



**QUEEN'S
UNIVERSITY
BELFAST**

ERC 
Enterprise Research Centre



Understanding micro- businesses in Northern Ireland

ERC Research Report

November 2018

Understanding micro-businesses in Northern Ireland

Nola Hewitt-Dundas

Queen's Management School and the Enterprise Research Centre
Nm.hewitt- Dundas@qub.ac.uk

Stephen Roper

Warwick Business School and the Enterprise Research Centre
Stephen.roper@wbs.ac.uk

The Enterprise Research Centre is an independent research centre which focusses on SME growth and productivity. ERC is a partnership between Warwick Business School, Aston Business School, Queen's University School of Management, Leeds University Business School and University College Cork. The Centre is funded by the Economic and Social Research Council (ESRC); Department for Business, Energy & Industrial Strategy (BEIS); Innovate UK, the British Business Bank and the Intellectual Property Office. The support of the funders is acknowledged. The views expressed in this report are those of the authors and do not necessarily represent those of the funders.

ACKNOWLEDGEMENT

The authors are pleased to acknowledge financial support from the Economic and Social Research Council for the Micro-business Britain Survey on which this report is based. Katherine Hathaway, Jane Bourke (UCC and ERC) and Mark Hart (Aston and ERC) made important contributions to the success of the survey fieldwork.

ABOUT THIS REPORT

This report represents a collaboration between Queen's University Management School and the UK Enterprise Research Centre. The production of the report was funded by the Department for the Economy Northern Ireland and Invest Northern Ireland. Views in the report are those of the authors alone and do not necessarily reflect those of the sponsoring organisations.

EXECUTIVE SUMMARY

Drawing on new survey data this report provides a profile of micro-businesses with 1-9 employees in Northern Ireland in comparison to UK regional, Irish and US benchmarks. The report provides the first evidence on levels of business ambition, resilience and digital adoption for this group of firms. The Micro-business Britain Survey covered 6,200 firms in the UK - 495 in Northern Ireland – 1,500 companies in Ireland and 2,000 in the US.

There are currently around 28,500 micro-businesses employing around 111,000 people (19.7 per cent of the workforce) in Northern Ireland. In 2017 these firms generated sales of £10.4bn, 17.2 per cent of that by all NI firms.

The survey paints a detailed picture of the micro-business sector in Northern Ireland and suggests that:

- Most micro-businesses are very small, having average employment of 3.3. Most are well established having traded for an average of 29 years and over this period have provided the basic income for the founding family. This household-business link is crucial to understanding these firms.
- 78 per cent of micro-businesses in NI are family-owned and in the vast majority of cases the founder is still involved in the business. Around half of all micro-businesses in NI are home-based. Family-ownership is more important in Northern Ireland than elsewhere.
- Four-fifths of NI micro-businesses said their key priority was to 'keep their business similar to how it operates now'. Only around a fifth of business leaders aim to build a 'national or international business'. For most of these firms stability dominates growth in terms of ambition.
- 90 per cent of micro-businesses in NI traded profitably over the year prior to the survey with around 1:3 micro-businesses reporting international sales. 46 per cent of firms reported using sources of external finance.

Ambition

77 per cent of NI micro-business owners see it as 'important' or 'very important' to 'keep their business similar to how it operates now', and a more ambitious 18 per cent of all respondents aim to build a 'national or international business'. Other more operational aspirations – employee engagement, HR practices, social benefits - fall

between these two extremes with 38 per cent of all micro-business owners in Northern Ireland aiming 'to grow their business rapidly and profitably with a view to exit'. Overall, levels of business ambition are broadly similar in Northern Ireland and other parts of the UK.

Individuals' personal ambitions suggest a marked emphasis on the 'freedom' and 'flexibility' which comes from being your own boss. Aside from 'freedom' and 'flexibility' micro-business owners in Northern Ireland place a high priority on 'building a business to hand on to my family' with 54 per cent of business owners in the region regarding this as important.

Finance and exporting

39 per cent of NI firms were taking advantage of funding from external lenders, the highest proportion of firms in any UK region, although well below the 47 per cent of firms in Ireland which reported using external finance from banks or other lenders. A further 6 per cent of firms in NI were taking advantage of funding from friends or family.

On average, Micro businesses in Northern Ireland derive 10% of their sales from export markets. This is marginally higher than the UK average of 9% and slightly below that of similar firms in Ireland.

Innovation and digital adoption

27 per cent of NI micro-businesses reported introducing a new or significantly improved product or service over the three years prior to the survey compared to 32.5 per cent in the UK as a whole. This level of innovative activity in NI was the lowest of any UK region and significantly lower than that in micro-businesses in Ireland (40 per cent) and the US (36 per cent). In terms of organisational innovation, the gap between the proportion of innovating firms in NI and the UK was greater – 13 per cent in Northern Ireland compared to 23 per cent in the UK as a whole.

There is little difference in the adoption of CAD and E-commerce between firms in NI, Ireland and GB. For CRM, Web-based Accounting and Cloud Computing adoption rates in NI lag those in other areas. In terms of newer technologies – AI and machine learning – adoption levels in NI are broadly in line with those elsewhere although the number of firms reporting adopting both technologies remains small.

Resilience and barriers to growth

The barrier to success most frequently cited by Northern Ireland micro-businesses was the extent of competition in the market (48 per cent). Between a third and a half of Northern Ireland micro-businesses stated that competition, the extent of regulations or red tape and late payment by customers were significant barriers.

The overall profile of resilience strategies adopted by micro-businesses in NI, GB and Ireland is relatively similar. Around a quarter of firms deal with challenges when they arise, a quarter adopt risk mitigating strategies, and around 1: 10 have a formal risk register.

Future research directions

Three main themes emerge from our analysis of micro-businesses in Northern Ireland and comparator areas and could provide the focus for further research:

1. How are business ambition and performance related to the characteristics of owner-managers? – how do the life-stage and characteristics of micro-business owners shape their level of ambition? How do individuals' characteristics influence attitudes to using external finance or undertaking risky innovation? The Micro-business Britain survey contains detailed information on the characteristics and households of owner-managers and this data could be analysed alongside that for each firm.

2. What drives growth and productivity in micro-businesses? – how do innovation, skills, finance and ambition come together to drive growth in micro-businesses? Which of these is most important and how do these factors work together? There has been little previous analysis of the drivers of growth in micro-businesses. This analysis would adopt a multi-variate modelling approach to the Micro-business Britain data allowing the strength of each influence to be identified.

3. How does the local business eco-system influence micro-business performance? – some performance gaps have been identified between micro-businesses in NI and elsewhere. Are these due to structural factors (firm size, sector, ownership) or do they reflect aspects of the business eco-system in NI and elsewhere? This analysis would exploit the international and multi-regional nature of the Micro-business Britain data along with other local eco-system characteristics.

CONTENTS

ACKNOWLEDGEMENT	3
ABOUT THIS REPORT	3
EXECUTIVE SUMMARY.....	4
1. INTRODUCTION.....	8
2. BUSINESS AND PERSONAL AMBITION.....	14
3. USING EXTERNAL FINANCE.....	18
4. EXPORTING AND INNOVATION	22
5. ADOPTION	28
6. BUSINESS CHALLENGES AND RESILIENCE	31
7. FUTURE RESEARCH DIRECTIONS.....	34

1. INTRODUCTION

Micro-businesses – defined as having between one and nine employees – play a significant role in all economies both as an employer and source of future growth. In Northern Ireland in 2017 there were 28,500 micro-businesses employing around 111,000 people (19.7 per cent of the workforce) and generating sales of £10.4bn, 17.2 per cent of that by all NI firms. More generally, across the UK there were 1.11m micro-businesses in 2017, employing around 4.09m people (17.6 per cent of the workforce) and generating £552bn in sales, 14.7 per cent of that by all UK firms¹. Micro-businesses include local plumbers, builders, hairdressers and mechanics. They are also our architects, designers, artisans, lawyers and accountants.

Most micro-businesses start small and stay small. For other entrepreneurs their micro-business is the launchpad for scale-up. Or, at least, the test-bed for a new business idea or innovation. The Micro-business Britain Survey (Annex 1) on which this report is based was designed to shed new light on this diverse segment of the SME population in the UK. This is important because micro-businesses are often excluded from other national and international surveys which might help us understand what drives their growth and productivity. For example, we know very little about the nature of innovation activity in micro-firms as firms with less than 10 employees are excluded from the flagship UK Innovation Survey. Similarly, micro-businesses are also excluded from the OECD Digital Adoption survey so – until now – we have known very little about the adoption of new technologies by micro-firms.

The Micro-business Britain project therefore addresses important gaps in our understanding relating to innovation, technology adoption and productivity. It also focuses attention on the individuals – or more correctly the households – which are closely linked to many micro-businesses. What shapes their level of ambition for growth or productivity improvement? How does this influence their investment or engagement with external finance providers? To enrich this insight the UK survey – which covered 6,200 firms in all parts of the UK and 495 firms in Northern Ireland – was accompanied by smaller benchmark surveys of micro-businesses in Ireland (1,500) and the US (2,000).

¹ Business Population Estimates for the UK and regions 2017, BEIS Table A, page 3. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/663235/bpe_2017_statistical_release.pdf.

On average micro-businesses in Northern Ireland have average employment of 3.3 and have been operating for 28.7 years (Table 1.1). Around half (48.8 per cent) of all micro-businesses in NI are home-based, a slightly smaller proportion than that in other UK regions. 78 per cent of micro-businesses are family-owned and in four out of five the founder is still involved in the business. Typically, however the founder is not the only member of the firms' leadership team which in most regions has 1.9-2.1 members on average (Table 1.1).

Table 1.1: Profiling micro-businesses across UK regions and comparator areas

	Employment (average)	Age of business (years)	% home based	% family owned	% founder still involved	Size of leadership team (no)
East of England	3.5	22.8	51.0	71.9	81.8	1.9
East Midlands	3.4	23.0	54.9	70.3	79.1	2.1
London	3.2	20.5	56.8	58.1	85.6	2.1
North East	3.5	21.4	52.4	66.4	82.1	1.8
North West	3.4	20.6	54.1	73.0	82.9	2.0
South East	3.4	22.8	54.7	69.6	82.6	2.0
South West	3.3	23.8	52.8	74.3	79.2	1.9
West Midlands	3.4	22.6	57.1	69.7	84.2	2.0
Yorks. & Humber	3.2	22.4	54.7	69.5	78.7	1.9
Scotland	3.2	25.4	51.0	74.0	81.0	1.9
Wales	3.3	26.5	50.1	76.2	82.4	1.9
Northern Ireland	3.3	28.7	48.8	78.1	80.2	1.9
UK	3.3	22.9	53.9	70.2	81.9	2.0
Ireland	3.1	24.7	47.3	76.6	84.9	1.8
USA	3.5	19.2	41.3	71.0	95.2	1.9

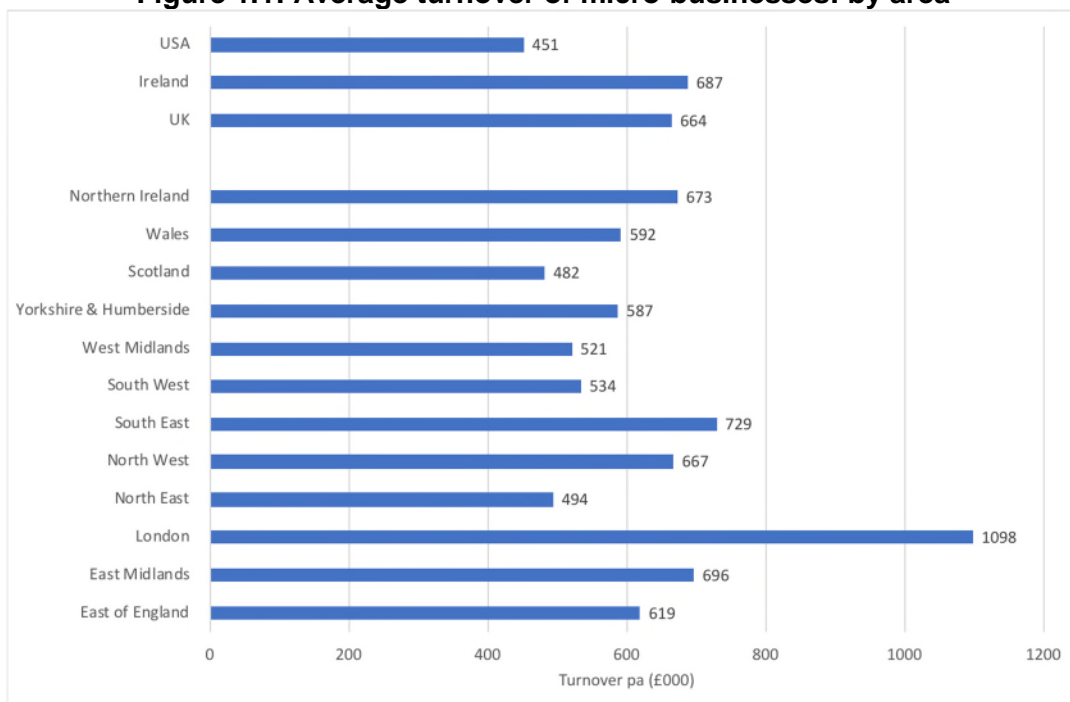
Source: Micro-business Britain Survey, observations are weighted to provide representative results for each area.

