



DIGITAL DISRUPTION AND SMALL BUSINESS IN SCOTLAND

A REPORT FOR FSB SCOTLAND BY DR JIM HAMILL

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1. FOREWORD

Few would dispute that we live and work in an era of rapid technological change. The digital and social media revolutions are already disrupting a wide range of industries, threatening to transform existing ways of doing things and existing business models. The changes witnessed since the advent of the Internet twenty years ago are nothing compared to what is coming over the next few years.

Our small businesses need to 'adapt or die'. They need to embed digital capabilities into the core of their business. The days of treating digital as a peripheral add-on are over. Many organisations have become, or are in the process of becoming, digital dinosaurs due to their inability to adapt. A recent report suggests that four out of ten industry incumbents, across a broad spectrum of sectors, will be displaced by digital disruption over the next five years.

No industry, no company in Scotland should consider itself immune from the threat of digital disruption. This raises complex issues for Scottish SMEs, for public policy makers and the business support network.

Developing an appropriate response to digital change is the number one medium term challenge facing Scottish business today. As a matter of urgency, we need to support the small business community in transforming digitally; in overcoming the barriers and obstacles they face in developing and implementing effective digital strategies.

This will require appropriate responses from public policy makers in a broad range of areas including training and skills development; regulation and licensing; taxation; digital government and, of course, digital infrastructure. The business support network too has a critical role to play; ensuring that the level and type of support available to small businesses is fit for purpose in an era characterised by turbulent digital change and digital disruption.

As a basis for stimulating further discussion and debate on these issues, I am pleased to launch this report.

As Scotland's leading direct membership business organisation, FSB is in a strong position to support the small business sector, policy makers and public sector support agencies in ensuring that Scotland's small businesses utilise the full potential of digital technologies for achieving sustained business growth and competitiveness.

I hope that the report makes a valuable contribution to stimulating further research and discussion in this area. I believe it to be the first report focusing on the opportunities and threats presented by digital disruption to the Scottish economy and Scottish companies.

Dr Jim Hamill, University of Strathclyde Business School

2. EXECUTIVE SUMMARY

‘The impact of digital technologies on the business world, we ain’t seen nothin’ yet. The innovations and disruptions of the past ten years have been nothing but astonishing, but they’re just the warm-up acts for what’s to come.’

Westerman, Bonnet, McAfee (2014).

‘Disruptive selection is nature’s way of weeding out the average business.’

Solis (2013)

This report presents the main findings and recommendations of a digital disruption evaluation study conducted by [Dr Jim Hamill](#) (Strathclyde Business School) on behalf of FSB Scotland, prepared between April and July, 2015.

The core premise of the report is that we have entered a new and even more revolutionary phase in the development of digital technology; a period characterised by turbulent digital change and digital disruption. Across a wide range of industries, digital technology is threatening to disrupt existing value chains, business models and traditional ways of doing things. No industry, no company in Scotland is immune from the threat of being disrupted.

While there is growing recognition of the need for businesses to transform digitally, the report highlights a gap between the current use of digital technology by Scottish firms and the pace of change. The majority of businesses in Scotland remain unprepared for the coming digital onslaught. Digital led change is taking place at a much faster rate than the ability of SMEs to adapt. In an era where digital business transformation has become critical, this represents a threat to Scotland’s global competitiveness.

The findings presented here raise important implications for small business, for public policy makers and the business support network:

- For SMEs, the option quite simply is to ‘adapt or die’. Overcoming resistance to digital change should be considered a top challenge facing Scottish business today.
- For public policy makers, digital disruption raises a wide range of issues not yet being fully and openly debated including the impact of digital disruption on labour markets and employment; training and skills development; regulation and licensing; taxation; digital infrastructure; digital government and so on. In particular, with academic evidence suggesting that almost half of all jobs could be automated within the next two decades, there is an urgent need for more research on the potential impact of digital technology on Scottish labour markets.
- Business support: publicly funded digital support programmes for small businesses have been widely available in Scotland for at least two decades. These have undoubtedly led to good progress being made in a number of important areas. The majority of Scottish businesses are now online, with a website and using social media. However, it is a legitimate question to ask whether the level and type of support available is fit for purpose in an era characterised by turbulent change.

3. RECOMMENDATIONS

For SMEs

- **Carpe Diem:** Given the potential impact of digital disruption on employment, growth and national competitiveness, it is essential that SMEs in Scotland make digital a top priority now. While it is critical to have a strong digital support in place, the ultimate responsibility for moving to a much higher level of digital maturity lies with owners and managers themselves. It is no longer acceptable for digital to be seen as a peripheral activity. To remain competitive, all businesses in Scotland need to transform digitally, embedding digital at the core of everything they do.
- To achieve this, Scotland's small businesses need to build strong capabilities at two main levels:
 - **The digital capability** to work differently - the capacity to rethink and improve internal business processes, external customer engagements and underlying business models through the strategic use of new technology.
 - **The digital leadership** to agree a digital vision for the business, to execute that vision and drive transformation.
- Scotland needs to develop new digital leaders. People who can combine business knowledge and experience, with the ability to develop digital transformation strategies aligned with the goals of the organisation. Further, these individuals need the confidence and personal skills to drive change.

For Policy Makers

Digital is already a top issue for the Scottish Government with the stated objective of being a world class digital nation by 2020. However, given the rapid pace of digital change and the emerging threat of digital disruption across a wide range of sectors, a reassessment of current public policy in Scotland is required.

At the time of preparing this report, [an open letter on the digital economy](#) (MIT Technology Review, June 4th, 2015), from a group of leading US technologists, economists and investors was published on the MIT Technology Review website. The letter called for radical changes in public policy in a wide range of areas including education, infrastructure, entrepreneurship, trade and immigration. It also called for more research to be undertaken into the impact of digital disruption on the US economy and US businesses, and we would suggest a similar approach in Scotland.

Our main recommendations in this area are as follows:

- **Research:** The Scottish Parliament's Economy, Energy and Tourism Committee should launch a detailed investigation of the opportunities and threats presented by the digital and social media revolutions. The Scottish Government should examine the potential impact on the labour market and business base.
- **Training and Skills Development:** The majority of businesses lack the skills to leverage the full potential of the digital economy. Given the rapid pace of change, many people in work may find that their current skills and experience may date quickly. Education policymakers should investigate whether there is sufficient part-time, evening, weekend, on-demand and online courses available for those individuals or businesses wishing to update skills.
- **Regulation and Licensing:** What is the appropriate regulatory environment for disruptive start-ups emerging from the collaborative economy e.g. Airbnb, Uber and others? The Scottish Government should review their Business Regulatory Impact Assessments to ensure that traditional operators and new digital firms are treated fairly. Scotland's licensing and regulatory regime will be challenged by digital disruption. The Scottish Government's Regulatory Review Group should examine how to best encourage innovation while ensuring traditional operators are not disadvantaged.

- **Taxation:** The Scottish Government is committed to delivering a modernised business rates system ahead of the 2017 revaluation. A property-based taxation system may give digital businesses an advantage over traditional operators. The Scottish Government should examine this issue.
- **Digital Infrastructure:** While digital infrastructure is not the main focus of this report, fast, reliable, mobile, nationwide connectivity is a prerequisite for digital success. Delivering blanket superfast broadband and data coverage has to be a top priority for the Scottish and UK Governments.
- **Digital Government:** The mygov.scot programme is the Scottish Government's plan to improve the public sector's web presence. Progress has been slow and the FSB has argued for a single web portal for the business community to interact with the public sector.
- **Cybersecurity and Fraud:** Concerns regarding security are a major barrier to SME progress in the strategic use of IT. While the Scottish Government's cyber security strategy is due to be published shortly, the FSB has highlighted the need to integrate digital security help into wider enterprise support. In addition, firms need clear guidance from law enforcement regarding what sort of infringements constitute a crime.

