

## **Innovation and Business Performance**

**Jennifer Turnbull, Kenny Richmond, Jonathan Slow, Scottish Enterprise**

### **Introduction**

The link between innovation and business performance has been well documented. Innovation is a crucial factor in determining an economy's competitiveness with much of the rise in living standards attributed to innovation<sup>1</sup>. Studies have shown that a large and rising share of economic growth and living standards in recent decades is derived from innovation, which leads to increased productivity and the creation of new products, services, processes and industries<sup>2</sup>. Evidence shows a positive relationship between competition, innovation and productivity, with product and process innovations having the potential to lead to increased efficiency, quality and reduced costs, or to open-up new markets<sup>3</sup>. It has also been shown that more innovative businesses grow twice as fast, both in employment and sales, as businesses that do not innovate<sup>4</sup>.

Innovation can take a variety of forms including product, process, marketing and business organisation<sup>5</sup>. However, there is little published evidence on whether specific types of innovation are more effective than others in driving improved business performance. This paper examines the effects of different types, and combinations, of innovation activity on business performance in terms of turnover, employment, labour productivity and export activity. The aim is to help inform policy to support innovation in businesses, for example in terms of prioritising innovation interventions that are likely to have the most effective outcomes and stimulate further opportunities for business growth.

### **Methodology**

This research is an analysis of the UK Innovation Survey 2015, covering the period 2012 to 2014. As innovation trends in Scotland tend to be broadly similar to the UK overall, this analysis is based on the whole UK survey rather than the Scottish responses as the larger UK sample size allows for a more robust and detailed analysis<sup>6</sup>. It is assumed, therefore, that the UK results will also apply to Scotland.

The UK Innovation Survey is conducted every two years by the Office for National Statistics (ONS) on behalf of the Department for Business, Energy and Industrial Strategy (BEIS). The information feeds into the Community Innovation Survey (CIS) covering European countries. The UK Innovation Survey enables the level of innovation activity across the UK to be measured, which helps to identify where innovation policy might be best targeted.

The 2015 survey results cover a UK-wide representative sample of businesses with 10 or more employees in sections B-N of the Standard Industrial Classification (SIC) 2007. Overall, roughly 15% of businesses across the UK were sampled and the responses were weighted back to the total business population. The stratified sample resulted in a higher proportion of responses from larger businesses than smaller businesses, however, the results were not weighted by factors which would give more weight to larger businesses, such as employment or turnover. From a sample of 29,732 businesses surveyed 15,091 responses were achieved (a response rate of just over 50%).

---

<sup>1</sup> [Innovation and Growth: Rationale for an Innovation Strategy, OECD, 2007](#)

<sup>2</sup> [Innovation and Growth: How Business Contributes to Society, Ahlstrom, D, Academy of Management Perspectives Vol 24, 3](#)

<sup>3</sup> [Productivity and Competition: A Summary of the Evidence, Competition and Markets Authority and UK Innovation Survey 2017, Department for Business, Energy & Industrial Strategy, 2018](#)

<sup>4</sup> [Business Growth and Innovation, Mason et al, NESTA 2009](#)

<sup>5</sup> [Productivity Handbook - Office for National Statistics](#)

<sup>6</sup> The smaller sample size in Scotland does not allow for a similarly robust and detailed analysis

A business is defined as being **Innovation Active** if it has undertaken any of the activities 1 to 3 below:

1. Introduced a new or significantly improved product (good or service) or process.
2. Engaged in innovation projects not yet complete or abandoned.
3. New and significantly improved forms of organisation, business structures or practices and marketing concepts or strategies.
4. Investment activities in areas such as internal research and development, training, acquisition of external knowledge or machinery and equipment linked to innovation activities.

A business is defined more widely as a **Broader Innovator** if it has engaged in any of the activities 1 to 4 above.

Businesses are classified as innovation active if they engaged in at least one of activities 1 to 3 above although in practice most businesses engage in multiple forms of innovation activity, such as introducing a new product or process alongside having incomplete innovations and/or introduced new marketing strategies.

The survey results are the only comprehensive source of data on types of innovation activity in the UK and include information on business performance such as turnover, employment and exports<sup>7</sup>. The focus of this analysis is to compare performance variables (specifically, turnover, employment and productivity levels and growth<sup>8</sup>) for different types of innovation activity and is based on Office for National Statistics (ONS) microdata from the Secure Research Service<sup>9</sup>. The dataset includes variables for turnover and employment that are sourced from the IDBR, which were used to calculate median turnover, employment and productivity levels. The dataset also includes estimated turnover and employment levels from survey responses for 2012 and 2014, which were used to calculate median growth levels<sup>10</sup>.

The performance outcomes of different categories of innovation active and broader innovation active businesses are compared with those of non-innovation active businesses to assess the extent of the 'innovation premium'.

## Survey Context

The gradual but significant improvement in innovation active performance since the 2008 recession continued in 2012-14, when 53% of UK businesses were innovation active<sup>11</sup>. Over the 2012-14 period the general economic environment was buoyant with the UK economy growing at an annual average rate of 2.5%<sup>12</sup>. Trends in Scotland were similar, although economic growth was lower than the UK overall (at an annual average rate of 2%), and the proportion of innovation active businesses was slightly lower at 50.4%.

## Survey Results

Innovation activity varies by the size of the business and type of innovation activity (figure 1). Generally, a higher proportion of large businesses were innovation active than smaller

---

<sup>7</sup> [UK Innovation Survey 2012 - 2014 Questionnaire](#)

<sup>8</sup> Exporting businesses are investigated in terms of their overall turnover and employment growth, data on exports growth are not separately available in these data.

<sup>9</sup> The following analysis contains statistical data from ONS which is Crown Copyright. The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data. This work uses research datasets which may not exactly reproduce National Statistics aggregates.

