating any digital storefront it is important to ensure that the site is accessible to mobile media. It may also be important to consider that these devices can determine location, opening up possibilities such as real-time discount voucher delivery if a customer is near the business' physical location.

However, in appreciating that customers are 'always connected' it is important to ensure that communication is controlled so that it does not become "a noisy, random, and border-line abusive user experience where notifications have become a tactic to steal our attention rather than enhance our lives" (Belsky, 2017). Furthermore, businesses cannot assume that the target demographic does not use social media, studies have shown that nearly as many 'baby boomers' use social media as 'millennials'.

### **3. Likely scope and scale of impact on businesses**

---

It is clear that business model changes have significant potential to impact the future success and indeed, survival, of a business. Digitisation is viewed as the main driver for change in many sectors; businesses, consumers and products are becoming increasingly connected due to digital networks. Businesses are more able to work in a collaborative way to provide solutions for customers.

Alongside this changing strategy within the business, digitisation leads to a change in interaction with the supply chain. It has been suggested that businesses should now think of themselves as part of an ecosystem. In this light, businesses should evaluate whether digitisation tasks are best performed within the business or by partner organisations (Paulus-Rohmer et al., 2016).

This does, however, mean that with increased transparency operational advantages are harder to maintain and customers have a far wider market from which to choose their products. Significantly, keeping the 'flavour' of the original business is important, when resources are accumulated in a firm-specific way it becomes harder for other firms to emulate and becomes a source of competitive advantage (Barney, 1991; Dierickx and Cool, 1989).

The threat to businesses in Wales and throughout the UK stems from a delay in repositioning the business model whilst waiting for superfast broadband. In this respect it has been shown that businesses are more likely to adapt business models in response to threats rather than opportunities. However, advanced adaptation towards a new business model will be more conducive than attempting to defend an existing market position (Saebi et al., 2016). Therefore, those businesses who's primary market has pre-existing access to superfast broadband will have already adapted and will now be in a position to pose a competitive threat. It is therefore evident that businesses in Wales need to take positive steps in business model renewal, particularly as 47% of responding businesses have a market outside Wales but within the UK.

Whilst it is clear Welsh businesses are considering their online presence, there remains much scope for businesses to seek competitive advantage, or at a minimum comparability with counterparts elsewhere. 'Live chat' was a feature of only 10% of firms, and 50% of firms had no revenue coming from online sales. These elements are particularly instrumental in widening potential markets for the business. Broadband speed has no impact on live chat engagement, and those with superfast broadband were marginally more likely to engage in online sales than those with standard broadband, 29% and 22% respectively. Approximately 25% of study participants had between 1 and 25% of sales serviced through online ordering or payment within the last year.

## 4. Lessons for Superfast Broadband Support in Wales

---

The digitisation of business models is an inevitable development within an increasingly technological business environment, with demands for change impacting businesses of all size, sector and industry differently. The principal challenge for the SFBBE programme is to make businesses aware that a proactive rather than reactive approach to developing business models is essential. The key implications for the programme can be summarised as follows:

*Ensure that businesses in Wales do not view superfast broadband exploitation as an IT function.*

The literature makes it apparent that an individual within the business must be responsible for driving digitisation and that management must also value digital technology's place within the operations of the firm. Electing digitisation or servitisation champions can contribute to the success of initiatives.

*Support businesses to understand the different ways in which digital technologies can be incorporated into their business model*

It has been established that businesses can digitise their offer through adding services to their pre-existing products, creating digital products for sale, or ultimately selling services. It is important to remember, however, that digitisation does not necessarily mean a renewal of all business functions and that keeping a 'unique flavour' to how the business operates is a source of competitive advantage.

*Offer a range of support for businesses at different stages of digital maturity*

Whilst a large number of the businesses that responded to the survey had a website presence, case study research highlighted that there are micro businesses in Wales with very limited digital literacy who would not respond to the survey or have knowledge to set up a website. This would suggest a need for events that cover the full range of digital business model functions: setting up a website, managing 'Live chat' and other customer contact, e-commerce and other functions.

## 5. References

---

Baines, T.; Lightfoot, H.W., (2014) 'Servitization of the manufacturing firm: Exploring the operations practices and technologies that deliver advanced services', *International Journal of Operations & Production Management*, 34 (1), pp. 2–35.

Barney, J., (1991) 'Firm resources and sustained competitive advantage', *Journal of Management*, 17 (1), pp. 99–120

Barquet, A. P. B.; De Oliveira, M. G.; Amigo, C. R.; Cunha, V. P., Rozenfeld, H., (2013) 'Employing the business model concept to support the adoption of product–service systems (PSS)', *Industrial Marketing Management*, 42, 693–704.