Digital Business Support

Publicly funded digital support to businesses has been available in Scotland for two decades. The majority of Scotland's firms are now receiving tangible benefits from their online activities. Compared to the pace of digital change taking place, however, many remain unprepared. It is critical, therefore, that the business support network continues to deliver the right help in an era of rapid digital change.

- Business support programmes may need to re-evaluate their content. There needs to be a stronger emphasis on developing digital leadership in small business. Business support advisers in Scotland's enterprise networks may require additional training (e.g. an accredited course) to develop digital leadership in Scotland's firms.
- This report suggests new support for small businesses which helps them to both develop and implement a digital transformation plan – designed around their own operations and aligned to their wider business plan.
- Support programmes need to tackle the barriers preventing businesses from implementing digital change. Much current support is focussed on introducing businesses to certain channels and technologies - additional on-demand support at the implementation stage may be required.
- In addition, this report suggests the reorientation of existing graduate internship programmes to match Scottish businesses with digitally capable students and graduates.
- A digital export programme, run across the Scottish enterprise agencies but in co-ordination with UK bodies, should be considered. New technologies could allow more small firms to sell products or services abroad – but much help in this area is focussed on traditional exporting.

4. INTRODUCTION

‘We are in the early stages of an era of great technological change. Digital innovations are remaking our industries, economy, and society just as steam, electricity, and internal combustion did before them.’

MIT Technology Review, June, 2015.

It is now widely accepted that the effective use of digital technology is critical to the future competitiveness of the small business sector in Scotland. With small companies accounting for 98 per cent of all businesses in Scotland, the level of digital maturity has also become a key driver of national competitiveness. This has been fully recognised by the Scottish Government in its stated objective of Scotland becoming a world-class digital nation by 2020. The May 2013 publication ‘[Scotland’s Digital Future - Supporting the Transition to a World-leading Digital Economy](#)’ outlined the key actions to achieve this objective. More recently, a [Skills Investment Plan](#) has been launched to support the development of ICT and digital skills in Scotland. Scottish Enterprise is also in the process of launching a number of new digital business support initiatives.

Small and micro-businesses can derive a wide range of potential business benefits from the strategic use of digital technology. Compared to larger enterprises, however, small companies face unique issues and challenges in responding to the opportunities and threats presented by the digital and social media revolutions. These include limited resources, time, lack of knowledge, confidence and concerns regarding the risks and costs involved. The absence of a digital mindset is often one of the main barriers to be overcome.

The main aims of the study were to develop a detailed understanding of the potential impact of digital disruption on the small business sector in Scotland. The FSB wanted to produce recommendations relevant to Government, policy makers, public sector support agencies and the small business sector itself.

Four key research questions were addressed:

- What is the likely impact of digital disruption on small companies in Scotland?
- What are the main digital opportunities and threats presented?
- How should small business owners respond in order to prepare for the future?
- What are the implications for policy makers and public sector SME support programmes?

A hybrid approach to project methodology was employed comprising the following:

- A detailed review of the growing literature relevant to the business impact of digital disruption.
- Desk research evaluating existing reports relating to small business use of digital technology in the UK generally, and Scotland in particular.
- Desk research covering a review and evaluation of public sector digital support policy and programmes in Scotland.
- Personal interviews and focus group discussions with a carefully chosen sample of key influencers.

5. DIGITAL DISRUPTION AND DIGITAL DARWINISM

‘The web as I envisaged it - we have not seen it yet. The future is still so much bigger than the past.’

Tim Berners-Lee (2014)

Digital disruptors are tearing up the rule books, and no industry is immune. In response, firms must take a different approach to digital strategy, embedding digital capabilities into the heart of their business, rather than treating digital touch-points as peripheral add-ons.

The Digital Maturity Model, Forrester Research (2014)

Digital disruption has the potential to overturn incumbents and reshape markets faster than perhaps any force in history..... an average of roughly four of today’s top 10 incumbents (in terms of market share) in each industry will be displaced by digital disruption in the next five years. Despite these dire ramifications, only 25 per cent describe their approach to digital disruption as proactive—willing to disrupt themselves in order to compete.

Digital Vortex: How Digital Disruption Is Redefining Industries (2015)

The core premise of this report is that we have entered a new and even more revolutionary phase in the development of digital technology; a period characterised by turbulent digital change and digital disruption. Across a wide range of industries, digital technology is threatening to disrupt existing value chains, business models and industry structures. Leading authors are predicting the ‘[end of business as usual](#)’ (Solis, 2011) where the only choice facing companies today is to adapt or die. There are already many examples of organisations who have become, or are in the process of becoming, digital dinosaurs due to their inability to adapt. The logical outcome is [Digital Darwinism](#) (Solis, 2014) - a phenomenon when technology and society evolve faster than our ability to adapt.

The prime cause of digital disruption is the rapid convergence of a range of technologies including broadband and mobile connectivity, social media, enterprise social, the cloud, big data, Internet of Things, wearables, intelligent machines, automation and the rise of Gen C – a generation of constantly connected customers (see Figure 1 for brief summary). As a consequence, small businesses are operating in a digital business environment completely different from even a few years ago.

The new digital era is only partly about technology. First and foremost, the digital and social media revolutions are about the fundamental changes that technology is bringing about in how we live and work, how we communicate, access information and make purchasing decisions. It is about the emergence of a new breed of empowered, constantly connected customers (B2B as well as B2C) who rely more on peer reviews and customer-to-customer marketing in purchasing decisions. It is about new business models based on the key principles of the collaborative sharing economy, crowdsourcing, crowdfunding and so on.

Glossary: Disruptive Technologies (Figure 1)

Figure 1: Disruptive Technologies

| Technology | Summary |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Social Media | The social interaction that take place among people across a range of online platforms including Blogs, Twitter, LinkedIn, Facebook, YouTube, Pinterest. |
| Enterprise Social | The use of social technologies within an organisation to improve: business processes and systems; efficiency and effectiveness of internal communications; knowledge sharing and collaboration. |
| The Cloud | A generally used term for describing the delivery of hosted services over the Internet including: Infrastructure-as-a-Service (IaaS); Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS). |
| Big Data | An all-encompassing term for large and complex data characterised by the 3Vs - Variety, Velocity and Volume. The rapid growth of social media, the Internet of Things etc. has led to an explosion in Big Data. Software improvements are opening up Big Data to SMEs. |
| The Internet of Customers | Most often used to describe the way in which new technology is leading to a major power shift from suppliers to customers – the growing empowerment of customers. |
| The Internet of Things | A situation where everyday objects have network connectivity, allowing them to send and receive data. Generally expected to be the 'next big thing' on the Internet with 75 billion connected products by 2020. |
| Wearable Technologies | Any wearable device supporting Internet connectivity e.g. Google Glasses, Apple watches etc. |
| Intelligent Machines/ Automation | Increasingly sophisticated and specialised computers, machines, robots and algorithms that can do many routine and repetitive tasks; not just low skill tasks but increasingly many professional tasks. |

Figure 2: Digital Disruption and the Scottish Economy

| Disruptive Technologies | Impact |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> • Social Media • Enterprise Social • Broadband and Mobile • The Cloud • Big Data • The Internet of Customers • The Internet of Things • Wearable Technologies • Intelligent Machines/Automation | SMEs <ul style="list-style-type: none"> • Strategy and Markets • Business Intelligence and Business Insight • The Customer Experience • Sales and Marketing • Internal Operations & Processes |
| | Policy Makers <ul style="list-style-type: none"> • Research • Training and Skills Development • Regulation and Licensing • Taxation • Digital Infrastructure • Digital Government |
| | Business Support <ul style="list-style-type: none"> • A focus on implementation barriers • Match digital natives with businesses • Digital leaders urgently required • Developing digital vision • A digital export programme |
| | |

As shown in Figure 2, and discussed in more detail in the remainder of this report, digital disruption raises wide ranging and complex issues for Scottish SMEs, public policy makers and the business support network in Scotland. Insert 1 summarises the potential impact in just one of these areas –employment.