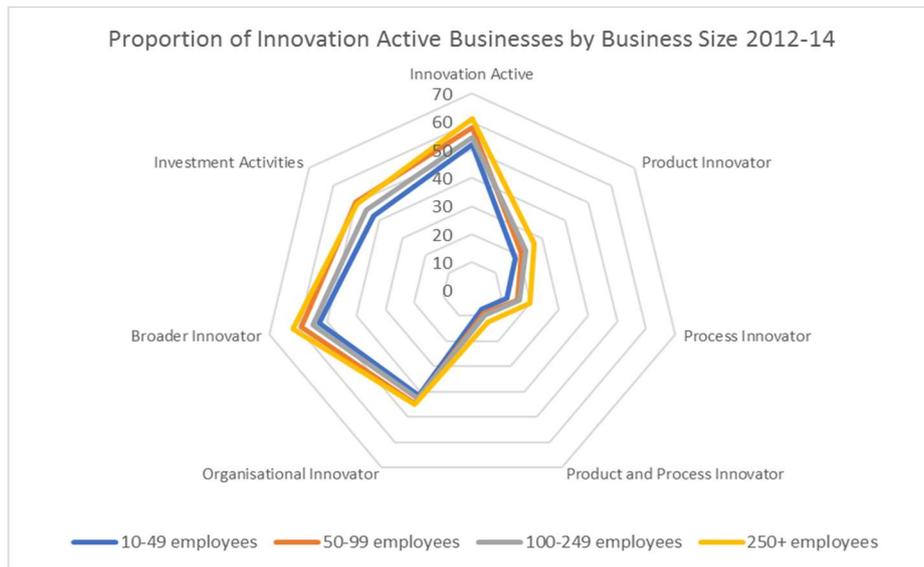
<sup>10</sup> It should be noted that although these sample sizes were smaller, turnover and employment levels were broadly consistent with those from the larger IDBR sample.

<sup>11</sup> [The UK Innovation Survey 2015, BIS](#)

<sup>12</sup> [Economic review: April 2015, ONS](#)

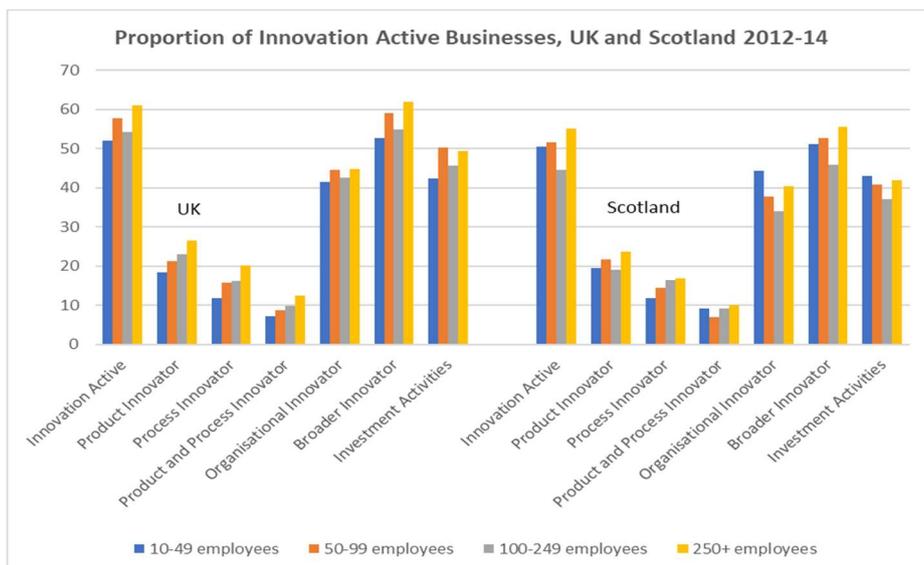
businesses for each type of innovation except organisational-only innovators<sup>13</sup>. Regardless of size, most businesses classified as innovation active were engaged in more than one type of innovation activity. High proportions of businesses were broader or organisational innovators while relatively small proportions were product or process innovators. Most innovation active businesses had also undertaken innovation investment activities (such as internal research and development, training, acquisition of external knowledge or machinery and equipment linked to innovation activities).

**Figure 1**



The proportions of Scottish businesses engaged in the main types of innovation were broadly similar to those in the UK. This is highlighted in figure 2 below.

**Figure 2**



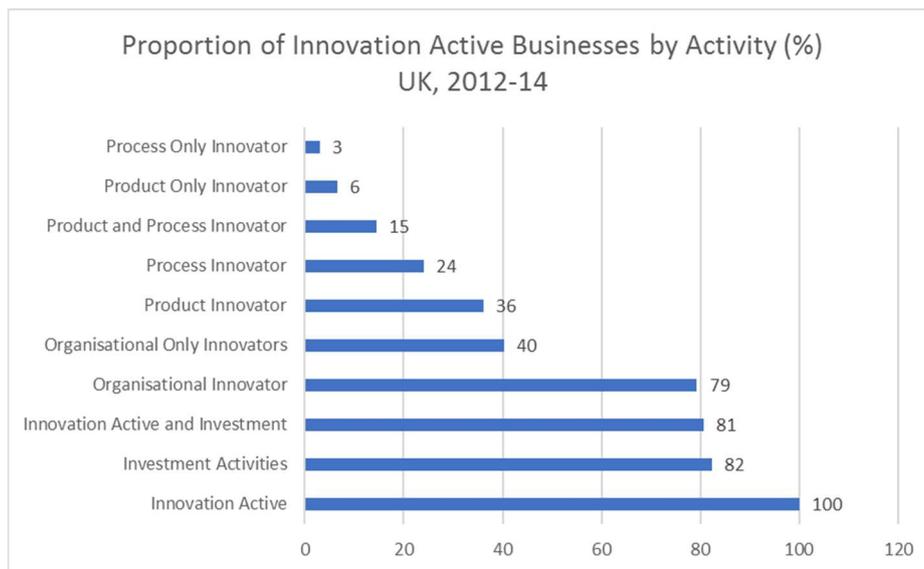
Source: Scottish Government, UK Innovation Survey 2015 – Results for Scotland