Perhaps the most noticeable contrast between micro-businesses in Northern Ireland and those elsewhere in the UK is in terms of family ownership. In NI, 78 per cent of micro-businesses are family-owned compared to 70 per cent in the UK as a whole and only 58 per cent in London. The profile of micro-businesses in Northern Ireland is relatively similar to that in Ireland although compared to the US the level of family-ownership is higher and the continued involvement of the founder lower. In the US, 95

per cent of micro-businesses still involve the founder (NI, 80 per cent).

Despite broadly similar average levels of employment (Table 1.1), significant differences in average turnover been micro-businesses in different areas are observed. (Figure 1.1). Firms in Northern Ireland reported average turnover of £673k, close to the UK average of £670k and significantly above that in some other regions (Scotland, the North East). Micro-businesses in Ireland had slightly higher average turnover at current exchange rates of £687k.

Figure 1.1: Average turnover of micro-businesses: by area



Average sales growth in the year prior to the survey (2017-18) also varied significantly by area and region. Again, micro-businesses in NI reported growth of 2.6 per cent, close to the UK average of 2.8 per cent but below the 3.2 per cent achieved in Ireland (Figure 1.2). Around 90 per cent of micro-businesses in NI traded profitably over this period, the highest proportion of any UK region, and a notably higher proportion than in either Ireland or the US (Figure 1.3). It is possible that this is linked to the higher average age and higher share of family owned micro-businesses in Northern Ireland compared to other areas.

Figure 1.2: Average turnover growth: by area

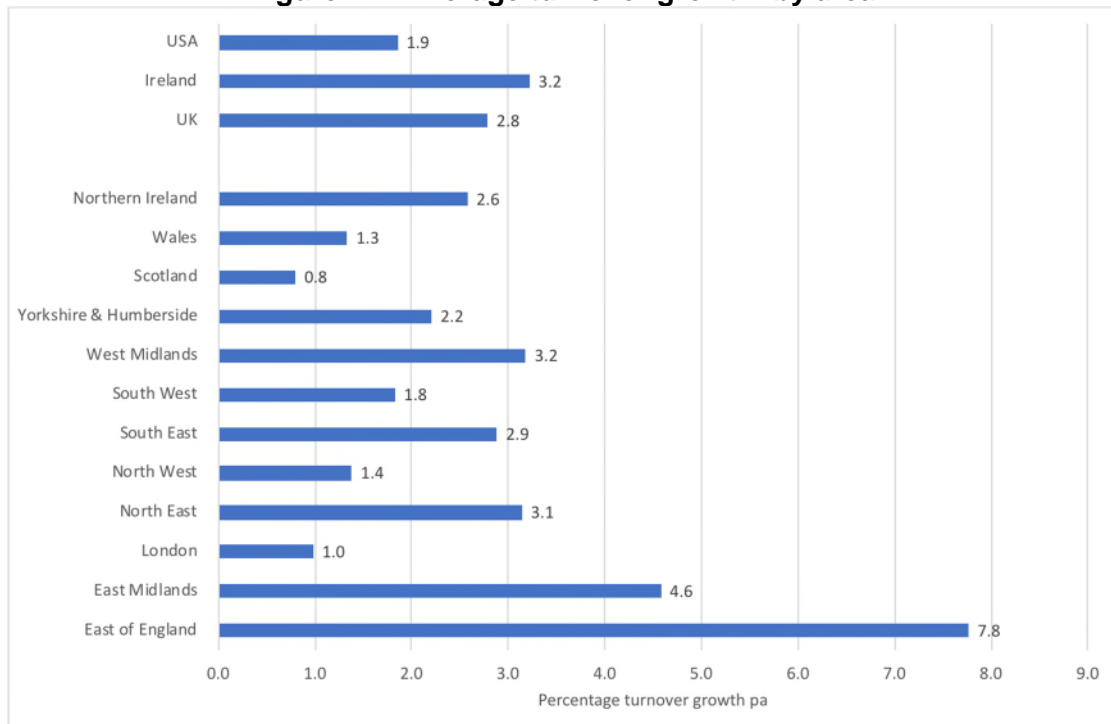
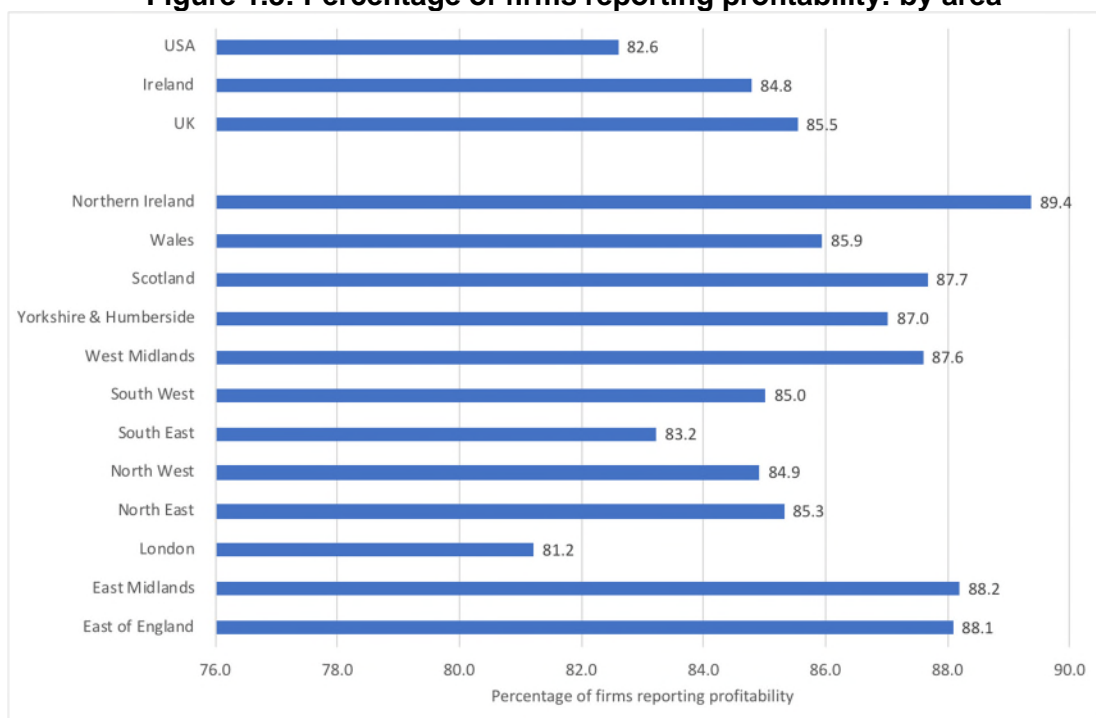
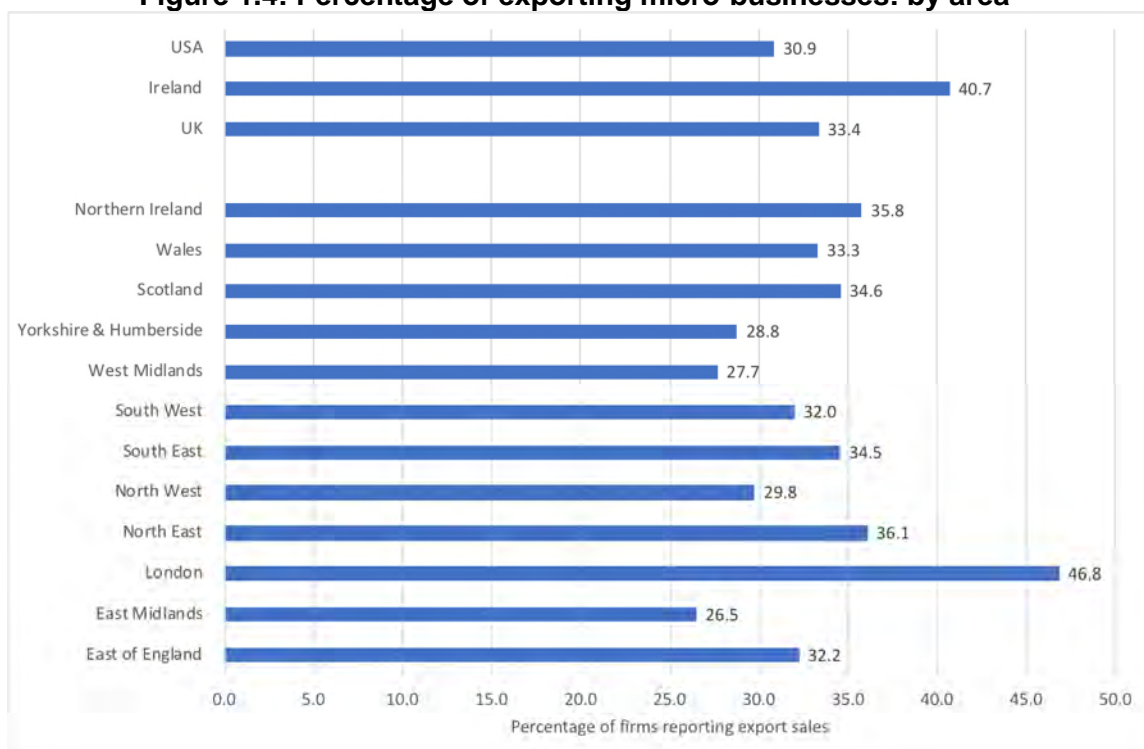