Digital Disruption and the Scottish Labour Market (Insert 1)

Digital disruption, especially the rapid emergence of sophisticated and specialised intelligent machines, could transform labour markets and employment in Scotland. The impact could be as seismic as the shift from an agrarian to industrial economy in the late 19th and early 20th centuries.

Increasingly computers, machines, robots and algorithms will perform many routine and repetitive tasks. It is not just low skilled jobs that are under threat. Many professional and middle class occupations will also be affected including lawyers, teachers, professors, software programmers and many others.

A recent academic study by Frey and Osborne (2013) entitled ‘The Future of Employment: How Susceptible are Jobs to Computerisation?’ produced detailed evidence to suggest that over 40 per cent of jobs in the US could be automated within the next two decades. Similar predictions have been made in recent best-selling books including *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies* by Erik Brynjolfsson and Andrew McAfee (2014) and *Rise of the Robots: Technology and the Threat of a Jobless Future* by Martin Ford (2015).

Even with a margin of error of 50 per cent in the above estimate, global labour markets, including Scotland, will be profoundly affected.

A number of previous reports have been published evaluating the digital progress being made by Scotland's small businesses. These reports, summarised later in the report, have provided a very useful benchmark foundation for monitoring future progress. However, given the rapid pace of digital change and the potential for digital disruption across a wide range of industries, a major reassessment of the digital progress being made by Scotland's small businesses and how we support them in responding to the opportunities and threats of digital technology is urgently required. It is no longer just a question of being connected, having a website, being e-commerce ready or being present on social media. The more important question is how do firms avoid becoming obsolete in an era of digital disruption.

Who Will Be Disrupted?

Based on the above, the three obvious questions to ask are:

- Which industries/companies in Scotland are most likely to be disrupted?
- Over what timescale will this take place?
- How big will the impact be?

No detailed research has yet been undertaken to answer these questions. One of the main recommendations of this report is that a comprehensive government-led investigation of the potential impact of digital disruption on the Scottish economy is urgently required.

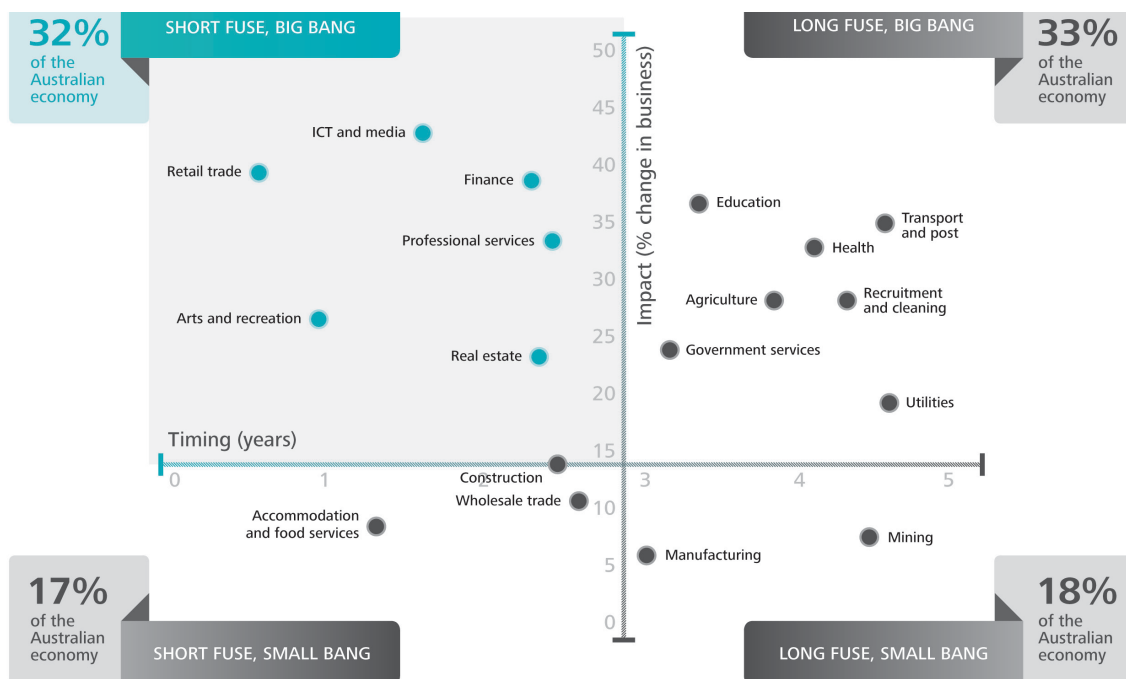
A recent report published by Deloitte (2012) entitled [Short fuse, big bang](#) provides a very useful framework for evaluating the potential impact of digital disruption across different industries. Two main criteria were used to assess the extent to which different industries will be disrupted: how much change can be expected (bang) and the time frame each industry has to adapt (fuse) as shown in Figure 3.

The exact positioning of each industry on the matrix is based on data derived from the Australian economy and would require amendment to fit a Scottish context. However, there is no reason for thinking that Scotland would differ radically from the main conclusions of the Australian report namely, that every single industry faces the threat of digital disruption, just not in the same way.

Four main types of industry are identified:

- **Short fuse, big bang:** Industries that have less than three years to adapt and transform themselves or face watching up to 50 per cent of their business perish.
- **Short fuse, small bang:** Industries with a lot less to lose in the way of digital disruption, but there is still a limited window in which they can act to mitigate potential damage.
- **Long fuse, big bang:** Some of the most profound changes will be felt in these sectors who can expect to lose a lot if they don't undergo a metamorphosis. Over time each of these sectors will be delivered in fundamentally different ways.
- **Long fuse, small bang:** Sectors with the least potential for digital disruption.

Figure 3: Short Fuse: Big Bang



A somewhat similar approach to evaluating the industry impact of digital disruption was developed in an even more recent study by IMD in association with Cisco entitled Digital Vortex: How Digital Disruption Is Redefining Industries (2015).

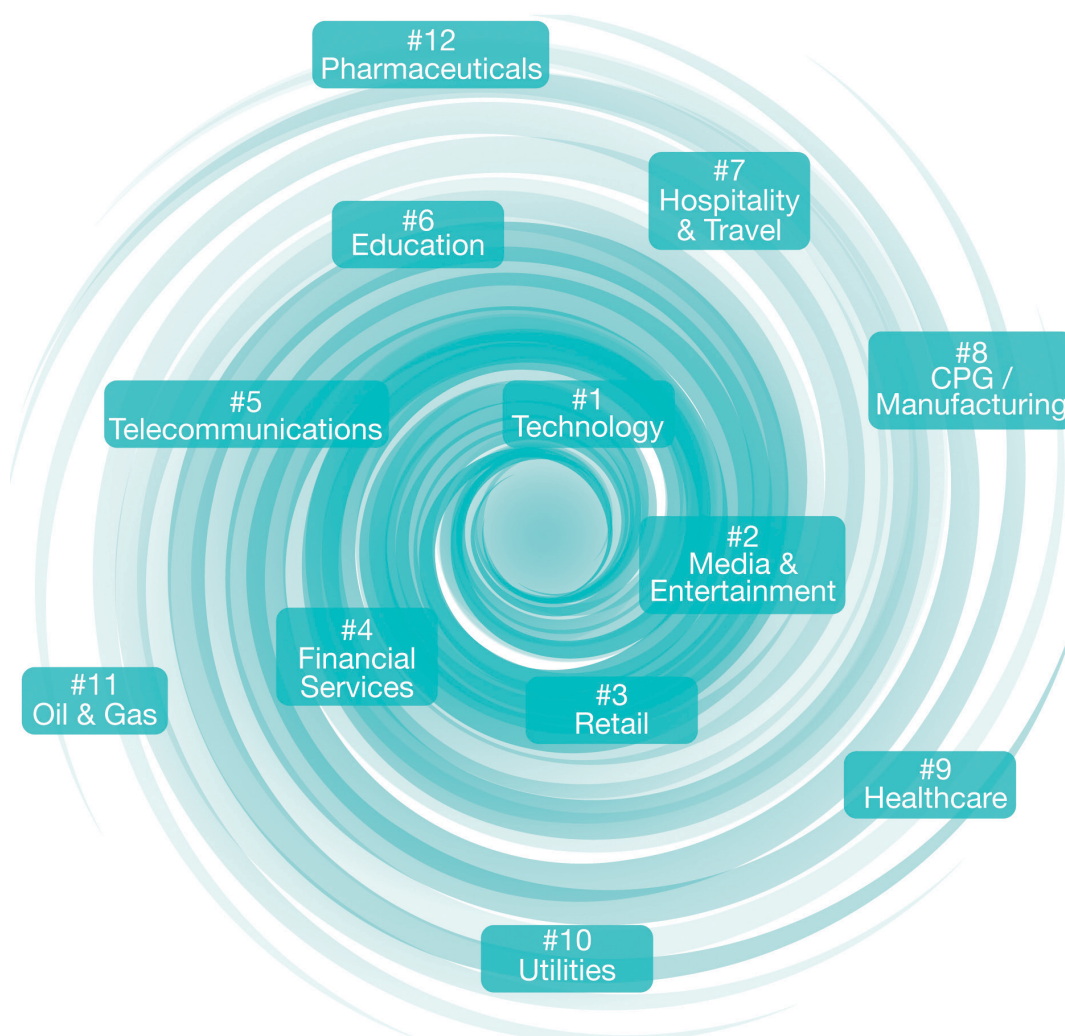
A Digital Vortex is defined as the *'inevitable movement of industries toward a digital center in which business models, offerings, and value chains are digitized to the maximum extent possible.'* Four main criteria were used to assess the strength of the vortex across different industries:

- **Investment:** The level of investment in companies that are focused on using digital technologies to disrupt.
- **Timing:** The length of time until digital disruption is expected to have a meaningful impact in an industry, and the rate of change expected to occur.
- **Means:** The barriers to entry that digital disruptors face in an industry, and the extent of digital business models they have at their disposal to surmount these barriers.
- **Impact:** The extent of disruption, such as impact on the market share of industry incumbents.

Based on quantitative analysis of market data and responses from 941 business leaders across 13 countries, industries were scored and ranked based on their potential for digital disruption, as shown in Figure 4. An industry's ranking (and its position in the Digital Vortex) represents the extent of potential competitive disruption within five years as a result of digital technologies and business models.

While some industries may be less affected than others, the report is unequivocal in its main conclusion that all industries, including those that have been more stable in recent years, will see competitive upheavals as innovations become increasingly exponential. According to the authors, the center of the Digital Vortex symbolizes the new normal characterised by rapid and constant change as all industries become increasingly digital.

Figure 4: Digital Disruption by Industry



Source: Global Centre for Digital Business Transformation, 2015.

The data is simply not available yet to accurately position different Scottish industries on either of the two models shown above. However, there is no reason for thinking that Scotland will be any different – all industries are potentially under threat.

To illustrate the scale of the challenge facing Scotland's small businesses, Appendix 1 presents 25 brief examples of the potential disruptive effect of digital technology across a broad spectrum of industries, products and services. The examples are not intended to be fully comprehensive; they are illustrative of the radical changes taking place, highlighting that no industry, no company is immune from the threat of being disrupted.

Case Study

Coast and Glen

The local fish van may be a declining species but Coast and Glen have replaced it with an online service delivering fresh fish to households throughout the UK.

Founded by Magnus Houston, from Inverness, the website provides an online subscription service allowing customers to sign up for a small, medium or large FISHBOX to be delivered weekly, fortnightly or monthly direct to their home. The FISHBOX contains a mix of fresh seafood caught locally and is available nationwide.

Magnus states, *'digital has transformed the way we do business. I started as a fisherman, working single handed from a small village called Cromarty on the East Coast of the Highlands. Our catch, mainly lobsters and crabs, was sold to a wholesaler who would immediately transport it to Europe. We then started to sell to a few local restaurants on our way home. The feedback from chefs was really positive. So good in fact, they wanted more products than we were able to catch. We had to start sourcing from other boats in Cromarty and neighbouring harbours. Demand grew for these 'straight from the boat' products and the company 'Coast & Glen' was born in 2011! This got us thinking how could we come up with a system that would allow a wider range of customers throughout the UK to experience truly seasonal, straight from the boat seafood? Packaged, prepared, paid for and delivered in a way that was convenient for the customers. The answer was FISHBOX, the channel was e-commerce, with Facebook (6,000 page likes) being used to engage and interact with our customers. The rest is history.'*

<http://www.coastandglen.com/>

<https://www.facebook.com/FishboxUK>

6. OPPORTUNITIES AND THREATS FOR SCOTTISH BUSINESSES

Based on the discussion above, there can be little doubt that digital disruption is a major threat to many Scottish SMEs. For each threat, however, there is a corresponding opportunity to be exploited from the effective use of new technology. The threats and opportunities of digital disruption for Scotland's small businesses are summarised in Figure 5 below.

One of the main barriers to digital progress is that many small businesses do not see the relevance of rapid technology change to their own business. It is important, therefore, to be very clear on the potential business benefits to be derived from digital progress and the threats of inaction.

Figure 5: Threats and Opportunities

| Business Impact | Threat | Opportunity |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strategy and Markets | Digital technology lowers the costs and barriers to entry for new disruptive start-ups. Existing markets and business models get disrupted by smarter entrants when the existing ways of doing things no longer work for consumers. | Opportunities exist for developing new and innovative business models offering higher value propositions to customers. For small businesses wishing to expand overseas, the effective use of digital technology can help to overcome many of the traditional barriers and obstacles to SME exporting leading to quicker internationalisation. |
| Business Intelligence and Business Insight | Small firms face the impact on brand reputation of negative customer feedback (genuine or fake) posted on social media. In a social media era, the brand reflects the customer experience; and experiences are widely shared. Good news travels fast on social media, bad news even faster. | Customer feedback on social media provides opportunities for developing action based on social media listening, leading to the better customisation / personalisation of products and services. There are opportunities to access big data and predictive analytics to develop better businesses. Big data is no longer the preserve of large companies. |
| The Customer Experience | Empowered, constantly connected customers now expect rich customer experiences supported by the innovative use of digital technology. They expect their social customer service enquires to be handled promptly and efficiently. The provision of social customer service excellence and active two-way customer engagement has become the new marketing. | Opportunities for using digital technology to enhance the overall customer experience building brand loyalty and advocacy, customer retention and growth build a quality customer base providing a strong basis for sustained growth and competitiveness. Use of social channels to deliver enhanced levels of customer service at lower costs. |
| Sales and Marketing | The effectiveness of traditional approaches to sales and marketing is declining; no one listens anymore. It is becoming much more difficult to identify and acquire new customers using traditional marketing communications due to the twin problems of information overload and attention deficit. | Opportunities for improving the efficiency and effectiveness of the sales and marketing effort (achieving more with less) through effective use of new technology including marketing automation and word-of-mouth tools. |

| | | |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internal Operations & Processes | The potential for losing competitiveness to more nimble, flexible and fast moving rivals. Information and e-mail overload. By 2025, Digital Natives will account for 70 per cent of the global workforce. Their work expectations are radically different to previous generations. | Opportunities for internal cost savings, improved efficiency, agility and flexibility through the innovative use of new technology within the business e.g. open source and cloud solutions. Use of collaborative software to build and support business partnerships. |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

For most small companies, the key question is how digital technology can be used to improve the bottom line. This is shown in Figure 6, where the five impact areas listed above are presented as digital drivers that help to achieve three core business goals and objectives - increased sales, lower costs, building a quality customer base. It is the quality of a company’s customer base, the strength of the relationship it has with quality customers and its ability to leverage that relationship that provides small business with a strong foundation for sustained growth and competitiveness. A key question for most SMEs is how digital technology can be utilised to enhance the overall customer experience leading to customer loyalty and advocacy.