Figure 2 also highlights low proportions of innovation active businesses that are product and process innovators in Scotland and the UK. Only 36% in the UK included product innovation

<sup>13</sup> Organisational innovators are also referred to as 'Wider' innovators. Wider innovators are businesses that have engaged in point 3 above: New and significantly improved forms of organisation, business structures or practices and marketing concepts or strategies.

in their activities; only 24% included process innovation; and 15% were both product and process innovators. The equivalent figures for Scotland were 39%, 25% and 18% respectively. Most innovation active businesses included wider organisational innovation in their innovation activities in both Scotland (86% of innovation active businesses) and the UK (79%). In the UK almost half of organisational innovators did not undertake any other type of innovation activity. This is highlighted in figure 3, which also illustrates the small proportions of innovation active businesses that engaged in either process or product innovation only.

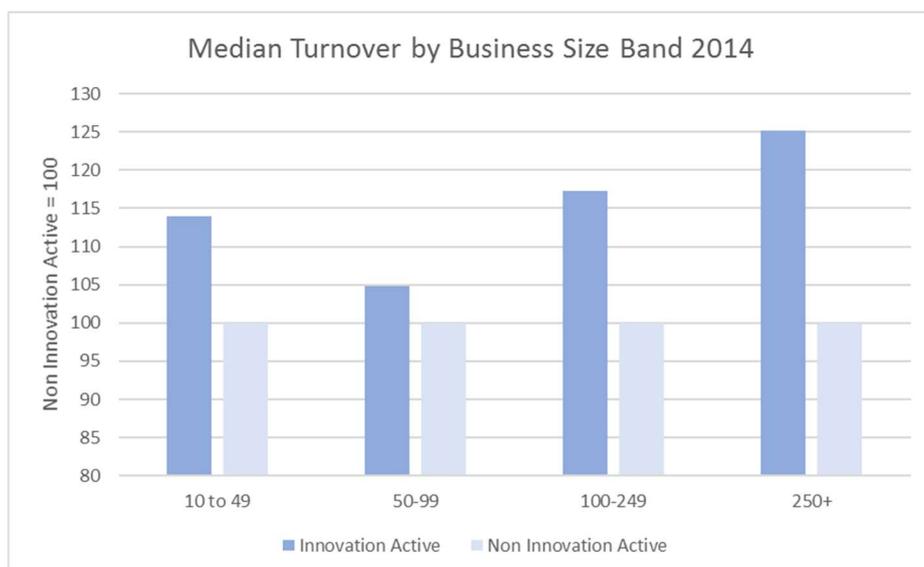
**Figure 3**



**Turnover level by type of innovation activity and by business size band**

Across the UK, in every size band, businesses engaging in some type of innovation had higher turnover than non-innovation active businesses, ranging from 5% higher average turnover for medium-small businesses to 25% higher on average for large businesses (figure 4).

**Figure 4**



Turnover levels vary by business size band and by type of innovation activity and table 1 shows that product and/or process innovators had the highest turnover in every size band. In

addition, except for organisational innovation in small-medium businesses and organisational only innovation in medium and larger businesses, **turnover levels were higher for all types of innovation than for non-innovation active business.** This suggests that businesses benefit from innovation in terms of higher turnover levels, especially for product and process innovation. It could also indicate that businesses undertaking multiple innovations, for example, businesses might invest in skills as well as equipment, potentially alongside new working practices and procedures, could become larger through innovation, or are more able to undertake multiple innovations because of their size. Nevertheless, this highlights the potential rewards for businesses introducing new products and processes if they include these in their innovation activities. **This suggests that innovation is important in helping businesses achieve higher scale.**

**Table 1: Median Turnover Levels Relative to Non-Innovation Active Businesses = 100**

Type of Innovation	10-49 employees	50-99 employees	100-249 employees	250+ employees
Non-Innovation Active	100	100	100	100
Innovation Active	114	105	117	125
Product Innovator	126	129	128	148
Process Innovator	119	117	121	165
Product and Process Innovator	136	112	119	161
Product Only Innovator	102	166	*	130
Process Only Innovator	120	115	138	149
Organisational Innovator	114	98	111	119
Broader Innovator	114	105	117	125
Investment Activities	114	101	117	124
Innovation Active and Investment	114	101	117	126
Organisational Only Innovators	114	87	92	84

Notes: Three highest relative turnover innovation types are highlighted in green. Product, process and organisational innovators will be counted in any of the activities classified as innovation active within the activities 1 to 3 above (page 2). Investment activities are included in broader innovation activities 4 above (page 2) but not counted as innovation active unless in conjunction with activities 1 to 3.