Figure 1.3: Percentage of firms reporting profitability: by area



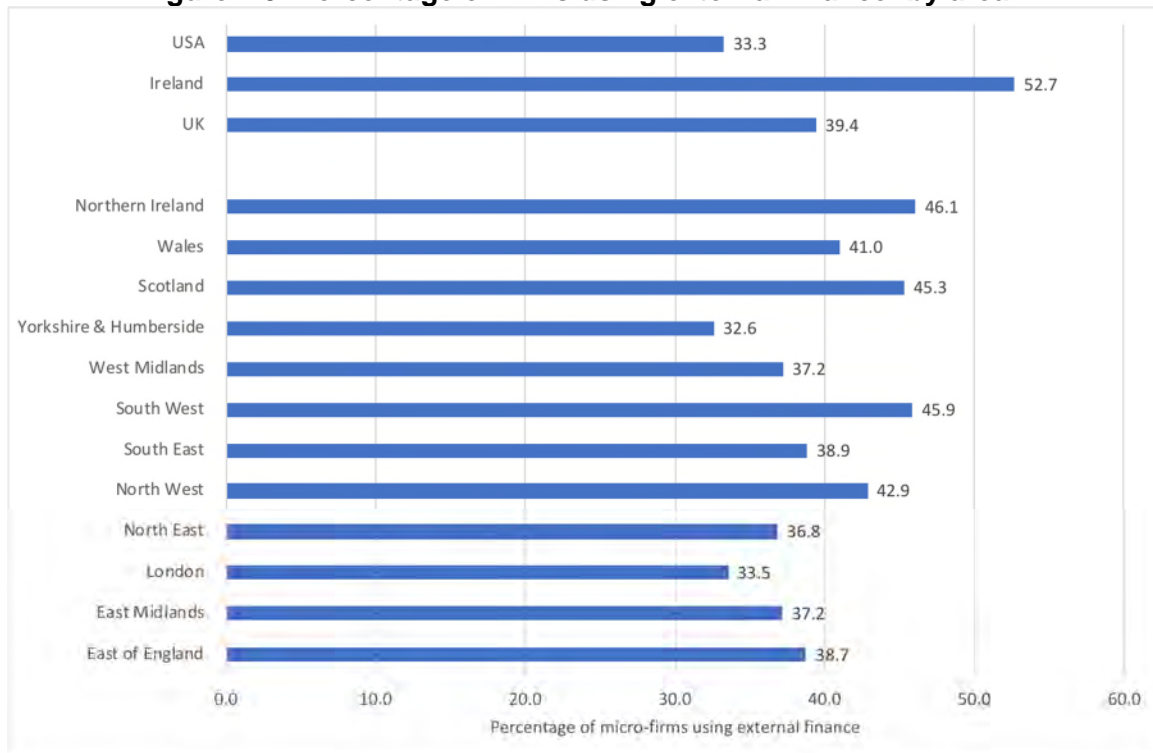
In the Micro-business survey firms were also asked whether they had ‘sales to internationally-based customers either B2B or direct to consumers’. Around 1:3 micro-businesses in Northern Ireland reported trading internationally, a slightly higher proportion than that in the UK as a whole but lower than the 40.7 per cent of Irish micro-businesses reporting international sales (Figure 1.4). Northern Ireland firms were more likely to report international sales than those in most other UK regions with the exceptions of London and the North East. In part this may reflect the unique position of Northern Ireland as the only part of the UK with a land border to another EU country.

Figure 1.4: Percentage of exporting micro-businesses: by area



One factor often linked to growth in smaller firms is their use of external finance from banks or other lenders. 46 per cent of Northern Ireland micro-businesses reported using external finance in the year prior to the survey, the highest percentage in any UK region, and a significantly higher level than the 39 per cent across the UK as a whole (Figure 1.5). Micro-businesses in Ireland, however, (53 per cent) were even more likely to be drawing on external finance.

Figure 1.5: Percentage of firms using external finance: by area



Comparing some of these key indicators by sizeband and ownership suggests the commonality of some firm characteristics (exporting, use of external finance) and also some contrasts in growth performance. Turnover and employment growth particularly appear stronger in slightly larger (5-9 employee), non-family owned firms in Northern Ireland (Table 1.2).

Table 1.2: Breakdown of key indicators for NI micro-businesses

	Exporting (% firms)	Turnover growth (avg)	Employment growth (avg)	Use of external finance (%)
A. By sizeband				
1-4	34.6	2.0	0.0	46.2
5-9	40.1	4.6	12.3	45.7
B. By ownership				
Non-family	39.7	4.4	6.8	45.0
Family-owned	34.6	2.1	1.8	46.5
All firms	35.7	2.6	2.9	46.2

2. BUSINESS AND PERSONAL AMBITION

Previous research has linked owner-managers' growth ambitions to the subsequent growth and performance of the firm². In the Micro-business Britain Survey we use a new set of ambition questions which reflect the dual structure adopted in some business development programmes. In the Dutch Growth Accelerator programme, for example, attendees are asked to reflect on their own individual aspirations for the future and separately on their aspirations for the future of their business³. Given the nature of micro-businesses these two sets of aspirations are often strongly interlinked but for many owner-managers their aspirations for the business will be a means towards a more personal ambition.

Looking first at respondents' aspirations for their micro-business we consider the proportion of respondents ranking each aspiration as 'important' or 'very important'. This suggests a sharp distinction between 77 per cent of NI respondents' who aim to 'keep their business similar to how it operates now', and a more ambitious 18 per cent of all respondents who aim to build a 'national or international business' (Figure 2.1). Other more operational aspirations – employee engagement, HR practices, social benefits - fall between these two extremes with 38 per cent of all micro-business owners in Northern Ireland aiming 'to grow their business rapidly and profitably with a view to exit' (Figure 2.1).

Overall, the profiles of business ambition are broadly similar in Northern Ireland and other areas. Micro-business owner-managers in Northern Ireland are, however, less likely than those in other areas to aim to 'build a national or international business'. A notable contrast between the US and the UK and Ireland is also the proportion of firms which aim to 'grow rapidly with a view to exit': 58 per cent in the US compared to 30-40 per cent across the UK and Ireland (Figure 2.1).

² Hermans, J., Vanderstraeten, J., Van Witteloostuijn, A., Dejardin, M., Ramdani, D., & Stam, E. (2015). Ambitious entrepreneurship: a review of growth aspirations, intentions and expectations. In *Entrepreneurial growth: individual, firm and region* (Vol. 17, pp. 127-160).

³ OECD. (2012). *An International Benchmark analysis of public programmes for high growth firms*. Paris.

Turning to individuals' personal ambitions suggest a rather different set of priorities, with a marked emphasis on 'freedom' and 'flexibility' (Figure 2.2). This is consistent with much of the research literature on self-employment and entrepreneurship which stresses the financial as well as the non-financial benefits of being your own boss. The financial aspect of running a business proves important for some however with 37 per cent of all business owners in Northern Ireland regarding it as important 'to build great wealth or a very high income' (US 63 per cent). Aside from 'freedom' and 'flexibility' micro-business owners in Northern Ireland place a high priority on 'building a business to hand on to my family' with 54 per cent of business owners in the region regarding this as important (Figure 3.2). This undoubtedly reflects the relatively high level of family ownership of micro-businesses in Northern Ireland noted earlier (Table 1.1).

Figure 2.1: Indicators of business ambition

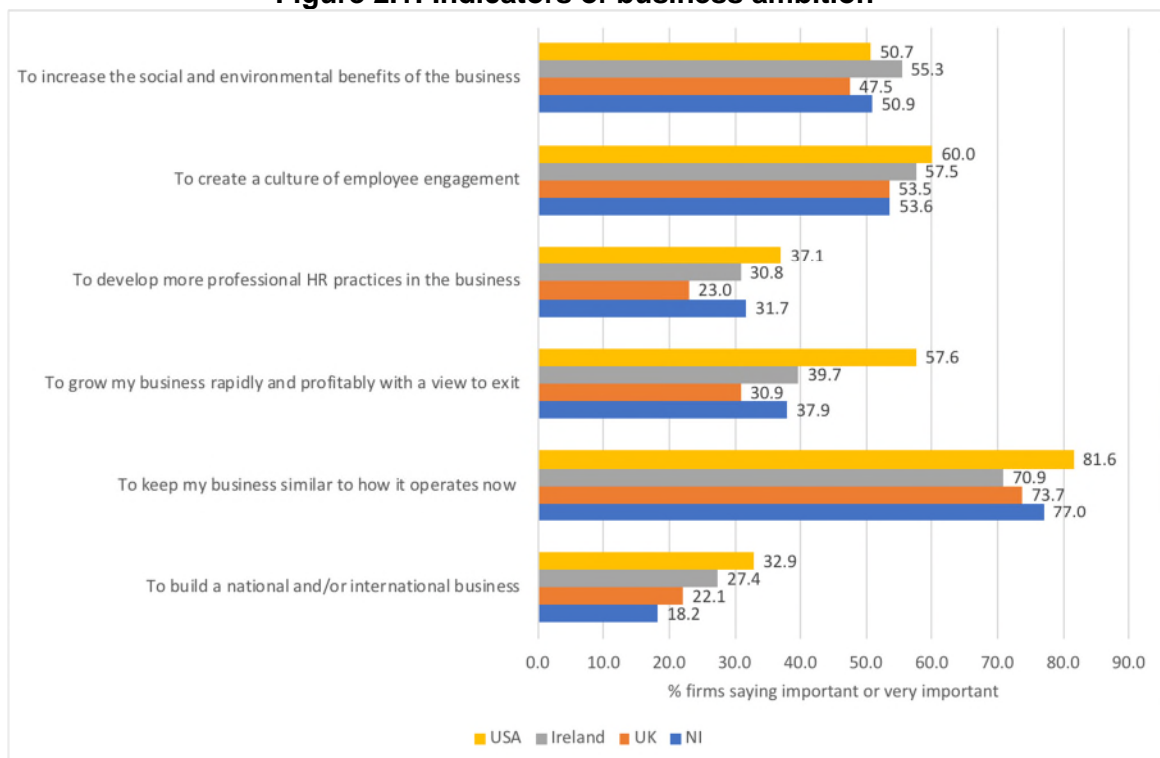
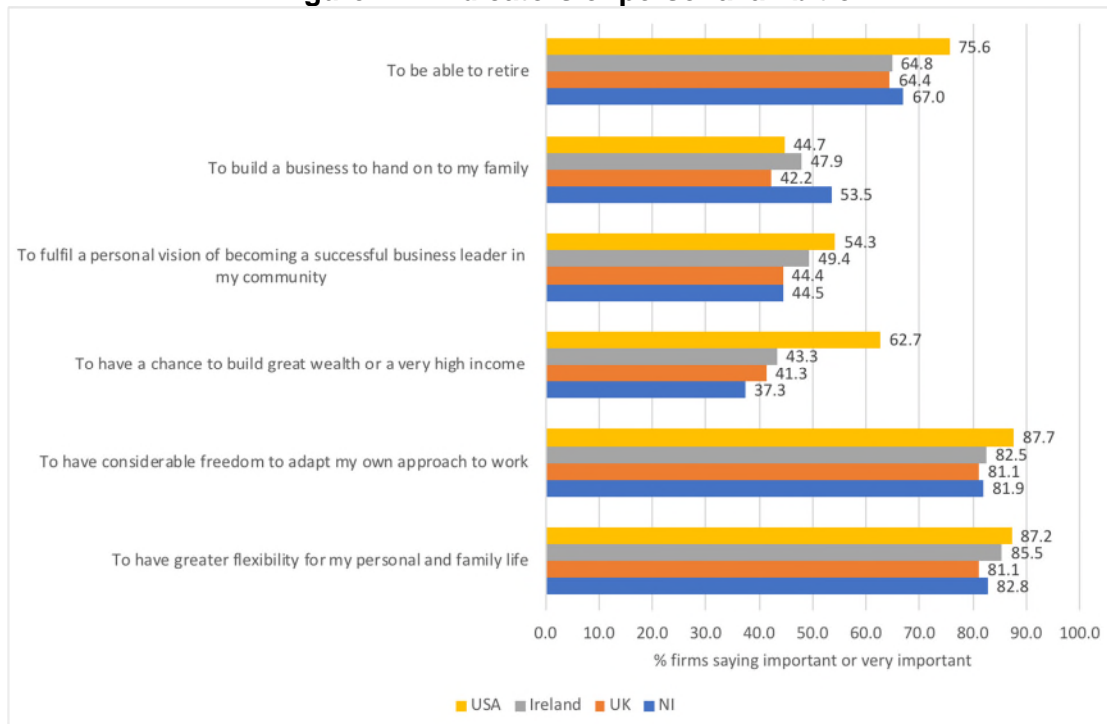


Figure 2.2: Indicators of personal ambition



Focussing in more detail on two of the key business ambition metrics, Figures 2.3 and 2.4 compare levels of business ambition in Northern Ireland to other UK regions. The proportion of micro-business owners in Northern Ireland seeking to grow a national or international business – 18 per cent – is around 4 percentage points below that in the UK as a whole. The UK average is however influenced significantly by particularly high levels of ambition in London and ambition levels in Northern Ireland are broadly in line with the UK outside London. There is a more significant ambition gap between firms in Northern Ireland, Ireland and the US, however (Figure 2.3). Conversely, Northern Ireland has one of the highest proportions of owner-managers seeing ‘keeping the business as it is now’ as their most important priority (Figure 2.4).