Based on the above, exciting opportunities are available to small businesses in Scotland if they grasp the nettle of digital disruption. As discussed elsewhere, however, considerable progress still needs to be made before the small business sector in Scotland is leveraging the full potential of digital technology in this regard.

Figure 6: Digital Drivers and Ultimate Business Objectives



Case Study

Appointedd

Founded by former magazine editor Leah Hutcheon, online start-up business Appointedd uses a cloud based, ‘software as a service’ model to supply an integrated booking, management and marketing solution to a wide SMEs throughout the UK and internationally.

Appointedd’s tools allow customers to book appointments online, through the client’s website or Facebook page. Business owners can also use the software to manage staff rotas and send automated e-mail and text marketing campaigns. Initially developed for the health and beauty industry (e.g. hairdressing), Appointedd’s customer base has grown to include an array of service providers ranging from physiotherapists and PR consultants to music teachers and dog walkers.

In August 2014, the company announced a six figure angel investment which will allow it to double in size.

Leah states: *‘We believe that running a service business should be easy. It should just flow. Our cloud based solutions allow small business owners to manage the whole of their operations online. Using a ‘software as a service’ model allows small businesses to utilise functionality that only larger companies have generally been able to afford. At Appointedd, our purpose is to give small service businesses more time to do what they do best. That’s why we’re committed to taking the pain out of taking bookings. We make it easy for your customers to book with you wherever they are, whatever time it is, all online. No more no shows, no more to-ing and fro-ing by email and no more missed opportunities. Just seamless scheduling allowing you to sell to your customers. We would encourage more small businesses to explore the potential offered by the Cloud.’*

www.appointedd.com

7. DIGITAL ADOPTION BY BUSINESSES IN SCOTLAND

Strong links exist between the effective use of digital technology by small business and national competitiveness. It is not surprising, therefore, that a significant volume of research has been published regarding digital maturity amongst SMEs.

The UK

At a UK level, a recent and very comprehensive study by [Johnston Press and Buzzboard](#) (December 2014) highlighted a vast gulf between the way consumers engage with products and services online and on mobile, the information provided by SMEs on these channels and a '*shocking level of digital unreadiness*' which is holding back UK SMEs. The study, which examined over one million UK small businesses for seven signs of 'digital readiness', concluded that UK small businesses are failing to maximise the potential offered by digital technology in helping to grow and expand their business.

At the most basic level, the report argued that many UK SMEs lack proper websites or the capacity to handle online customers. Over 40 per cent of the companies surveyed had no website with a full 71 per cent stating that they were incapable of handling online consumers. Those that did have a website often failed to utilise it effectively to engage with their customers, with only half having a contact form and less than 40 per cent providing an email address.

In terms of mobile, 60 per cent of websites were not compatible across platforms, a worrying statistic given the rapid growth of consumer mobile connectivity.

Small firms' social media presence were also found wanting; 69 per cent of surveyed companies had no Twitter account, 70 per cent no Facebook page and 89 per cent no LinkedIn page.

Similar results were reported in the [Lloyds Bank UK Business Digital Index](#) (2015). The second year that this study has been published, they highlight that there is a general, but slow and not universal, move to becoming more digital. This report highlights relatively poor levels of Scottish business digital competency when compared to other parts of the UK, and specifically London and the South East.

The main barriers to small business digital progress were attitudinal combined with a lack of understanding of potential business benefits. Interestingly, this study suggested that most digitally capable SMEs are a third more likely to report an increase in turnover in the past two years, compared to the least capable firms.

The FSB's own research, shows that 95 per cent of small businesses in the UK use email and 74 per cent have a website. The average annual spend per company on technology is £3,500. Business benefits being derived from using IT include communications (62%), innovation (59%), back office (58%) and sales/marketing (53%) (FSB, 2013 - www.fsb.org.uk/frontpage/assets/fsb-intellect-april13.pdf).

Scotland

The [Digital Economy Business Survey 2014](#), published by the Scottish Government's Chief Economic Adviser Office in March 2015, provides the most recent and comprehensive evaluation of the digital progress being made by Scotland's small business sector.

The main aims of the study were to establish a baseline on covering the current level of digitisation by Scottish businesses; to allow digital progress to be measured and tracked over time; and to provide insight into the areas businesses may require extra support to improve their adoption and exploitation of digital technology. In total, 4,002 businesses (excluding single member enterprises) in Scotland took part in the research via a telephone survey. The sample of companies interviewed was similar to FSB member organisations in terms of size, with 82 per cent employing fewer than 10 staff and a further 15 per cent between 10 and 49 employees.

The key findings are summarised below:

- **Connectivity:** 92 per cent of businesses had access to a broadband Internet connection with 19 per cent having Next Generation Access (NGA) defined as broadband providing a download speed greater than 24 Mbit/s.
- **Adoption of technologies:** The most widely adopted digital technologies were having a company website (73 per cent), making use of mobile technologies (64 per cent) and using social media (53 per cent). Only a third of the companies surveyed used data analytics. Use of the cloud and management software was even lower at 25 and 13 per cent respectively.
- **Business benefits:** For companies using digital, different business benefits were identified depending on the specific technology used. These included technologies which:
 - Generated company exposure and increased customer responsiveness (websites and social media)
 - Allowed greater flexibility and remote working (mobile internet and cloud computing)
 - Improved the effectiveness of advertising (data analytics) and the collection of vital customer data (management software).
- **Digital public services:** 60 per cent of the businesses surveyed had used a Scottish public authority website in the last 12 months. The most common activity was to obtain or read information (49 per cent). Of those that had used digital public services, 82 per cent stated that it had saved time and made it easier to find the information needed.
- **Innovation:** Among businesses using digital technologies, 71 per cent stated that the technologies had helped in the development of new products and services, mainly by researching competitor products online (55 per cent had done this).
- **Internationalisation:** Around one-fifth (18 per cent) of businesses sold goods or services or licensed their products outside the UK. A third (33 per cent) of the exporting businesses made 20 per cent or more of their export sales via their website. Sixty-five per cent of exporters agreed that using digital technologies had increased the number of international markets they exported to.
- **Digital Skills:** Only 37 per cent of businesses stated that their employees were equipped with sufficient technology skills to meet the digital technology needs of the business.
- **Importance of digital technology to current operations and future growth:** Overall, 75 per cent of businesses stated that digital technologies were 'essential' or 'important' for the current operations of the business; the same percentage stated that digital technology was 'essential' or 'important' to the future growth or competitiveness of their business.
- **Barriers to adoption:** The main barriers to digital adoption were 'lack of relevance to the business', 'lack of understanding or knowledge on how to use the technology', 'lack of customer demand', 'cost and time' factors.

Based on the results outlined above, the report identified six main types of Scottish small business in terms of digital adoption as summarised in Figure 7.