### **Turnover growth by type of innovation activity and by business size band**

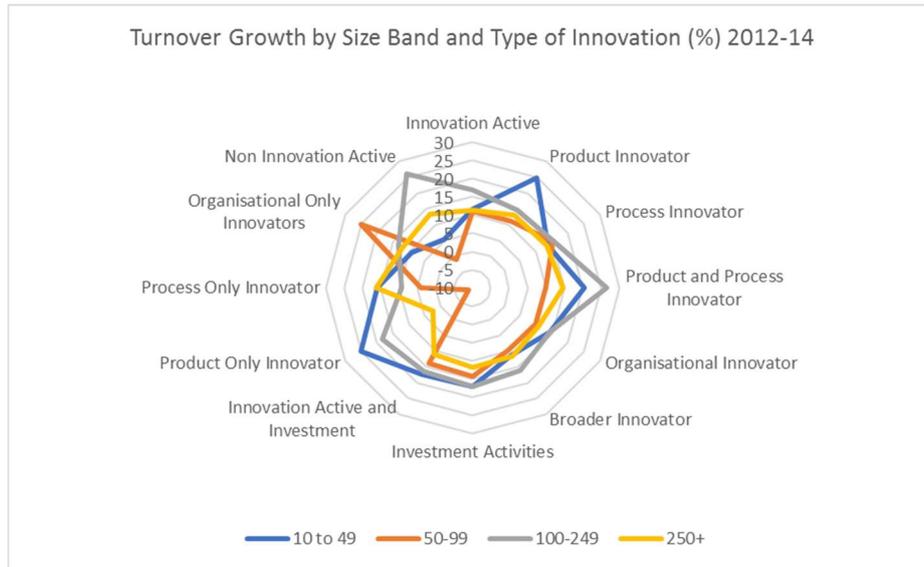
In large and medium-large businesses, turnover growth rates were relatively consistent across all types of innovation, while in smaller businesses the highest median turnover growth was associated with product and organisational innovation (figure 5). It can perhaps be argued that more 'radical' types of innovation are more generally linked to faster growth in smaller businesses<sup>14</sup>. It is interesting that non-innovation active small-medium business have high turnover growth, which may be the result of an innovation introduced in a previous survey period. It has been noted, for example, that new innovations may often take some time to influence firms' bottom line<sup>15</sup>.

Potentially, larger businesses may be more likely to engage in all types of innovation activity than smaller businesses given their greater ability to resource multiple activities. For small businesses, their resources may mean they can only focus on a single product and associated marketing or organisational structure, for example. However, it could also be the case that smaller businesses may be too slow in abandoning or changing the direction an innovation is taking, for example if a business is heavily committed to a specific product for expansion or even survival.

<sup>14</sup> [SMEs' internationalisation: When does innovation matter? Journal of Business Research 96 \(2019\) Pages 250-263](#)

<sup>15</sup> [Innovation and productivity: How strong is the connection? Economic Research Council](#)

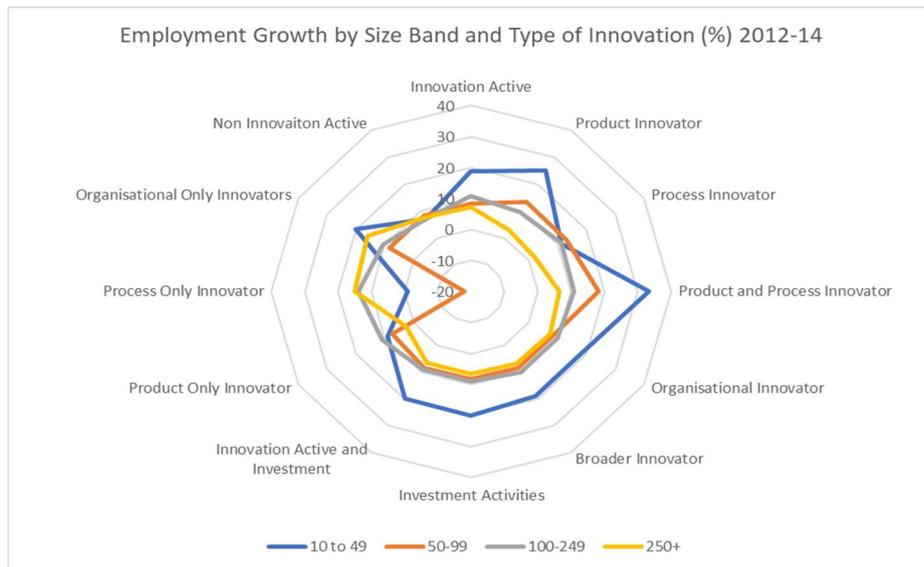
**Figure 5**



**Employment growth by type of innovation activity and by business size band (%)**

The survey results show little difference in average employment size between innovation active and non-innovation active businesses. Employment growth varies by type of innovation activity and by business size band (figure 6). Again, employment growth rates are highest for either combinations of product, process and product & process innovation, or product or process only innovation; and reflects the impact of the returns to these types of innovation<sup>16</sup>. Employment growth rates are also higher in small businesses with investment activities.

**Figure 6**



<sup>16</sup> For example, we know that turnover growth and productivity growth are higher in these combinations, the fact that employment growth is also greatest should not perhaps be surprising. Moreover, it reinforces the fact that economic growth more generally will be associated with product and process innovation, alone or especially in combination. Research [[Assessing regional innovative entrepreneurship ecosystems with the global entrepreneurship and development index : the case of Scotland](#)] has suggested that a weakness in the Scottish entrepreneurial system is linked to low levels of product and process innovation.

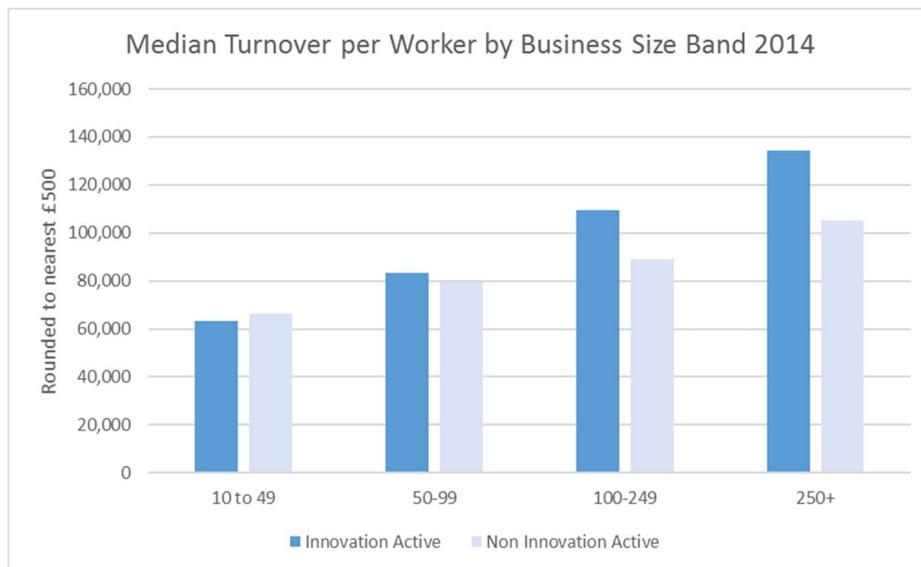
Generally, large businesses have lower percentage employment growth rates than small businesses. It may be the case that larger businesses, because of their greater use of capital and higher productivity levels, will have a lower growth rate in employment as they can, more easily, exploit economies of scale due to their level of resources. It could also reflect that it is easier for small companies to have higher growth rates because they are starting from a lower base level.