Figure 2.3: Desire to grow a national or international business: by area

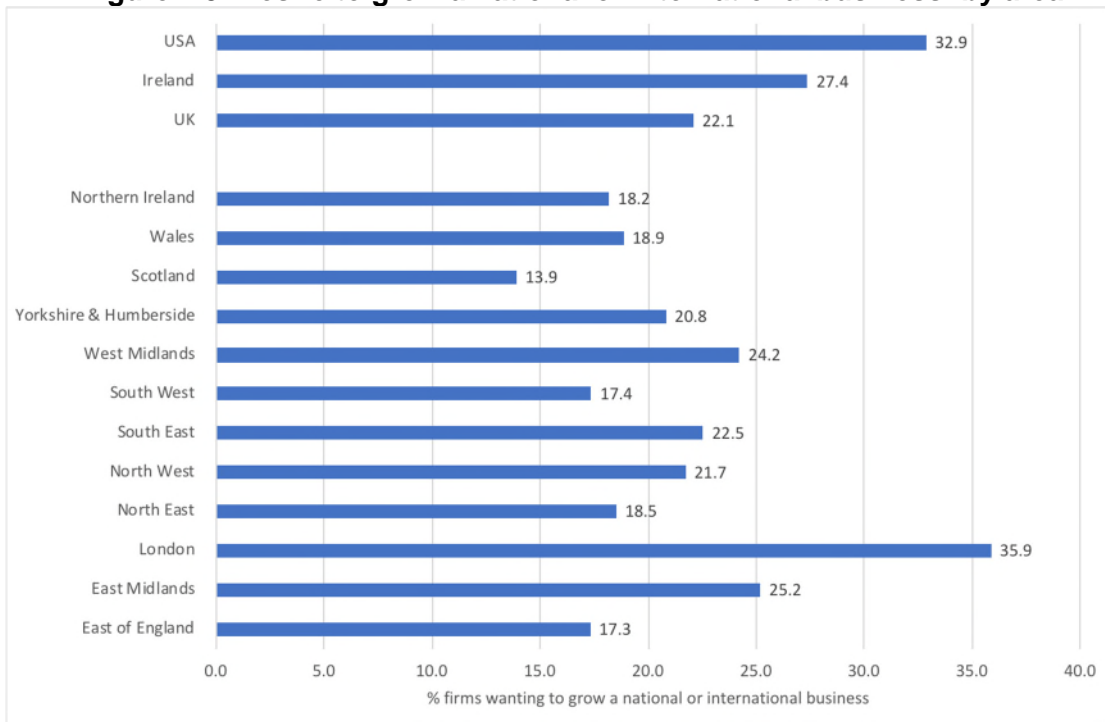
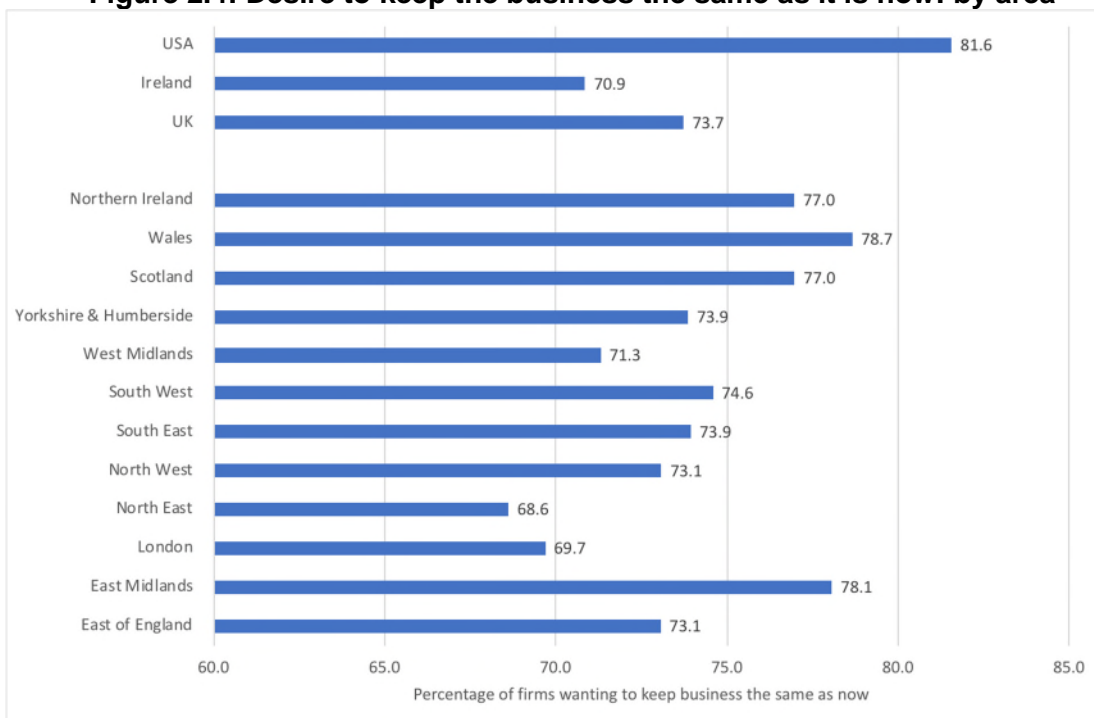


Figure 2.4: Desire to keep the business the same as it is now: by area



Looking more closely at micro-businesses in Northern Ireland, the broad profile of business ambition is consistent across both firm sizebands and ownership (Table 2.1). For each group the most common motivation remains (for around three-quarters of firms) maintaining the status quo, with around 1:5 businesses seeking growth to national or international status. Perhaps unsurprisingly larger firms and family-owned businesses are marginally more likely to emphasise the importance of more professional HR practices, employee engagement and environmental factors (Table 2.1).

Table 2.1: Business ambition in Northern Ireland: by sizeband and ownership

	No. of employees		Ownership	
	1-4	5-9	Family	Non-family
To build a national and/or international business	17.5	20.7	16.8	18.4
To keep my business similar to how it operates now	77.8	73.9	79.1	76.4
To grow my business rapidly and profitably with a view to exit	37.8	38.2	38.8	37.8
To develop more professional HR practices in the business	29.3	40.0	35.2	30.7
To create a culture of employee engagement	50.6	64.2	57.3	52.5
To increase the social and environmental benefits of the business	49.1	57.3	53.5	50.2

3. USING EXTERNAL FINANCE

External finance often enables investment and growth in smaller companies but owner-managers are often reluctant to engage with finance providers fearing debt and, where equity is involved, dilution of ownership. Indeed, evidence from the SME Finance Monitor suggests that since 2011 the proportion of SMEs seeking external finance has declined monotonically year-on-year. Discouraged borrowing may be one factor here alongside the legacy of poor banking practice and relationships during the recession period⁴.

⁴ Kon, Y., & Storey, D. J. (2003). A Theory of Discouraged Borrowers, *Small Business Economics*, 21, 37-49. Fraser, S (2014) 'Back to borrowing? Perspectives on the 'arc of discouragement', ERC White Paper, No. 8.

The Micro-business Britain survey suggests that around 7 per cent of UK firms were using external finance provided by friends or family (Figure 3.1), while another 31 per cent were using bank lending or other external finance (Figure 3.2). Finance from family, friends was marginally less common in Northern Ireland 6 per cent, while 39 per cent of NI firms were taking advantage of funding from external lenders. This was the highest proportion of firms in any UK region although well below the 47 per cent of firms in Ireland which reported using external finance from banks or other lenders (Figure 3.2). Firms in the US reported particularly high levels of funding from friends and family (Figure 3.1).

Figure 3.1: Using external finance from friends, family etc.