Figure 7: Digital Adoption and Scottish Small Businesses

| Segment | Digital Economy Maturity Index Score | % of Scottish Companies | Digital Characteristics |
|-----------------------|--------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disconnected Doubters | 0-10 | 13 | <p>Current: Likely not to have an internet connection (34%). If using technologies at all, it tends to be mobile technologies or will have a website.</p> <p>Attitudes: Do not see the need to go online or use digital technologies or see how it could benefit the business.</p> <p>Future: Are unlikely to consider getting an internet connection. Have no intentions of using digital technologies in the future.</p> |
| Basic Browsers | 11-30 | 38 | <p>Current: Tend to have a standard broadband connection. Most have adopted 1 or 2 technologies, most commonly a website or mobile technologies. Some make use of public services online, mainly to look for information.</p> <p>Attitudes: Tend not to consider technologies important to the running of the business. Do not think that technologies are of any relevance to the business.</p> <p>Future: Tend not to have any plans to develop digital skills of staff. However, a majority hope to develop the use of their websites and social media. Some wish to expand their use of mobile technologies, cloud computing and data analytics.</p> |
| Tentative Techies | 31-49 | 30 | <p>Current: Tend to have standard broadband connections. Most have adopted 3 of the key digital technologies. Tend to use public services online to obtain information and return filled in forms online. Tend to make at least some sales online.</p> <p>Attitudes: Consider technologies to be important to the current running of the business. However, they tend not to see the full potential of how technologies can benefit the business.</p> <p>Future: Consider digital technologies to be very important to the future competitiveness of their business. Expect to start or increase the sales made over the internet in the next 2-3 years.</p> |

| | | | |
|-------------------------------|---------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Enthusiastic Explorers</p> | <p>50-66</p> | <p>15</p> | <p>Current: Tend to have adopted at least 4 of the key digital technologies. Likely to have a digital strategy and be exploring new ways of communicating with customers via a range of social media channels. Most have started using digital technologies to aid product development. Will use digital technologies to increase exports.</p> <p>Attitudes: Consider technologies to be very important or essential to the running of the business.</p> <p>Future: Consider digital technologies to be very important /essential to the future competitiveness of the business. Expect to start selling or significantly increase the proportion of sales made online. Hope to develop the use of their existing technologies. Tend to have plans to develop the digital skills of their staff.</p> |
| <p>Digital Champions</p> | <p>67-80</p> | <p>3</p> | <p>Current: Among the most likely to have adopted Next Generation Access NGA (29%). Tend to have a digital strategy. Tend to use all digital technologies and use them extensively. Most are using digital technologies to aid product development and have also increased the number of international markets they have been able to export to.</p> <p>Attitudes: Digital technologies are essential to the running of the business.</p> <p>Future: Tend to have plans in place to develop staff's digital skills and a desire to develop the use of the digital technologies already adopted. Expect to start selling or significantly increase the proportion of sales made online in the next 2-3 years.</p> |
| <p>Digital Pioneers</p> | <p>81-100</p> | <p>0.2</p> | <p><i>Digital Pioneers</i> have adopted NGA and are making extensive use of a range of key digital technologies. They communicate with their customers and other businesses using a number of digital channels, they are likely to offer customers the choice to order products and make payments online.</p> <p>Strategy: They have a strategy for digital, with a clear idea of their current level of digitisation and how to improve.</p> <p>Benefits: successfully exploit digital technologies and reap benefits from this in terms of improving their competitiveness, increasing efficiency and increased growth. They are improving working conditions through offering flexible working, using mobile technologies and cloud computing. They use technologies to increase their responsiveness to customers. They use digital technologies to innovate, develop new products and services and effectively use technology to reach out to international markets.</p> <p>Skills: <i>Digital Pioneers</i> recognise the need to continuously develop the digital skills of their staff and have plans in place to do so.</p> |

Source: Digital Economy Business Survey 2014

The FSB's 2015 UK-wide report [Driving Digital Demand Among Small Businesses](#) revealed that almost all small business owners (99 per cent) rate the internet as being highly important to their business.

This report showed that about two thirds (65 per cent) of firms are using social media, 55 per cent use cloud computing and 42 per cent believe that digital skills are important to growth.

Further, the data from this study reveals that half of all Scottish small businesses (48 per cent) are already offering goods and services online, with an additional 13 per cent planning to do so in the near future. This compares to 51 per cent of firms selling online on a UK-wide basis, with 15 per cent planning to do so in the near future.

Case Study

KCP Ltd

Founded in April 2003 by Karl and Wendy Pring, who have more than 40 years' combined experience in the Civil Engineering and Waste Management sectors, KCP Ltd provides specialist maintenance services delivering efficient, environmental solutions to a broad range of customers across the UK.

Within the sectors in which they operate (mainly industrial, food and drink, farming and landfill), the company is considered an innovator in the strategic use of digital technology to provide a unique service to existing and potential customers. CCTV imagery is uploaded directly onto a password protected part of the company's website. A secure login allows clients to access their CCTV footage and associated written reports from anywhere in the world.

The main benefit from the service, considered unique in the industry, is that it further cements KCP's reputation as a forward thinking and progressive SME, helping to differentiate the company from the competition by providing tailored and innovative customer solutions.

Wendy states that *'poor broadband speeds in our area have been a problem. We have an upload speed of just 0.12MB at our workshop. Uploading these large documents can tie up one of our PCs for most of the day. We often have to do this at home where we have a faster broadband connection. The connectivity problem has not prevented us from developing this digital option for our customers. We do, however, look forward to the day when this is no longer a problem for us. Improving the availability of broadband for small businesses in Scotland should be a priority'*.

The company are also proactive users of social media to engage with customers, mainly through their Twitter and LinkedIn pages.

<http://www.kcpltd.net/>

<https://twitter.com/kcpltdUK>

<https://www.linkedin.com/company/kcp-env-ltd>

Tourism and Hospitality Research

Almost 20 per cent of FSB member businesses operate in the tourism and hospitality sectors. A 2013 study by Scottish Enterprise ('Industry Support for Digital Implementation') provided interesting sector specific data covering the level of digital adoption by Scotland's small tourism and hospitality businesses as summarized below.

- A large majority of Scottish tourism and hospitality businesses (almost 70%) now see e-commerce and the web as an integral part of their everyday operations with 97 per cent of the companies surveyed marketing their business online. The same percentage believes that digital activity will have a positive impact on their future business prospects.

- Nearly 60 per cent of Scottish tourism and hospitality businesses have traded online for more than five years, with the vast majority having done so for at least three years or more.
- The main ways in which digital technology is being used include online booking, providing information about local events and amenities, customer feedback and payment processing.
- Over half of respondents claimed that over half of their bookings are on-line with 35 per cent suggesting that between 75 and 100 per cent of their bookings are on-line.
- Almost all respondents (96%) claimed to have derived clear business benefits from trading on-line. The main benefits included improved customer communication, an increase in business outside Scotland and improved customer satisfaction levels. More than 80 per cent of respondents expect increased online activity to lead to additional international business.
- Online marketing is carried out primarily through the businesses' own websites, and social media platforms with 90 per cent using social media for marketing. The most popular social media channels are Facebook, Twitter, LinkedIn and YouTube.
- Nearly two-thirds (64%) of respondents say their online channels cater for users of mobile devices with a large majority of the remainder having plans to implement mobile commerce in future.
- However, almost 90 per cent admitted they do not use digital to its full potential.
- The three main barriers that were perceived, as risks to continued progress were a lack of time, knowledge and resources.
- When asked what areas of digital would they like to use more effectively, the most popular were social media based marketing (67%), e-marketing (60%), customer relationship management (52%) and mobile commerce (51%).
- Assistance is sought to help better understand the benefits of digital, help complete training and gain access to expert advice.

Based on the above, the authors of the report concluded that *'the survey results portray an industry that is digitally aware, and to a large extent one that is taking advantage of the online tools available, including e-booking, social media marketing and customer relationship management.'* While this may be true, when benchmarked against the level of digital disruption currently taking place in the global tourism and hospitality industry, especially from collaborative economy start-ups such as Airbnb, a less positive conclusion would be reached.

Research Summary and Evaluation

Based on the research summary presented above, the following conclusions can be derived:

- Previous research has focused mainly on the digital channels being used by small businesses. As a consequence, a strong body of knowledge now exists covering the level of small company adoption of different technologies e.g. levels of connectivity, the percentage having websites, using social media and so on. No research has yet been undertaken covering the potential impact of digital disruption on Scotland's small businesses or their level of preparedness in terms of the opportunities and threats presented. Rapid technology change is creating major opportunities and challenges for the Scottish economy and Scotland's small businesses. No research has yet been produced covering the size of this impact or likely timescales.
- The focus on channels and technologies being used has been very useful in establishing a baseline for future benchmarking. More attention now needs to be paid to how these various channels are actually being used and their overall strategic importance to small businesses. The available evidence would suggest that few small businesses have a coordinated and integrated digital strategy, fully aligned with and supportive of core business goals and objectives.