**Productivity (turnover per worker) level by type of innovation activity and by business size band**

Larger businesses had higher productivity (turnover per worker) levels than smaller businesses, and **innovation active businesses had higher productivity levels than non-innovation active businesses in all except the smallest size band** (figure 7), suggesting that innovative businesses are more productive than non-innovation active businesses. Poorer productivity performance in small businesses may be due to several factors: they may simply lack the resources to fully capitalise on innovation; they may be less likely to undertake product and process innovations that tend to deliver improved performance; or they may be less able to undertake product and process innovation due to a lack of skills and R&D resources.

The productivity differential increases with the size of the business and medium-large and large innovation active businesses have productivity levels around 25% higher than non-innovation active businesses in these size-bands. This suggests that for larger businesses, many of the resource-based constraints noted above have been overcome.

**Figure 7**



Product and process innovators had the highest productivity levels in every business size band. More generally, table 2 shows that innovation active businesses tended to have higher productivity levels than non-innovation active businesses across all size-bands.

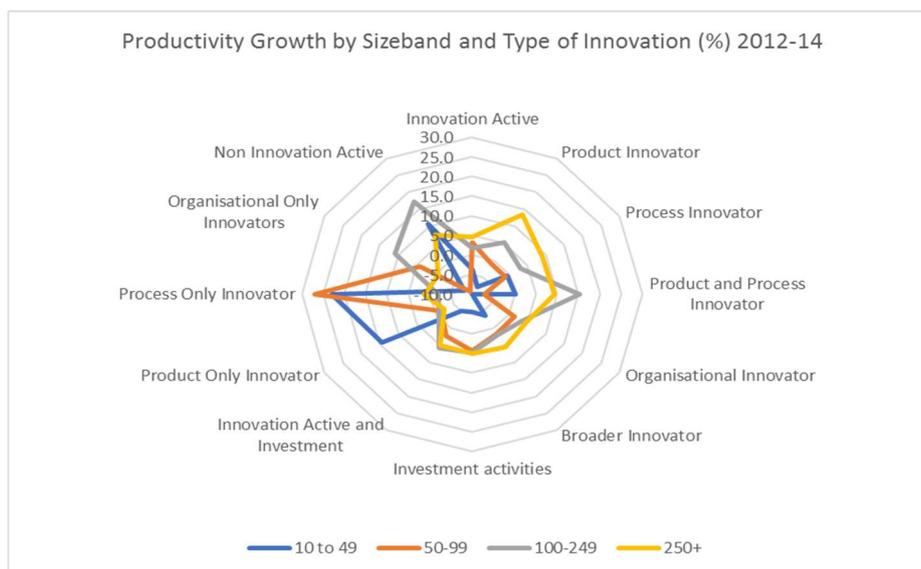
**Table 2: Turnover per Worker Levels Relative to Non-Innovation Active Businesses = 100**

Type of Innovation	10-49 employees	50-99 employees	100-249 employees	250+ employees
Innovation Active	95	105	123	128
Non-Innovation Active	100	100	100	100
Product Innovator	105	128	135	148
Process Innovator	105	118	126	170
Product and Process Innovator	120	111	125	165
Organisational Innovator	95	97	117	121
Broader Innovator	95	105	123	128
Investment Activities	101	101	122	131
Innovation Active and Investment	101	101	124	133
Product Only Innovator	90	174	*	126
Process Only Innovator	100	118	129	163
Organisational Only Innovators	101	84	98	86

**Productivity growth by business size band and innovation activity (%)**

Productivity growth rates also vary by type of innovation activity (figure 8). In all business size bands, **productivity growth rates were highest for product and/or process innovation**. This is perhaps to be expected: the more radical nature of these innovation activities suggests they are more likely to translate into larger productivity returns through increased sales or efficiency (possibly a key objective of innovating for many businesses). In medium-small and medium-large size businesses, productivity growth rates were also high for investment activities and organisational-only innovation suggesting that this size of business is perhaps undergoing structural change as they grow, and such innovation is necessary at that stage of the business life-cycle.

**Figure 8**



## Key Points by Business Size-Band

**Large Businesses (250+ employees):** For large businesses the biggest growth in turnover and productivity comes from product and process innovation<sup>17</sup>. Employment growth tended to be concentrated more in businesses that changed their organisational structure or just undertook process innovation. Generally-speaking, the resources available to large businesses might suggest a greater ability and resources to innovate, and to do this successfully.

**Medium-Large Businesses (100-249 employees):** A similar outcome is also seen in medium-large businesses. However, the role of investment (in equipment, training etc which is not included in the innovation active definition) features heavily in productivity and turnover growth and might suggest that medium-large businesses are to some extent actively transitioning from being a medium-sized business to a large business; they may already have the product/service portfolio to achieve this (as discussed below) but will need to invest in other activities in order to grow to a large business.

**Medium-Small Businesses (50-99 employees):** For medium-small businesses the picture appears a little different. Productivity levels fell for product, process, and product only innovators. However, excepting product-only innovators, they did have turnover growth. It seems that these businesses may be growing employment to support their activities, which impacts negatively on productivity. The decline in turnover for product-only innovation might reflect that these businesses do not yet have the scale to simultaneously undertake that kind of innovation and grow the business. Once those businesses do have the scale (perhaps from increasing investment) their turnover may be more likely to grow.