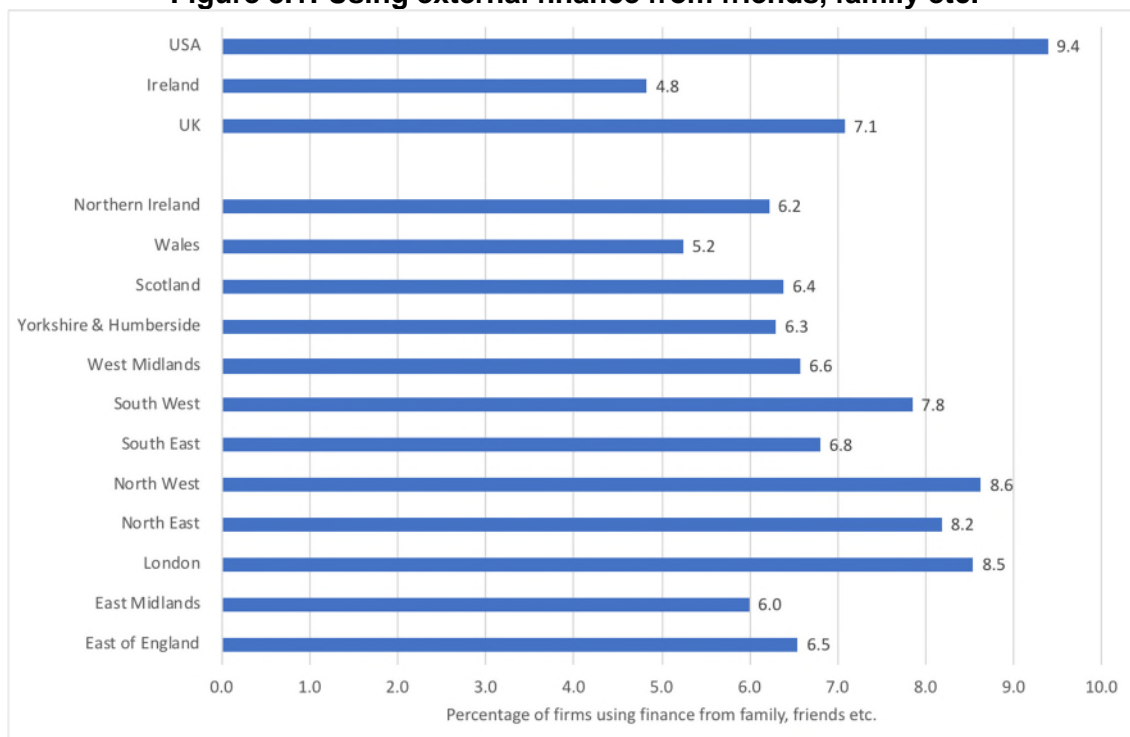
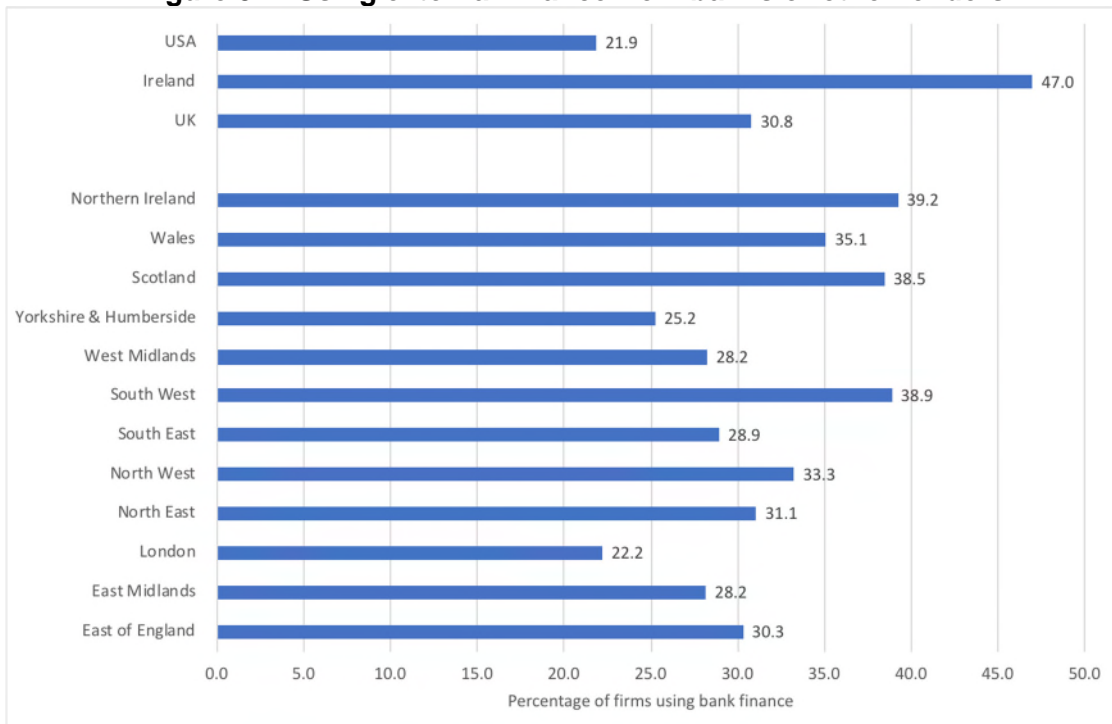
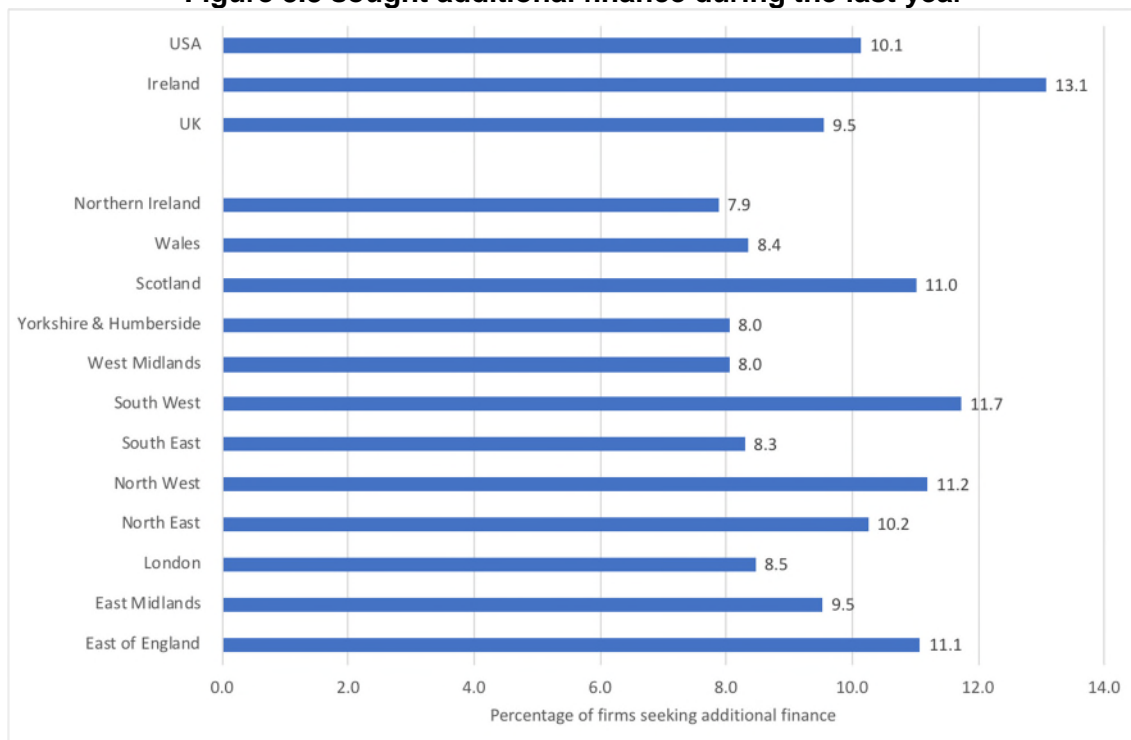


Figure 3.2: Using external finance from banks or other lenders



While Northern Ireland has the highest proportion of micro-businesses currently accessing bank finance the proportion of firms in the region seeking additional finance has been the lowest of any UK region over the last year (Figure 3.3). At 8 per cent the proportion of NI micro-businesses seeking additional finance was also below that in Ireland (13 per cent) and the US (10 per cent).

Figure 3.3 sought additional finance during the last year



Larger micro-businesses, and those in the production sector and non-family ownership were more likely to be using family and friends finance (Table 3.1). In terms of bank borrowing, the key difference was between the production and services sectors used by 48 per cent of production companies and 35 per cent of services businesses. Family-owned, production, and larger businesses were more likely to have sought additional external finance during 2017.

Table 3.1: External finance in Northern Ireland: by size, sector and ownership

	Using finance from family and friends (% firms)	Borrowing from banks or other providers (% firms)	Sought additional finance during the year (% firms)
A: By sizeband			
1-4	5.9	39.3	7.6
5-9	7.3	39.0	8.7
B: By industry			
Production	7.8	47.5	8.3
Services	5.3	34.7	7.7
C. By ownership			
Non family	7.8	39.0	6.2
Family	5.8	39.4	8.4

4. EXPORTING AND INNOVATION

Innovation and exporting both have the capacity to enable firms to increase productivity and growth. Innovation, many enable firms to achieve a position of leadership through technology or best practice in the markets they serve. Exporting may compliment innovation, allowing firms to spread the cost of developing new products or services across larger sales volumes⁵. Firms in Northern Ireland have particular export opportunities due to the land border with Ireland. Existing relationships may however be challenged by Brexit depending on the nature of the final settlement. Whatever the nature of the final Brexit settlement however, innovation will remain key to firms' continuing competitiveness.

Previously studies of innovation in micro-businesses in Northern Ireland have stressed the importance of innovation for growth and the importance for innovation itself of collaboration. Micro-businesses may have limited internal technical and managerial resources and collaboration with universities, other businesses or consultants may allow access to otherwise unavailable resources⁶.

We begin this section with a focus on exporting before moving on to consider levels of innovative activity in Northern Ireland micro-businesses.

On average, micro-businesses in Northern Ireland derive 10% of their sales from export markets (Figure 4.1). This is marginally higher than UK average of 9% and significantly greater than some other regions such as Scotland, the West Midlands, and the North West, often seen as strong industrial regions within the UK. Having said this, levels of export sales among micro-businesses in Northern Ireland lag marginally behind those of similar firms in Ireland. Export sales in Northern Ireland are higher among slightly larger firms, among firms in the production industries and in family-owned firms (Table 4.1).

⁵ Love, J. H., & Roper, S. (2015). SME innovation, exporting and growth: A review of existing evidence. *International Small Business Journal*, 33(1), 28-48. doi:10.1177/0266242614550190

⁶ Department of Enterprise, (2014). *Innovation survey of micro-businesses in Northern Ireland*. Belfast. Roper, S., & Hewitt-Dundas, N. (2017). Investigating a neglected part of Schumpeter's creative army: what drives new-to-the-market innovation in micro-enterprises? *Small Business Economics*, 49(3), 559-577. doi:10.1007/s11187-017-9844-z

Figure 4.1: Percentage of sales derived from international markets

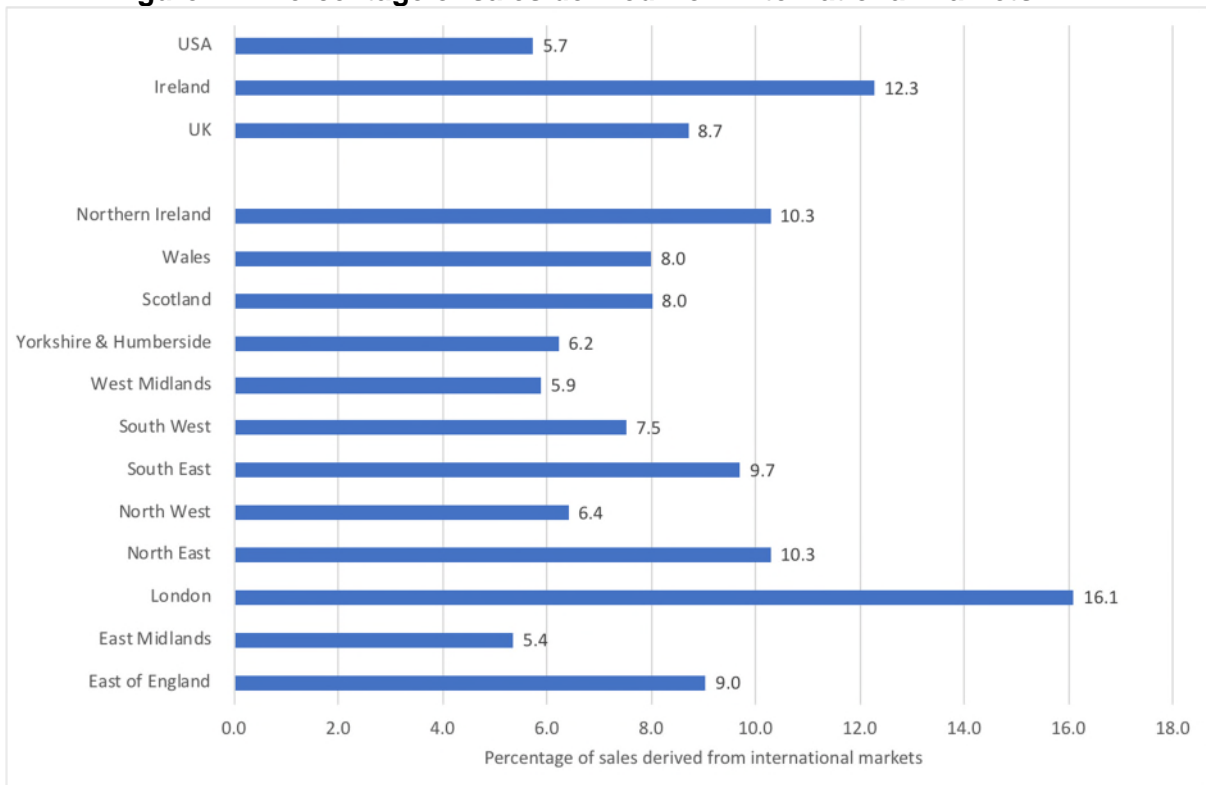


Table 4.1: Percentage of sales derived from exporting: Northern Ireland

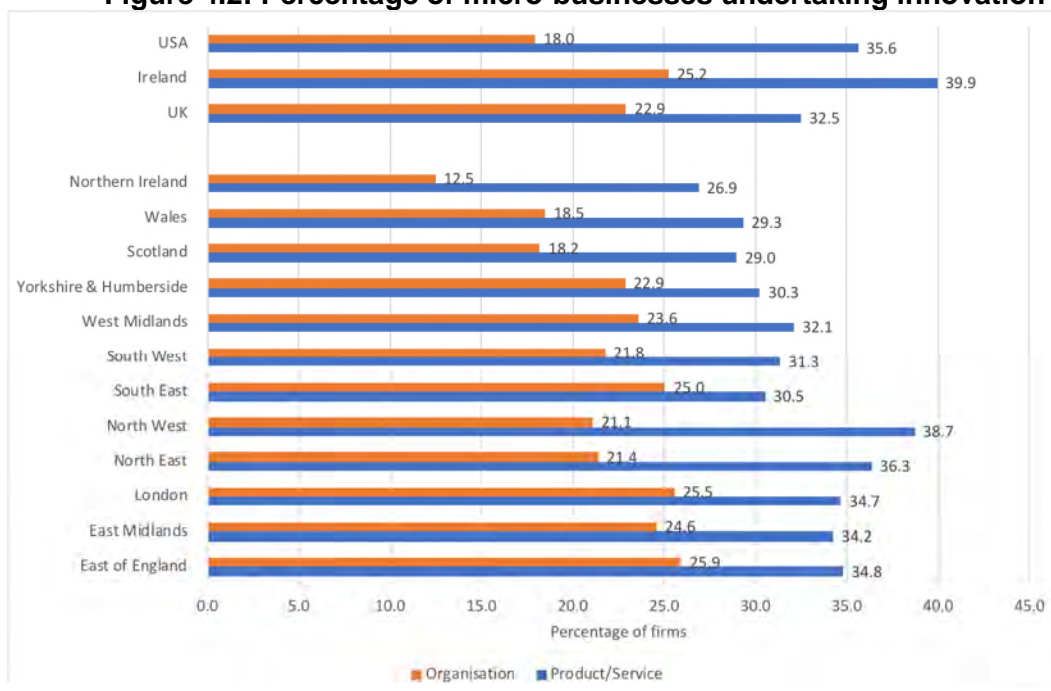
	Percentage of sales derived from exports %
A. By sizeband	
1-4 employees	9.9
5-9 employees	11.8
B. By sector	
Production	11.4
Services	9.6
C. By ownership	
Non-family	9.6
Family	10.5