- The lack of a specific focus in previous research on the potential of digital technology and social media for breaking down SME export barriers is a particular source of concern. The active encouragement of more small businesses to sell and expand abroad has been a major policy objective of most recent governments. As a consequence, a wide range of SME export support programmes have been introduced. Unfortunately, these have not yet fully embraced the way in which effective use of digital technology and social media can help to overcome the main barriers to exporting traditionally experienced by SMEs, leading to the more rapid internationalisation of the sector. The available evidence would suggest that few SMEs are leveraging the full potential of emerging technologies to support overseas market growth. It may be time for a rethink of our approach to SME export support.
- In terms of the digital progress being made by Scotland's small businesses, two main conclusions can be derived.
 - First, wide variations exist in the level of digital maturity and enthusiasm across Scotland's small business sector. While a small number of companies claim to be 'Digital Champions' (3%), a full 81 per cent are 'Disconnected Doubters' (13%), 'Basic Browsers' (38%) or 'Tentative Techies' (30%).
 - Second, and the most worrying aspect deriving from previous research in this area, is that the vast majority of SMEs remain ill prepared for the coming digital onslaught. Despite two decades of publicly funded digital support being available, the majority of SMEs in Scotland have made only limited progress in leveraging the full potential of emerging technologies for supporting business growth and competitiveness.

This raises serious public policy issues in terms of the Scottish economy's readiness for the digital era.

Case Study

Lovely Things Online

Lovely Things, a small independent, stylish interiors and gift business, is making good use of the web and social media to both sell online and to increase footfall to their existing gift shop located in Dock Street, Dundee.

Set up by owner and interior designer Lynne Duffus in November 2011, Lovely Things sells a wide range of stylish gifts and modern furniture for the home.

The 'trigger' for the company going digital was the closure of a local car park on the doorstep of the existing shop and its negative impact on footfall. In response, Lovely Things launched an e-commerce site to broaden market opportunities supported by the use of social media for customer engagement. In addition to the benefits derived from selling online, the website and social media activities have resulted in a significant increase in local people coming through the door after they have browsed the site. With 4,000 'likes', the company's Facebook page, in particular, has been essential to increasing local footfall and therefore sales.

Lynne states that *'small Scottish companies should not be put off by huge quotes received from some ecommerce developers. It doesn't have to be that way. I built the site myself with the help of a consultant using existing shop software, at a fraction of the price. More grants and possibly internships would allow us to do so much more online.'*

<http://www.lovelythingsonline.co.uk/>

<https://www.facebook.com/lovelythingsltd>

8. DIGITAL BUSINESS SUPPORT PROGRAMMES

Publicly funded digital support for small businesses has been widely available throughout Scotland for almost two decades, with one of the first programmes being [Net Exporter](#) launched by the then Glasgow Development Agency in December 1997. This provided basic support to Glasgow based small and medium sized enterprises to get connected and develop a website.

Since then a large number and diverse range of other digital support programmes have been launched and made available throughout Scotland. These fall into three main categories:

- Digital education and training through workshops, conferences and events.
- One-to-one support and advice.
- Direct financial assistance.

In terms of the former, numerous workshops and events have been delivered over the last two decades; with topics ranging from 'get connected', 'get broadband', 'website best practice' and SEO to the current focus on social media and e-commerce. The 2013 tourism study, quoted previously, listed no fewer than 188 different types of workshop available. Soon after publication of this report, Scottish Enterprise, with ScotlandIS, launched a major e-commerce initiative which further increased the number of workshops available to SMEs.

Additional workshops and digital training programmes are available from consultants and major digital providers such as e-Consultancy and the Digital Marketing Institute; together with a wide variety of online sources of information.

In addition to the wide availability of digital training workshops, extensive one-to-one support has also been made available to small businesses. Some local authorities have offered funded digital support on a one-to-one basis including Glasgow City Council's website audit consultancy programme and Aberdeenshire Council's specialist IT Consultancy Service. Business Gateway provides early stage free advice from an advisor, including advice on digital issues. Scottish Enterprise has also provided early stage free advice to account managed companies, including specialist advice from an internal Scottish Enterprise IT expert (2 days fully funded consultancy support). Scottish Enterprise have also provided up to 4 days of fully funded consultancy support under their sales and marketing expert help fund. This could include digital marketing support.

A number of innovative one-to-one support programmes have also been launched over the years with the following being worthy of mention: Glasgow City Council Digital Accelerator Programme; Scottish Enterprise e-Commerce Initiative; Byte the Bullet, Highlands and Islands Enterprise; and Glasgow City Council's digital exporter graduate internship programme.

At the time of preparing this report, and following a very recent and detailed review of the digital support landscape in Scotland undertaken by the Scottish Government's Business Excellence Partnership, a number of interesting new initiatives have been or are in the process of being introduced. The three most important of these are the:

- Skills Development Scotland / ScotlandIS Skills Initiative (inc. CodeClan)
- Scottish Enterprise/Business Excellence Partnership - Digital Support Programme
- Digital Tourism Scotland Programme.

Given the broad range and wide availability of the programmes mentioned above, it would be reasonable to conclude that few other areas of business have attracted as much support, over the last two decades, as digital. Despite the extensive range of support available, however, many Scottish businesses have not reached the level of digital maturity required in an era of rapid technology change.

The level of digital support made available to Scottish companies over the last two decades has undoubtedly led to good progress being made in a number of important areas, with the majority of Scottish businesses now online, having a website and using social media. Many claim to be deriving tangible business benefits from their online activities.

On a more pessimistic note, it is a legitimate question to ask whether the level and type of support available, even with recent changes, is fit for purpose in an era characterised by turbulent digital disruption. Enterprise agencies and the Scottish Government may wish to consider if the existing level and type of support available can deliver a significant increase in the number of digitally mature businesses.

The following comments are worth making:

- While some interesting new initiatives are being launched, there remains a heavy emphasis on skills/knowledge development through workshops and events. While skills and knowledge dissemination sessions are necessary, especially in an era of turbulent digital change, it is fair to question whether they result in implementation by attendees.
- This report suggests that there are four key stages to the implementation of an effective digital strategy for small businesses - Building the Foundations; Digital Strategy Development; Implementation; and Performance Measurement. This report suggests structuring business support around these business stages to drive digital maturity.
- It is essential that small businesses develop a clear and coherent digital vision and strategy. There is a danger that too many practical sessions will divert attention away from the real issue namely, how to transform your business to avoid becoming obsolete. There needs to be a strong emphasis on digital strategy not just tactics in future support programmes.
- More needs to be done to help small and micro-businesses overcome digital implementation barriers. Being able to attend practical workshops, awareness raising events, support and advice is all good. However, as mentioned at various stages in this report, small businesses face unique challenges in responding to the opportunities and threats presented by digital disruption. This report would suggest the development of more on demand support for smaller businesses at the point of implementing change.
- Efforts could be made to better integrate those leaving education with digital skills with the small business community. A number of graduate placements schemes already exist. Integrating these programmes with the various digital support initiatives mentioned elsewhere could provide firms with resources to transform digitally.
- Digital Leaders: In Scotland, as in most other countries, we face a severe shortage of digital leaders – people who can combine high level business knowledge, experience and understanding with the ability to develop digital business transformation strategies fully aligned with and supportive of agreed business goals and objectives – with the confidence and personal skills to drive organisational change. Business support advisers in Scotland’s enterprise networks may require additional training (e.g. an accredited course) to develop digital leadership in Scotland’s firms.

Figure 8: Digital Business Transformation – Key Questions for Firms



Source: Amended and adapted from ‘Leading Digital’ (2015)

9. TOWARDS THE FUTURE

The key premise of this report is that we live in an era of disruptive digital change. The digital and social media revolutions threaten traditional ways of doing things across a broad spectrum of industries.

The most recent survey in this area suggests that digital disruption could displace 4 out of 10 industry incumbents by 2020. Yet only a quarter of companies claim to have a proactive approach to digital (IMD, 2015).

The recommendations listed at the front of this document highlight a range of issues that businesses and policymakers should consider when developing an appropriate response to a period of rapid and turbulent change.