**Small Businesses (10-49 employees):** Small innovating businesses are, on average, growing rapidly as can be seen in the high levels of turnover growth. However, depending on the type of innovation being undertaken they are also increasing their employment, which will have a negative impact on productivity growth if employment increases faster than turnover. It seems that businesses able to focus on either product-only or process-only innovation are growing turnover and productivity rapidly. For businesses that are changing their organisational structure there seems to be a substantial growth in employment which is leading to decreased productivity. It can be speculated, perhaps, that businesses undertaking this kind of innovation only might be on a slower growth trajectory since faster growth generally comes from product and process innovation. More generally, businesses of this size may still be building their overall portfolio of products and services and experimenting with the best ways of delivering them.

**Overall, the general picture that emerges across all size bands is that product and process innovation** (combined with, or without, other types of innovation activity) tend to have the highest turnover and productivity levels and higher growth rates, although smaller businesses do not seem to achieve the same level of gains (see appendix). There may potentially be an optimal combination of innovation activities that produces the highest turnover and productivity levels and growth.

Where organisational only innovators have higher growth rates, this tends to be from a lower initial turnover or productivity level. **The results suggest, therefore, that engaging in any type of innovation is better for business performance than not innovating, but the best performance is by businesses with product or process innovation combined with other innovations such as marketing and/or organisational innovation or investment activities.** A similar picture emerges when comparing exporting and non-exporting businesses.

---

<sup>17</sup> Those businesses also tend to have the highest levels of turnover and productivity

## Innovation and Performance in Exporting Businesses

The survey allows an analysis of exporting<sup>18</sup> and non-exporting businesses (although not export growth). Across all size-bands, only a minority of businesses export, and the exporting rate is higher for larger businesses

**Table 3: Proportions of Exporting and Non-Exporting Businesses**

% of Business	10 to 49	50-99	100-249	250+	Total
• Exporters	16	29	33	33	19
• Non-Exporters	84	71	67	67	81

Exporting business were more likely to be innovation active than non-exporting businesses. Only 48% of non-exporters were innovation active compared to 76% of exporting businesses. Table 4 shows clearly that a higher proportion of exporters engaged in every type of innovation than non-exporters.

**Table 4: Proportion of Businesses by Innovation and Exporting Activity**

Innovation Type % of Businesses	Exporters	Non-Exporters
Innovation Active	76	48
Product Innovator	40	14
Process Innovator	23	10
Product & Process Innovator	17	6
Organisational Innovator	59	38
Broader Innovator	77	48
Investment Activity	69	38
Innovation Active and Investment	68	37

Turnover was higher for exporters than non-exporters for all innovation types: this suggests that exporting businesses tend to be larger than non-exporters within every size band<sup>19</sup>. Comparing exporters with non-exporters, table 5 shows that average turnover levels were 1½ to 2½ times those of non-exporters, suggesting a significant premium for innovating exporters.<sup>20</sup>

**Table 5: Average Turnover Levels and Growth**

Turnover Levels (relative to non-exporters = 100)	10 to 49	50-99	100-249	250+
All Non-Exporters	100	100	100	100
Innovation Active Non-Exporters	97	96	109	104
Innovation Active Exporters	242	176	178	166
Turnover Growth (%)				
All Non-Exporters	10.3	3.0	29.8	19.0
Innovation Active Non-Exporters	8.1	14.3	30.0	21.2
Innovation Active Exporters	15.5	5.3	7.1	15.3

However, turnover growth was higher in innovation active non-exporting than innovation active exporting businesses in every size band except small businesses. Since innovation active

<sup>18</sup> International exporting

<sup>19</sup> In other words, within the 10-49 category exporting businesses have higher turnover than non-exporters; the same is true in the 50-99 category etc.

<sup>20</sup> A rough analysis of SE Account Managed business data also suggests that businesses that export outperform those that don't export and likewise for businesses that innovate. However, businesses that innovate and export saw the largest performance growth.

non-exporters had higher turnover growth in the three largest size-bands than the non-exporter averages these results may be due to the types of innovation activity businesses were engaged in<sup>21</sup>. In the smallest size-band high turnover growth for exporters was due to process and product and process innovation and investment. High turnover growth in small-medium non-exporting innovators was also in product and process innovation; medium large exporters had higher growth in investment and organisational innovation than in product and process innovation; and in large businesses exporters had lower growth in product innovation and investment than non-exporters.

For all business sizes, turnover levels were highest in product only innovation and the fastest growth was in product & process and process only innovation, replicating the analysis of the overall sample presented earlier. This was the case in most business size bands (detailed data appended). Again, this is perhaps to be expected. Combined with the turnover growth data in the table above this suggests that exporting businesses have significant growth potential if they are looking to innovate products and/or processes.

Investment activities contribute to the broader innovation definition and are clearly important for exporting businesses: this may reflect the fact that a degree of investment is necessary to meet a higher scale of output required for international sales.

Comparing businesses within the same size bands, table 6 below shows that productivity levels for innovation active exporters are, on average, around double those for non-exporters. There is consistent 'out-performing' of productivity by exporting businesses in every type of innovation (detailed data appended).

**Table 6: Average Turnover per Worker Levels and Growth**

<b>Turnover per Worker Levels (relative to non-exporters = 100)</b>	<b>10 to 49</b>	<b>50-99</b>	<b>100-249</b>	<b>250+</b>
All Non-Exporters	100	100	100	100
Innovation Active Non-Exporters	91	97	113	103
Innovation Active Exporters	204	173	176	189
<b>Turnover per Worker Growth (%)</b>				
All Non-Exporters	3.4	-3.5	11.0	10.9
Innovation Active Non-Exporters	-9.9	7.0	14.7	9.3
Innovation Active Exporters	6.9	-7.1	0.8	8.9

Productivity growth rates reflect turnover growth results. Productivity growth was higher in all innovation active non-exporters in all size-bands except small businesses. Small innovative non-exporters had declining productivity growth in all types of innovation except process innovation, which contrasts with strong productivity growth in small innovating exporters.