Turning to innovation we consider two indicators relating to whether micro-businesses introduced new or improved products or services over the three years prior to the survey or new business models or forms of organisation (Figure 4.2). On both metrics micro-businesses in Northern Ireland lag those in other areas although the gap is

somewhat larger in terms of organisational innovation. 27 per cent of NI micro-businesses reported introducing a new or significantly improved product or service over the three years prior to the survey compared to 32.5 per cent in the UK as a whole. This level of innovative activity in NI was the lowest of any UK region and significantly lower than that in micro-businesses in Ireland (40 per cent) and the US (36 per cent). In terms of organisational innovation, the gap between the proportion of innovating firms in NI and the UK was greater – 13 per cent in Northern Ireland compared to 23 per cent in the UK as a whole. Again, levels of organisational innovation in NI micro-businesses lagged those in all UK regions and the international benchmarks. In Ireland the proportion of firms undertaking organisational innovation was around twice that in Northern Ireland (Figure 4.2).

The relatively low level of innovation activity in Northern Ireland micro-businesses is reflective of other recent evidence. The UK Innovation Survey 2017 suggests that the proportion of all firms in the Northern Ireland economy which were ‘innovation active’ was the lowest of any UK region⁷.

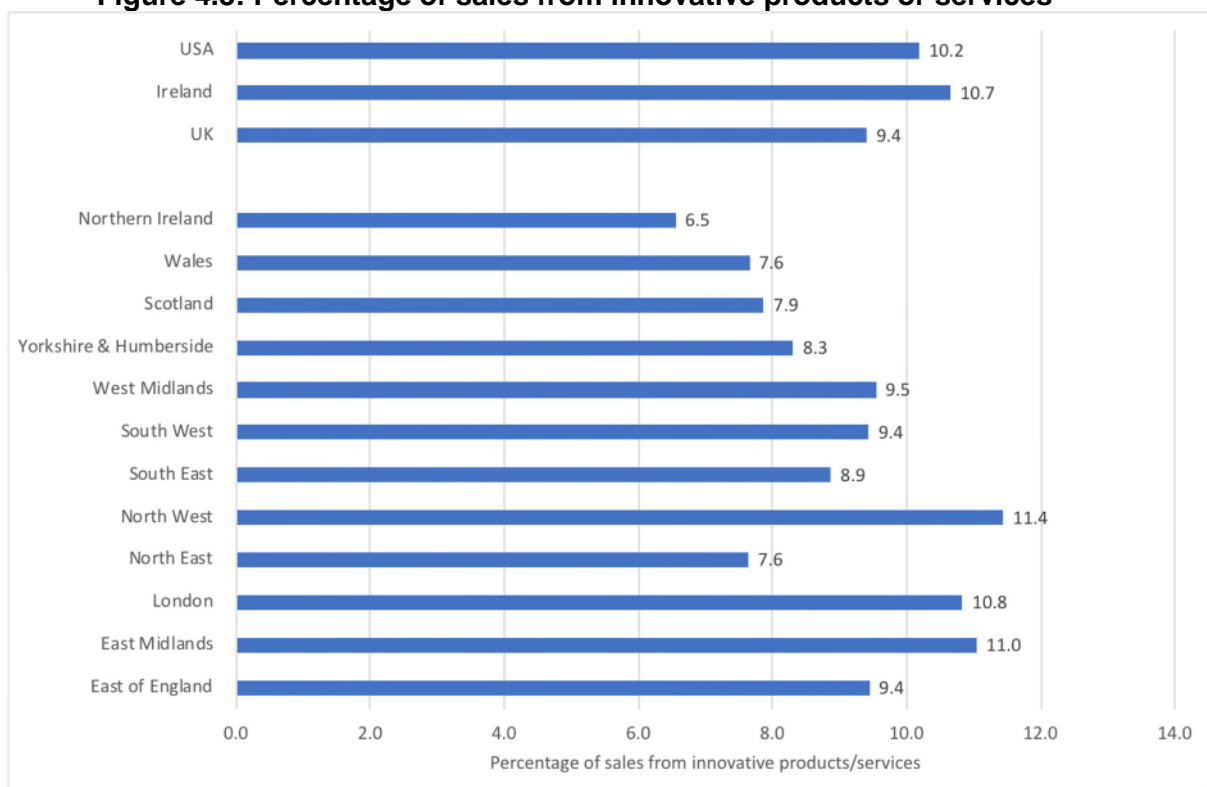
Figure 4.2: Percentage of micro-businesses undertaking innovation



⁷ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700472/ukis_2017_headlines_final.pdf

The relatively low proportion of micro-businesses in Northern Ireland which are innovating is also reflected in another key indicator of innovation – the proportion of sales derived from innovative products or services (Figure 4.3). This measure provides an indication of the extent to which firms are able to derive sales from new products or services – a measure of innovation success. In the year prior to the survey NI firms derived around 7 per cent of their sales from innovative products/services compared to 9 per cent for the UK as a whole and 11 per cent in Ireland. Northern Ireland again lagged all other UK regions on this metric.

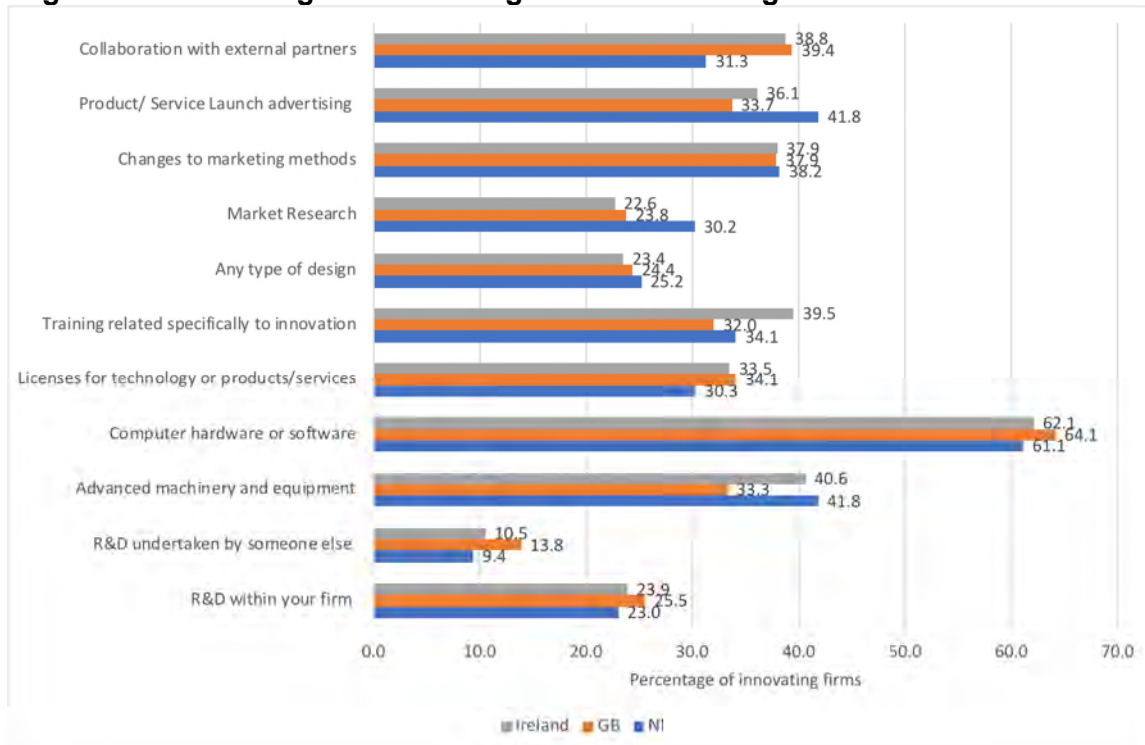
Figure 4.3: Percentage of sales from innovative products or services



Where micro-businesses are undertaking product/service or organisational innovation what is driving this change? Figure 4.4 reports the proportion of innovating firms investing in a range of activities which might support or drive innovation. R&D, for example, may generate new technology which may enable innovation, while design investment may lead to more efficient or attractive products or services. Patterns of investment prove relatively similar among innovating micro-businesses in Northern Ireland, GB and Ireland. Around two-thirds of firms in each area were investing in new computer equipment or software as part of their innovation activity with around 40 per cent investing in marketing activity, launch activity or advanced machinery. Notably

only around a quarter of innovating firms were undertaking in-house R&D suggesting that the majority of innovating firms were undertaking innovation without any in-house R&D capability. Indeed, a larger proportion of firms reported licensing in new product or service technologies. This emphasises the separation of technological development and innovation in micro-businesses and the importance of innovation without R&D⁸.

Figure 4.4: Percentage of innovating firms undertaking investment in innovation



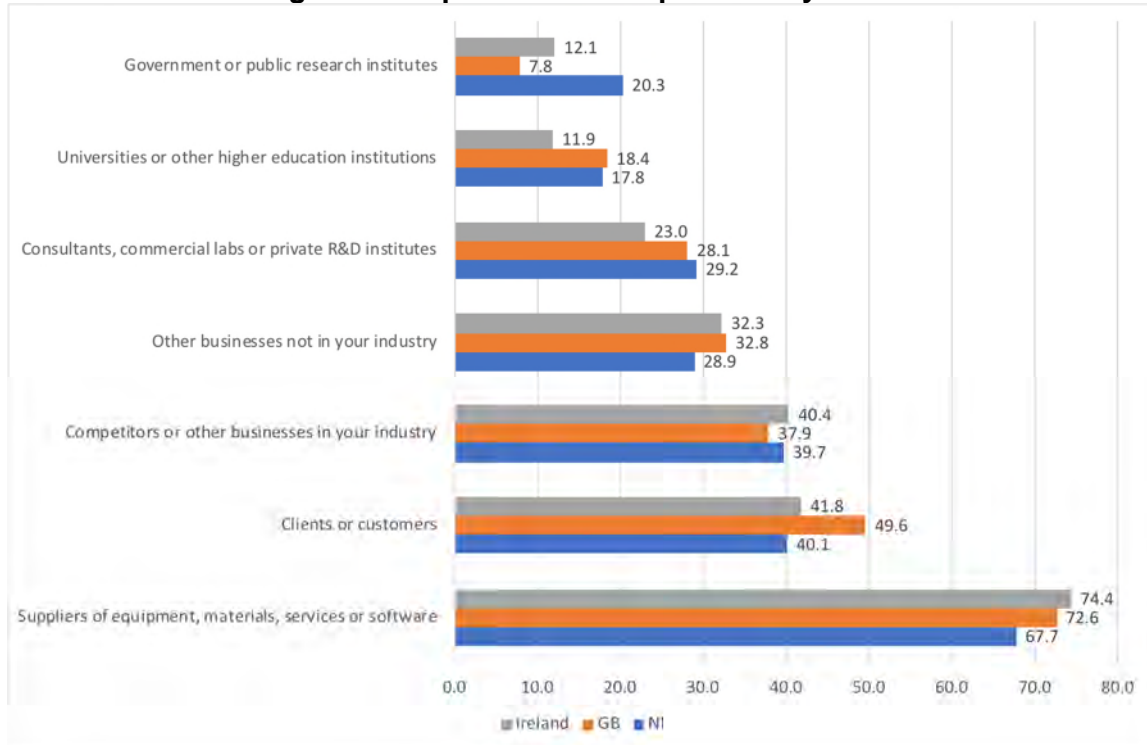
As indicated earlier, collaboration with partners can play an important role in enabling innovation in micro-businesses. In Northern Ireland levels of collaboration lag those in the UK and Ireland with 31 per cent of innovating firms working with partners as part of their innovative activity. The profile of this collaboration is summarised in Figure 4.5⁹. Around two-thirds of innovators in each area which were collaborating with suppliers, with the next most common partner type being customers. Smaller proportions of firms were collaborating for innovation with universities, consultants etc. While the profile of collaboration partners was broadly similar in Northern Ireland, GB and Ireland it is