Belsky, S., (2017) 'Mobile Notifications: A Tragedy Of the Digital Commons'. Available at: [https://www.linkedin.com/pulse/mobile-notifications-tragedy-digital-commons-scott-belsky?lsrc=f47e84fb-5b59-4427-8954-84415cb901a7&utm\\_source=social&utm\\_medium=leap&utm\\_campaign=linkedin&src=li-leap](https://www.linkedin.com/pulse/mobile-notifications-tragedy-digital-commons-scott-belsky?lsrc=f47e84fb-5b59-4427-8954-84415cb901a7&utm_source=social&utm_medium=leap&utm_campaign=linkedin&src=li-leap)

Berman, S.J., 'Digital transformation: opportunities to create new business models', *Strategy & Leadership*, 40 (2), pp.16-24.

Bettencourt, L.A.; Brown, S.W., (2013) 'From goods to great: Service innovation in a product-dominant firm', *Business Horizons*, 56 (3), pp. 277–283 .

Chalal, M.; Boucher, X.; Marquès, G., (2015) 'Decision support system for servitization of industrial SMEs: a modelling and simulation approach', *Journal of Decision Systems*, 24(4), pp.355-382.

Chesbrough, H., (2010) 'Business Model Innovation: Opportunities and Barriers', *Long Range Planning*, 43 (2-3), pp. 354-363.

Chesbrough, H.; Rosenbloom, R. S., (2002) 'The role of the business model in capturing value from innovation: evidence from xerox corporation's technology spin-off companies', *Industrial and Corporate Change*, 11 (3), pp. 529

Dierickx, I.; Cool, K., (1989) 'Asset stock accumulation and sustainability of competitive advantage', *Management Science*, 35 (12), pp. 1504–1511

Hart, P.; Saunders, C., (1997) 'Power and trust: Critical factors in the adoption and use of electronic data interchange', *Organization Science*, 8(1), pp. 23–42.

Kothandaraman, P.; Wilson, D. T., (2001) 'The future of competition: Value-creating networks', *Industrial Marketing Management*, 30(4), pp. 379–389.

Kowalkowski, C.; Kindström, D.; Brehmer, P.-O., (2011) 'Managing industrial service offerings in global business markets', *Journal of Business & Industrial Marketing*, 26, 181–192.

Kowalkowski, C.; Witell, L.; Gustafsson, A., (2013) 'Any way goes: Identifying value constellations for service infusion in SMEs', *Industrial Marketing Management*, 42 (1), pp. 18–30

Peppard, J.; Rylander, A., (2006) 'From value chain to value network: Insights for mobile Operators', *European Management Journal*, 24(2), pp. 128–141.

Porter, M. E.; Heppelmann, J. E., (2014) 'How smart, connected products are transforming competition', *Harvard Business Review*, 92(11), pp. 64–88.

Rappa, M., (2002) 'Business Models on the Web'. Available at: <http://digitalenterprise.org/models/models.html> (Accessed: 05 July 2017)

Saebi, T.; Lien, L.; Foss, N.J., (2016) 'What drives business model adaptation? The impact of opportunities, threats and strategic orientation', *Long Range Planning*, 50 (4), pp.

Sherer, S. A., (2005) 'From supply-chain management to value network advocacy: Implications for e-supply chains', *Supply Chain Management*, 10(2), pp. 77–83.

Stabell, C. B.; Fjeldstad, Ø. D., (1998), 'Configuring value for competitive advantage: On chains, shops, and networks', *Strategic Management Journal*, 19(5), pp. 413–437.



Teece, D., (2010) 'Business models, business strategy and innovation', *Long Range Planning*, 43(2), pp. 172-1494.

Tukker, A., (2004) 'Eight types of product-service system: Eight ways to sustainability? Experiences from SusProNet', *Business Strategy and the Environment*, 13 (4), pp. 246-260

Witell, L.; Löfgren, M., (2013) 'From service for free to service for fee: Business model innovation in manufacturing firms', *Journal of Service Management*, 24 (5), pp. 520-533



Cardiff Business School  
Ysgol Busnes Caerdydd

**Welsh Economy Research Unit**

**Cardiff Business School**

Cardiff University,  
Aberconway Building,  
Colum Drive,  
Cardiff CF10 3EU

For enquiries or to find out more please get in touch:

[superfast@cardiff.ac.uk](mailto:superfast@cardiff.ac.uk)

<http://www.cardiff.ac.uk/superfast-broadband-project/digital-maturity-survey>

<https://www.linkedin.com/company/welsh-economy-research-unit/>

<https://twitter.com/CUWERU>