This report's view is that if businesses are going to not just survive but also thrive during this period of change, many Scottish businesses will need to make significant changes. The onus is ultimately on business owners and managers to develop digital transformation plans, implement them and monitor their success.

Further, Scotland needs to develop a new type of business leader. We need to embed digital into all business planning. And we fundamentally need to make our firms both more opportunistic and resilient to the threats and opportunities which digital change will present.

This period of rapid change will also challenge governments across the world.

Ultimately, this report asks Scottish policymakers to examine whether their systems are capable of adapting to a rapidly changing business ecosystem. Inflexible systems might see innovation discouraged, or new players being given an unfair advantage.

For both the private and public sectors, this report highlights that digital adaptation will not be a one off. Rather we need to develop the capacity to adapt digitally into everything we do.

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APPENDIX 1

Is Your Industry About To Be Disrupted?

Admin/Secretarial and Virtual PAs

Need a PA but can't afford to employ one full time then do it virtually -

www.essentialpa.co.uk/

www.virtualpa.co.uk/

www.timeetc.co.uk/be-a-virtual-assistant/

Agriculture

Developed by Monsanto, 'FieldScripts' is a Big Data and Predictive Analytics system that tells farmers with great precision which seeds to plant and how to cultivate them in each patch of land. Farmers who have tried the system say it has pushed up yields by roughly 5 per cent over two years, a feat no other single intervention could match. Based on a database of 50 billion soil observations and 10 trillion weather-simulation points, the system could be the biggest change to traditional agriculture since genetically modified crops.

Bookkeeping and Tax Accountancy

The bookkeeping and accountancy industry is not one that springs immediately to mind when taking about digital disruption. However, new market entrants such as [Free Agent](#) could disrupt the existing relationships between professional advisers and small businesses. Their cloud based service allows small businesses to manage their accounts themselves without the need for a book keeper or accountant. In 2013, the Edinburgh based online accounting software firm was named as the fastest growing technology firm in Scotland and eighth overall in the UK in Deloitte's Fast 50 listing - with over 34,000 customers worldwide spread across 80 countries.

Building Services/Tradesmen

In the same way that review sites such as TripAdvisor have fundamentally changed the relationship between hospitality suppliers and customers, the same is happening in a range of other industries, including building services, with the last few years witnessing a proliferation of customer review sites such as www.ratedpeople.com, www.findatrade.com, www.trustatrader.com, www.checkatrade.com, www.trustmark.com, www.myhammer.com and others. These will fundamentally change the small tradesman/customer relationship.

Business Consultancy

Could online consulting marketplaces such as www.hourlynerd.com disrupt the traditional business consultancy industry? Founded in 2013, as part of a Harvard Business School course, over 4,500 companies have now used the site including giants such as GE, Microsoft, American Apparel and Others. The site, which has raised \$12.6m in three rounds of funding, features more than 10,000 consultants all with MBA degrees.

Business Finance

Crowdfunding platforms, such as [Kickstarter](#), [GoFundMe](#) and several others, are opening up new avenues for small business funding helping to overcome many of the barriers experienced by SMEs in using traditional banking channels.

Construction

3D printing is also threatening to disrupt the construction industry. A Chinese company WinSun recently produced 10 basic houses in one day, at an average cost of less than £3,000, using a giant 3D printer and "ink" made from recycled waste. Although at an embryonic stage, the technology could fundamentally disrupted the construction industry, disintermediating the role of small tradesmen and contractors. Large multinational construction companies are investing huge amounts of money into this area with the aim of having the capability of printing an entire house within three years. The Internet of Things (smart, connected houses) and Enterprise Collaborative Software (for managing partner working in complex construction projects) will also disrupt the industry.

Doctors/Healthcare

In a few years, the idea of receiving medical treatment exclusively at a doctor's office or hospital may seem quaint. Wearable technologies, implanted devices, and smartphone apps allow continuous monitoring and create a ubiquitous, 24/7, digitized picture of your health that can be accessed and analyzed in real-time, anywhere.

Driving/Transport Industry / Distribution and Delivery

Drone technology could revolutionise the way products are delivered. Amazon, in particular, is working hard to make that a reality. Drones may also replace pilots in many specialized tasks including the film, traffic monitoring, agriculture, police and military sectors.

Driverless cars could, over a period of time, replace many types of driving jobs including bus, lorry and taxi drivers.

Estate Agents

An estate agent, Thomas Morris in Cambridgeshire, has recently used the live video streaming app Periscope, working from a tablet, to conduct home viewings. Allowing viewers to ask questions during the live broadcasting will deliver a more open and authentic customer experience compare to the more traditional brochureware approach. As a consequence, it could help improve the profession's image.

Fast Food

In fast food retailing, many jobs have already been replaced by computerised kiosks which take orders without human intervention. Online services such as [Just Eat](#) are having an equally important impact on the take-away market.

Further and Higher Education

A Special Edition of the Economist (2014) entitled 'Terminal Degrees' contained the following hard hitting statement: *'If universities were to face the same conditions over the next 10 to 20 years that daily newspapers faced over the last 10 to 20, then revenues would fall by more than half, employment in the industry would drop by nearly 30 per cent and more than 700 institutions would shut their doors.'* (Economist, 2014).

Digital disruption caused by the rapid growth of MOOCs (Massively Open Online Courses) is one of the main reasons underlying this prediction.

Hospitality

The hospitality industry is facing huge digital disruption arising from the growth of Online Travel Agents (OTAs), customer review sites such as TripAdvisor, the rise of mobile, the growing importance of social media in consumer decision-making and the market entry of disruptive start-ups such as Airbnb.

Language Translation

Online translation services, such as Google Translate, are becoming increasingly sophisticated and accurate. While they may never replace the need for professional translation services, especially for contracts and other legal documents, there is no doubt that the demand for human translators will decline significantly.

Manufacturing

3D printing, additive layer manufacturing to use its formal title, could revolutionise a wide range of manufacturing sectors. With equipment prices falling dramatically, 3D printers could fundamentally change economies of scale for small manufactures allowing small businesses to take on larger manufacturing-on-demand work.

Music

The music industry has already been revolutionised by the rapid growth of digital downloads and online streaming services. Apple's recent announcement that is launching a music streaming service will complete the transformation of the industry and may even disrupt the early disruptors such as Spotify.

Recruitment

The disruptive impact on the traditional job recruitment market of sites such as LinkedIn, Indeed, Monster and others.

Retail

Disruptive technologies are threatening to shake the retail industry to its very foundation. The shift of consumer behavior from traditional to digital channels combined with *showrooming*, the practice of using a smartphone to find cheaper prices online compared to in-store, has resulted in many retailers being caught in a vicious cycle of declining margins.

Taxis

The incredible rise of Uber demonstrates that digital disruption is less about technology and more about the customer value proposition. According to some observers, the service is disrupting an inefficient taxi market built on monopolistic practices and politics by allowing customers to get better value for less effort. Digital disruption is about market rationalisation. In February 2015, Uber announced that it was launching in Glasgow and Edinburgh leading one expert observer to predict that existing taxi operators could lose up to 40 per cent of their business. On 25th June 2015, taxi drivers in Paris blocked access to the airport and erected barricades on major roads in protest at Uber.

Tourism

Market disruptor Airbnb, the home-sharing company, is now using Big Data and Machine Learning to guide the pricing strategy of its 800,000 hosts. 'Price Tips', a predictive analytics service combining billions of data points, provides a constantly updated guide informing hosts how likely they are to get a booking at different price levels. When hosts price themselves within 5 per cent of the suggested price, they are nearly four times more likely to get a booking. Quite a departure from the traditional approach to pricing for small hospitality suppliers.

TV, Cable, Satellite

Streaming services such as NetFlix and Hulu are threatening to disrupt the traditional television distribution market. An increasing number of consumers are opting to stream online rather than subscribe to satellite or cable services, especially millennials.

Source: FSB

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