Exporters generally have high productivity levels; they innovate and invest. Innovation and exporting are strong positive drivers of business performance and these results suggest that investment is also an important driver, possibly as a direct contributor to productivity growth and/or as a driver of scale. Overall, it seems that investment is crucial for productivity in businesses that export.

By type of innovation activity, the biggest returns appear to be to those businesses that undertake product and/or process innovation and/or invest. A key point is, therefore, that the benefits from exporting and innovation are significant, especially when undertaken together.

<sup>21</sup> They may also be influenced by the smaller sample size for exporters.

This analysis focuses on the 2012-14 Innovation Survey only; however, it may be the case that, especially for smaller businesses, innovation activity in one survey period will be followed-up with investment activity in the next survey or vice versa. Although potential time lags could affect the results a little, we do not believe this fundamentally changes the story: businesses that export and innovate tend to have higher turnover and productivity levels and growth than those that do not; moreover, exporting businesses also invest more, which will also drive productivity higher.

## Conclusions

This analysis examines the effects of different types and combinations of innovation activity on business performance measures such as turnover and productivity levels and growth, and if this differs by exporting activity.

Generally, the survey results show that businesses engaging in some type of innovation have higher average turnover than non-innovation active businesses, with an 'innovation premium' of up to 25% higher turnover for large, 17% for medium-large, 5% for medium-small and 14% for small businesses. **This suggests that innovation can help businesses reach higher scale.**

Innovation active businesses also tend to have higher productivity levels than non-innovation active businesses with an 'innovation productivity premium' of around 25% for large and medium-large businesses, although less in smaller businesses at -5% for small and 5% for medium-small businesses.

**Product and process innovators (combined with at least one other innovation activity) tended to have the highest turnover and productivity levels in all business size bands (see appendix). They also tended to have higher growth rates.**

Where organisational-only innovators had higher growth rates, this tended to be from a lower initial turnover or productivity level. This could be an area for future research: it is possible that single organisational innovations could be the beginning of a business engaging in more sustained and systematic innovation processes by preparing, and setting up structures, for the deeper product and process innovations associated with faster turnover and productivity growth; however, they could also be 'one-off' solutions for individual businesses, which, based on the results above, may have a lesser impact on business performance.

The results suggest, therefore, that:

- engaging any type of innovation is better for business performance than not innovating
- the best performance is in businesses with product or process innovation combined with other innovations such as marketing and/or organisational innovation or investment activities.

A relatively small proportion of businesses were exporters, however, they had stronger performance than non-exporters in terms of innovation activity and business performance outcomes.

Average turnover levels were higher for exporters than non-exporters in every size-band and a higher proportion of exporters engaged in every type of innovation than non-exporters. Innovating exporters also had higher average turnover levels no matter what type of innovation they undertook although the fastest turnover growth rates were generally for product and process innovation and for investment for most size bands. For exporting businesses, the importance of investment as a driver of turnover and productivity growth is also shown in the results.

It is known that innovation has a positive effect on business competitiveness and exporting, for example, the creation of new products and/or business processes alongside increased productivity and competitiveness can help businesses successfully enter new markets. However, exporting may also encourage businesses to innovate and learn-by-exporting; this means they improve their performance further after entering export markets, which can then drive more innovation. From a policy perspective, therefore, encouraging businesses to export and/or innovate could have a mutually reinforcing effect, especially if they subsequently invest in capacity and capability to access and benefit from exporting.

In terms of policy makers prioritising resources towards innovation interventions that are likely to have the most effective business outcomes, the results of this study confirm the message regarding the business benefits that can be achieved from innovation, especially product and process innovation, and provides some evidence to support this message. It also highlights a possible need to encourage businesses to have more strategic and systematic innovation processes to ensure they capitalise from their innovation.

However, relatively small proportions of innovation active businesses (in both Scotland and the UK) include product and/or process innovation among their innovation activities, even though product and/or process innovation have among the best turnover and productivity outcomes. Whilst it may be appropriate to promote more product and process activity, the results of this study suggest that when these are implemented it is important that businesses ensure they have the right organisational structure, workforce skills and marketing strategies to support their implementation. This is especially true for smaller businesses, given their potential failure to capitalise on innovations, and may potentially lead to faster growth in this group of businesses.

Appendix

**Table 7: Turnover Levels and Growth by Size Band and Type of Innovation**

	10 to 49		50 to 99		100 to 249		250+	
	Turnover (£000)	Growth (%)						
All 10+	1,049	11.9	5,338	10.6	14,629	14	56,400	18.1
Innovation Active	1,139	11.6	5,415	11	15,568	16.9	60,072	11.4
Non-Innovation Active	1,000	5.5	5,165	-1	13,271	26	48,006	13.3
Product Innovator	1,260	25	6,641	11.1	17,049	14.5	71,044	13
Process Innovator	1,194	13.6	6,029	15.4	16,000	15.7	79,301	13.5
Product and Process	1,356	20.4	5,801	10	15,730	26.6	77,176	14.6
Organisational Innovator	1,139	14.2	5,057	10	14,666	14.4	57,068	10.9
Broader Innovator	1,139	11.3	5,415	9.7	15,568	16.2	59,778	11.8
Investment Activities	1,139	17.1	5,230	14.3	15,498	17.1	59,616	11.7
Innovation Active and Investment	1,139	17.5	5,230	13.8	15,498	16.6	60,466	11.1
Process Only	1,200	15.8	5,928	4	18,358	9.2	71,583	16.2
Organisational Only	1,139	9.2	4,504	25	12,187	13.2	40,130	12.1