⁸ Jose-Luis Hervas-Oliver, Francisca Sempere-Ripoll, Carles Boronat-Moll & Ronald Rojas (2015) Technological innovation without R&D: unfolding the extra gains of management innovations on technological performance, *Technology Analysis & Strategic Management*, 27:1, 19-38, DOI: [10.1080/09537325.2014.944147](https://doi.org/10.1080/09537325.2014.944147)

⁹ Here, however some care is necessary in interpretation as the sub-group of innovating micro-businesses which are collaborating in Northern Ireland is relatively small.

notable that the proportion of micro-businesses collaborating with universities in NI (and the UK) was markedly greater than that in Ireland (Figure 4.5).

Figure 4.5: Open innovation partners by area



Significant contrasts are also evident between levels of innovative activity by firm sizebands, sectors and – to a lesser extent – ownership (Table 4.1). Reflecting the findings of other firm-level innovation surveys larger micro-businesses were more likely to be undertaking both product/service and organisational innovation. Services firms were also noticeably more likely to make new service innovations and organisational changes. Non-family firms were also more likely to be product/service and organisational innovators although here the distinction was less marked.

Table 4.1: Innovation by type of firm: Northern Ireland

	Product or service innovators (% firms)	Organisational innovators (% firms)
A. By firm sizeband		
1-4 employees	24.4	10.5
5-9 employees	35.6	19.4
B. By broad sector		
Production	17.1	7.3
Services	32.3	15.3
C. By ownership		
Non-family	28.0	15.8
Family	26.4	11.5

5. ADOPTION

The adoption or diffusion of information technology has been one of the key drivers of productivity across the advanced economies over the last three decades. The advent of Industry 4.0 presents businesses with new challenges relating to digitisation in both selling and operations¹⁰. International evidence on adoption is available for firms with 10 or more employees from OECD survey statistics. Micro-businesses are excluded from the OECD analysis however and the Micro-business Britain survey provides the first robust benchmarks for digital adoption in firms with less than 10 employees.

The Micro-business Britain survey focuses on seven digital technologies which vary in their maturity. They are:

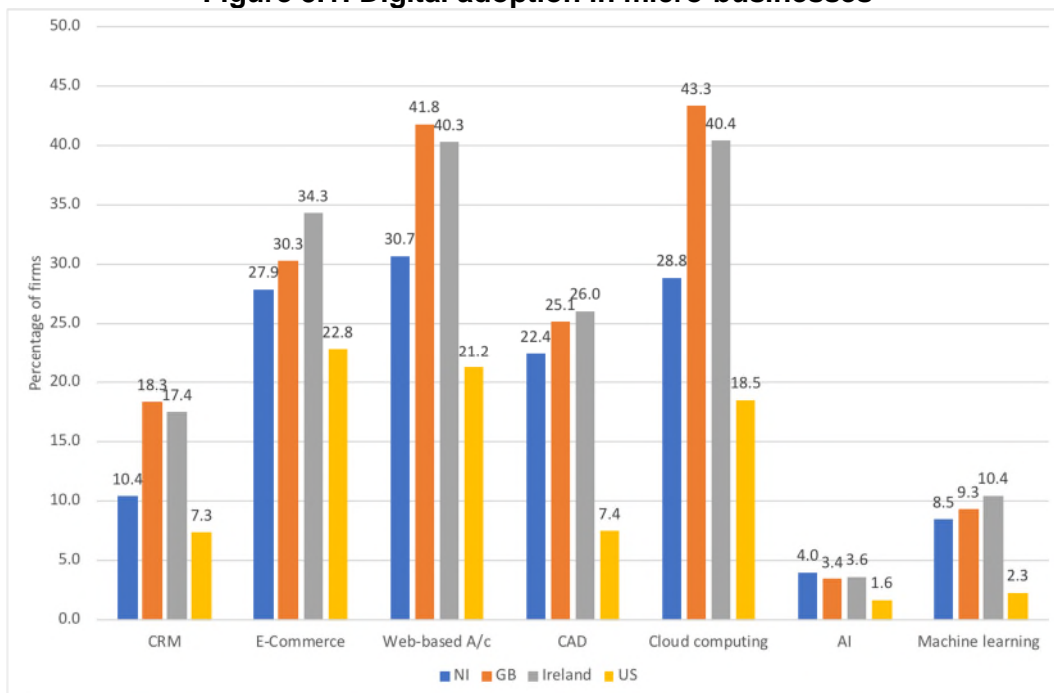
- **Customer relationship management (CRM) systems** use data analysis about customers' history to improve business relationships with customers, specifically focusing on customer retention.
- **E-commerce** involves selling goods and/or services through the company website.
- **Web-based accounting software** is an accounting information system which can be accessed with any device which is internet enabled.

¹⁰ OECD. (2017). *The next production revolution: implications for government and business*, Paris.

- **Computer-aided design software** aids in the creation, modification, analysis, or optimization of a design.
- **Cloud computing** involves the practice of using a network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer.
- **Artificial intelligence** is the simulation of human intelligence processes – learning, reasoning and self-correction - by machines, especially computer systems.
- **Machine learning technologies** use statistical techniques to give computers the ability to "learn" (i.e., progressively improve performance on a specific task) with data, without being explicitly programmed.

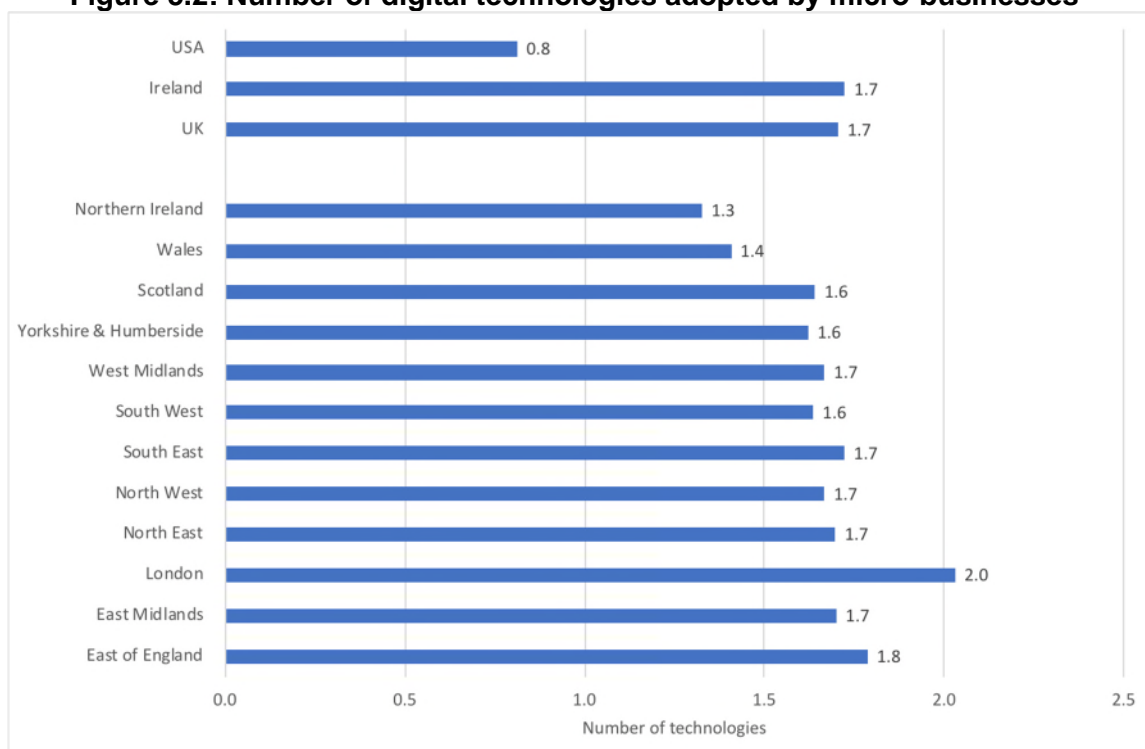
Figure 5.1 profiles the proportion of micro-businesses using each digital technology in Northern Ireland and compactor areas. While there is little difference in the adoption of CAD and E-commerce between firms in NI, Ireland and GB for the other more common digital technologies (ie. CRM, Web-based Accounting and Cloud Computing) adoption rates in NI lag those in other areas. However, in each case adoption rates are higher than among micro-businesses in the US which lag European firms on each of the technologies. In terms of the newer technologies – AI and machine learning – adoption levels in NI are broadly in line with those elsewhere although the number of firms reporting adopting both technologies remains small.

Figure 5.1: Digital adoption in micro-businesses



Another way of comparing digital adoption across areas is to count the number of the seven digital technologies which each firm uses. This provides an overall indicator of the extent to which firms in each area are taking on board digital technology (Figure 5.2). Across countries this measure clearly reflects the adoption profile illustrated in Figure 5.1, with similar levels of adoption in the UK and Ireland and lower adoption rates in the US. Comparing UK regions suggests that micro-businesses in Northern Ireland and Wales lag somewhat behind other UK regions in terms of adoption. Firms in London have the highest take-up of digital technologies.

Figure 5.2: Number of digital technologies adopted by micro-businesses



Exploring the extent of digital adoption in Northern Ireland in more detail suggests adoption is perhaps unsurprisingly higher among slightly larger firms and among those in services. There is no difference in digital adoption rates between family and non-family firms.

Table 5.1: Number of digital technologies adopted by type of firm: NI

	Number of digital technologies (average per firm)
A. By firm size	
1-4 employees	1.2
5-9 employees	1.8
B. By broad sector	
Production	1.2
Services	1.4
C. By ownership	
Non-family	1.3
Family	1.3

6. BUSINESS CHALLENGES AND RESILIENCE

This section deals with two further themes covered in the Micro-business Britain Survey: challenges and business resilience. Businesses, of course, face varying challenges as they seek markets and customers, but what are the key challenges for micro-businesses specifically? Are these different in NI to other areas? Here, we consider a number of challenges and identify the proportions of micro-businesses regarding each challenge as either ‘important’ or ‘very important’.

Resilience has been defined as the ‘maintenance of positive adjustment under challenging conditions’ or bouncing back from adversity or as the ability to ‘...anticipate, avoid, and adjust to shocks in the environment’. Being resilient typically requires some preparation for potential challenges and here we explore to what extent microbusinesses in Northern Ireland have resilience strategies in place¹¹.

In the survey micro-businesses identified a range of barriers that they perceived as potentially constraining business success (Figure 6.1). These included issues around the availability and quality of resources (finance, skills, suitable business premises), the competitive environment (intensity of competition in their market, late payment by

¹¹ Ortiz-De-Mandojana, N., & Bansal, P. (2016). The long-term benefits of organizational resilience through sustainable business practices. *Strategic Management Journal*, 37(8), 1615.

customers) to wider market and distributional issues (transportation or logistics difficulties) and regulatory factors (extent of 'red-tape').

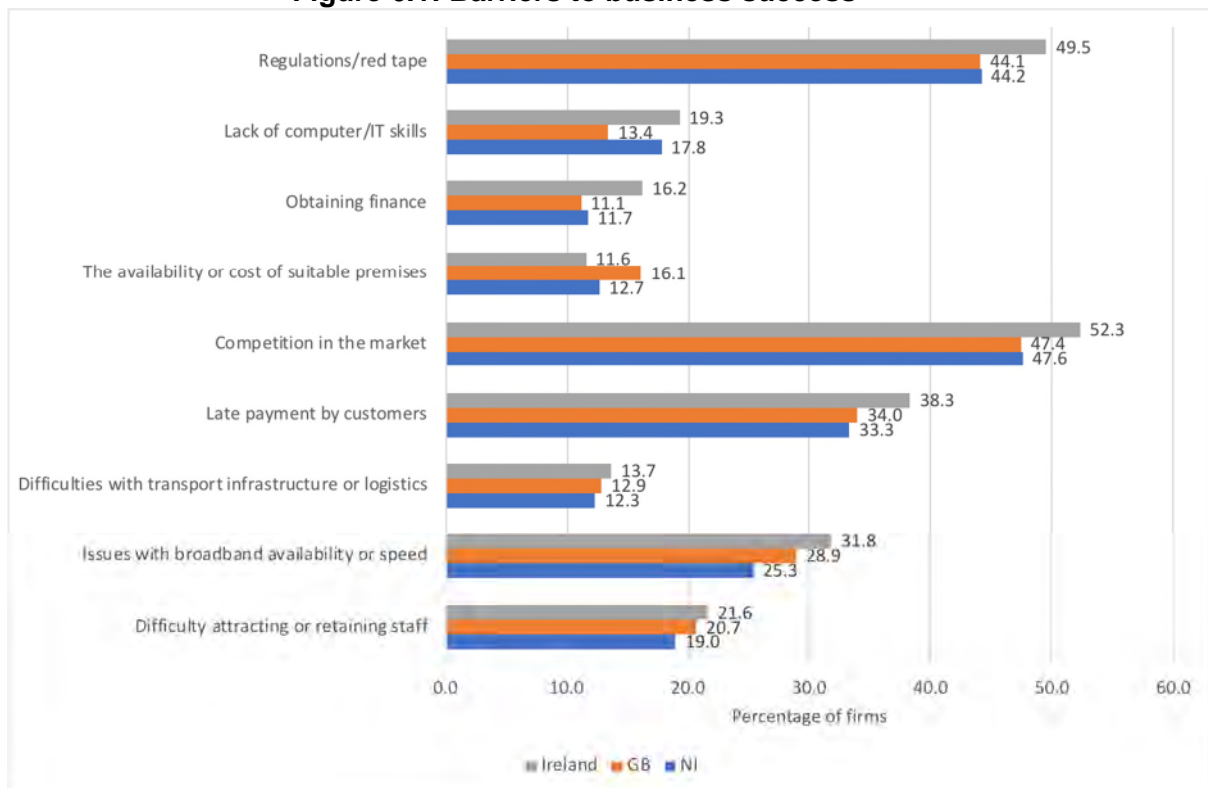
The barrier most frequently cited by Northern Ireland micro-businesses as constraining their success was the extent of competition in the market (47.6 per cent). Indeed between a third and a half of Northern Ireland micro-businesses stated that competition in the market, the extent of regulations or red tape and late payment by customers were significant barriers. All of these barriers are external to the firm yet are important in shaping how they respond within the business, whether in terms of the operational systems that they implement to ensure compliance with business legislation, the strategic response to a highly competitive market or in their financial management practices in ensuring satisfactory cash flow when faced with late payments. Interestingly the next most frequently cited barrier to business success related to issues with broadband availability or speed with one in four (25 per cent) of Northern Ireland micro-businesses identifying this factor.

Issues over which micro-businesses have more control, specifically in relation to their resources, whether access to finance, skilled labour, suitable premises etc. were cited less frequently as significant barriers to success. This suggests that Northern Ireland micro-businesses are operating in a wider ecosystem where these factors are available, and they have access to them.

Comparing the barriers identified by Northern Ireland micro-businesses to their comparators in GB and Irish suggests a broadly similar pattern. Again, in GB and Ireland, the regulatory environment along with market competition and to a lesser extent, the late payment by customers are cited by the largest proportion of businesses as significant or very significant barriers to success. Interestingly, Northern Ireland micro-businesses were slightly more likely to identify a lack of computer/IT skills as a barrier (17.8 per cent) as compared to GB micro-businesses (13.4 per cent). However, this barrier was largely consistent with that experienced by Irish micro-enterprises. Indeed, for many of the barriers, Northern Ireland micro-enterprises were less likely to identify these as having a significant or very significant effect on business success as compared to their GB and Irish counterparts. The most notable of these concerned broadband availability or speed. While it could be interpreted from this that broadband was superior in Northern Ireland, a more likely explanation would be that as technology adoption rates are consistently lower for Northern Ireland micro-businesses, they are

less likely to have experienced broadband issues as important barriers to success.

Figure 6.1: Barriers to business success



When faced with barriers or challenges to business success, businesses may strategically and operationally respond in different ways. This may be described as ranging from proactively pre-empting potential challenges or risks to the business and plan a course of action to either mitigate the risk or minimize it should it arise. Alternatively, businesses may adopt a reactive approach, dealing only with risks as they arise in a ‘fire-fighting’ mode. The overall profile of resilience strategies in NI, GB and Ireland is relatively similar with around a quarter of firms dealing with challenges when they arise, a quarter adopting mitigating strategies and around 1: 10 having a formal risk register (Table 6.1).

Table 6.1: Resilience strategies

	NI	GB	Ireland
We don't think about risks at all until they arise, and then we deal with them	24.3	21.0	24.7
We sometimes think about risks but do not make specific plans to deal with them	27.5	28.6	26.1
We regularly think about risks and formulate plans	33.8	37.0	39.8
We have a formal risk register with response strategies, which is kept under review	11.2	10.4	7.8
Don't know	3.1	3.0	1.6
Total	100.0	100.0	100.0

7. FUTURE RESEARCH DIRECTIONS

The Micro-business Britain survey data provides a unique insight into the drivers of growth and performance in micro-businesses across the UK and comparator areas. Our focus on firms in Northern Ireland suggests three key themes which may warrant further, more detailed, investigation using the micro-business survey data. These are:

1. How are business ambition and performance related to the characteristics of owner-managers? – the role of the founder and/or owner-manager is crucial in shaping the growth and development of micro-businesses. Our analysis has shown that in Northern Ireland most micro-businesses are well established – average age 28 years – and that in the vast majority of cases these firms are family-owned with the founder still involved. How do the life-stage and characteristics of micro-business owners shape their level of ambition? How do individuals' characteristics influence attitudes to using external finance or undertaking risky innovation? The Micro-business Britain survey contains detailed information on the characteristics and households of owner-managers and this data could be analysed alongside that for each firm.

2. What drives growth and productivity in micro-businesses? – how do innovation, skills and finance come together to drive growth and productivity in micro-businesses? Which of these is most important and how do these factors work together? How, for example, are lower levels of innovative activity in Northern Ireland influencing firms' growth and productivity? How important is digital adoption? How is this influenced by

business-owners' level of ambition? There has been little previous analysis of the drivers of growth in micro-businesses due a lack of detailed firm-level data. The Micro-business Britain data allows this type of multivariate analysis allowing the strength of each influence to be identified.

3. How does the local business eco-system influence micro-business performance? – earlier sections of this report identify some performance gaps between micro-businesses in NI and elsewhere. Are these due to structural factors (firm size, sector, ownership), firm-level influences or do they reflect aspects of the business eco-system in NI and other areas? For example, higher levels of technology diffusion in Ireland and the UK may reflect more extensive supplier networks in these areas as well as firms' own decisions about adoption. Similarly, use of external finance may be influenced by the supply-side in different regions as well as firms' own willingness to use external finance. Conversely, higher levels of university-business collaboration for innovation in Northern Ireland may reflect a higher level of business interaction by NI universities. This analysis would exploit the international and multi-regional nature of the Micro-business Britain data (along with other local eco-system characteristics) to consider how local business eco-systems support high growth and performance by micro-businesses.

Annex 1: The Micro-business Britain survey

The Micro-business Britain survey aimed to build a representative picture of established micro-businesses in the UK, US and Ireland. Telephone interviews were conducted with individuals who were either the owners or managers of each business. The focus was on established micro-businesses, i.e. firms with 1-9 employees that have been established for three years or more. Firms were excluded from the survey if they were branches, divisions or subsidiaries of larger companies, if they were charities, or if they were part of the public sector. Firms in the 5-9 size-band were over-sampled as were firms in some UK regions (Northern Ireland and Wales) to prevent particularly small sample sizes in these groups¹². In the analysis responses are therefore weighted to obtain representative results¹³.

The Micro-business Britain Survey included 9,755 interviews in total: 6,254 in the UK, 1,500 in Ireland, and 2,001 in the USA. Table A1.1 provides a breakdown of the (unweighted) international samples by sector. The UK survey was undertaken by telephone using a CATI system between February and May 2018 based on a commercially sourced sampling frame and achieved a response rate of 9.3 per cent. The Irish survey was undertaken between February and April 2018 and achieved an overall response rate of 11.7 per cent. US fieldwork was conducted during March and April 2018 from a US call centre. The US response rate was 12.3 per cent.

¹² Table A1 provides a breakdown of survey responses by broad sector.

¹³ Weighting strategies varied slightly between countries depending on the aggregate statistics available. Details are available from the authors on request.

Table A1.1: Sectoral and size-band overview of survey data

	UK	Ireland	US
ABDE - Primary	369	58	111
	5.90%	3.90%	5.50%
C - Manufacturing	592	150	196
	9.50%	10.00%	9.80%
F - Construction	650	125	146
	10.40%	8.30%	7.30%
G - Retail, wholesale	1099	273	393
	17.60%	18.20%	19.60%
HI - Transport, accommodation, food	669	222	153
	10.70%	14.80%	7.60%
JKL - Information, finance, real estate	793	188	301
	12.70%	12.50%	15.00%
M - Professional, scientific	1038	255	298
	16.60%	17.00%	14.90%
N - Administrative services	507	104	189
	8.10%	6.90%	9.40%
PQRS - Other services	537	125	214
	8.60%	8.30%	10.70%
Total	6254	1500	2001
	100%	100.00%	100.00%

Source: Micro-business Britain Survey, 2018.

The Micro-business Britain survey included 495 responses from Northern Ireland micro-businesses (Table A1.2). Reflecting the structure of the business population the majority of these firms (324) were in the 1-4 employee sizeband. More generally the respondent structure reflected closely that in the UK as a whole.

Table A1.2: Northern Ireland sample by size and sector

	1-4 employees		5-9 employees		All firms	
	No.	%	No.	%	No.	%
ABDE - Primary	23	7.1	6	3.5	29	5.9
C - Manufacturing	28	8.6	23	13.5	51	10.3
F - Construction	39	12.0	15	8.8	54	10.9
G - Retail, wholesale	67	20.7	37	21.6	104	21.0
HI - Transport, accom.	30	9.3	27	15.8	57	11.5
JKL - Information, fi	36	11.1	17	9.9	53	10.7
M - Professional, sci	48	14.8	21	12.3	69	13.9
N - Administrative se	19	5.9	10	5.8	29	5.9
PQRS - Other services	34	10.5	15	8.8	49	9.9
Total	324	100.0	171	100.0	495	100.0



Centre Manager
Enterprise Research Centre
Warwick Business School
Coventry, CV4 7AL
CentreManager@enterpriseresearch.ac.uk

Centre Manager
Enterprise Research Centre
Aston Business School
Birmingham B4 7ET
CentreManager@enterpriseresearch.ac.uk