**Table 8: Productivity Levels and Growth by Size Band and Type of Innovation**

	10 to 49		50 to 99		100 to 249		250+	
	Turnover per worker (£)	Growth (%)						
All 10+	65,500	-5.8	82,000	4.2	101,000	6.7	125,500	10.9
Innovation Active	63,500	-3.6	83,500	3.3	109,500	1.9	134,500	4.7
Non-Innovation Active	66,500	10.8	79,500	-9.1	89,000	17.3	105,000	7.4
Product Innovator	70,000	-7.7	102,000	-1.1	120,000	5.4	155,000	13.5
Process Innovator	70,000	-0.5	94,000	-0.9	112,500	3.2	178,000	9.0
Product and Process	80,000	0.2	88,000	-7.0	111,000	15.2	173,500	9.4
Organisational Innovator	63,500	-10.0	77,500	1.5	104,000	3.5	127,000	4.4
Broader Innovator	63,500	-3.6	83,500	1.6	109,500	1.9	134,500	5.5
Investment Activities	67,000	-5.6	80,500	4.4	109,000	4.9	137,500	5.1
Innovation Active and Investment	67,000	-5.0	80,500	2.3	110,000	5.7	139,500	4.9
Process Only	66,500	23.0	94,000	27.0	114,500	-1.9	171,500	1.2
Organisational Only	67,000	-8.0	67,000	4.2	87,500	11.0	90,500	-0.7

## Turnover Level (£000) 2014 – Exporters and Non-Exporters

	10 to 49		50 to 99		100 to 249		250+	
	Exporters	Non-Exporters	Exporters	Non-Exporters	Exporters	Non-Exporters	Exporters	Non-Exporters
All 10+ employee	2,290	937	7,933	4,314	20,624	10,869	73,394	44,489
Innovation Active	2,272	906	7,575	4,126	19,393	11,888	73,804	46,225
Non-Innovation Active	2,319	965	10,275	4,492	24,411	9,977	72,713	41,471
Product Innovator	1,983	984	8,078	4,093	19,449	11,888	77,463	58,925
Process Innovator	2,106	1,001	7,502	4,936	18,990	13,120	84,632	69,982
Product and Process	1,979	1,048	8,449	3,675	18,761	12,090	79,301	70,838
Organisational Innovator	2,206	906	7,090	3,774	19,287	10,826	77,217	37,712
Broader Innovator	2,302	917	7,482	4,126	19,393	11,825	73,160	45,663
Investment Activities	2,206	922	7,135	3,769	19,390	11,096	73,585	41,001
Innovation Active and Investment	2,172	915	7,180	3,769	19,370	11,081	75,655	41,976
Organisational Only	2,642	992	7,066	3,266	18455	9,600	62979	25,188

## Turnover Growth (%) 2012-14 – Exporters and Non-Exporters

	10 to 49		50 to 99		100 to 249		250+	
	Exporters	Non-Exporters	Exporters	Non-Exporters	Exporters	Non-Exporters	Exporters	Non-Exporters
All 10+ employee	14.3	10.3	6.3	3	4.6	29.8	14.9	19
Innovation Active	15.5	8.1	5.3	14.3	7.1	30	15.3	21.2
Non-Innovation Active	10.3	9.1	6.1	-0.6	7.9	17.8	13.5	22.3
Product Innovator	17.3	2	6.5	26	5.1	25	15.3	24.8
Process Innovator	23	21.3	-0.7	16.6	12.7	27	17.2	18.6
Product and Process	25.9	20.9	-1.2	22.3	22.1	24.8	16.4	15.2
Organisational Innovator	19	11.1	8.3	7.1	5.1	36.5	16.1	18.1
Broader Innovator	22	9.4	5.3	7.7	5.1	30	16.2	19.9
Investment Activities	20.9	9.5	6.7	13	8.3	36.5	16.2	21.3
Innovation Active and Investment	19	8.4	7	6	6.4	36.7	14.6	22.7
Organisational Only	19.8	7.9	17.8	-5.4	7.5	33.1	15.2	17.4

## Productivity Level (£) 2014 – Exporters and Non-Exporters

	10 to 49		50 to 99		100 to 249		250+	
	Exporters	Non-Exporters	Exporters	Non-Exporters	Exporters	Non-Exporters	Exporters	Non-Exporters
All 10+ employee	127,000	58,500	122,000	66,500	139,500	75,500	175,500	94,000
Innovation Active	119,500	53,500	115,000	64,500	133,000	85,500	178,000	97,000
Non-Innovation Active	136,500	64,500	160,500	69,000	157,500	67,500	170,500	89,000
Product Innovator	110,000	54,500	122,500	65,000	134,000	85,500	173,000	123,500
Process Innovator	117,000	59,000	117,000	77,000	133,500	92,500	206,000	142,000
Product and Process	116,500	61,500	128,000	56,500	134,000	85,000	193,000	145,500
Organisational Innovator	116,000	61,500	107,500	56,500	132,000	85,000	183,000	145,500
Broader Innovator	121,000	54,000	113,500	64,500	133,000	85,000	176,500	96,000
Investment Activities	116,000	54,000	108,000	60,000	131,000	81,500	178,000	90,000
Innovation Active and Investment	114,500	54,000	109,000	59,500	131,000	82,000	183,000	92,000
Organisational Only	132,000	62,000	102,500	52,500	125,500	71,000	161,000	53,000

## Productivity Growth (%) 2012-14 – Exporters and Non-Exporters

	10 to 49		50 to 99		100 to 249		250+	
	Exporters	Non-Exporters	Exporters	Non-Exporters	Exporters	Non-Exporters	Exporters	Non-Exporters
All 10+ employee	5.5	3.4	-5.4	-3.5	-1.9	11.0	9.4	10.9
Innovation Active	6.9	-9.9	-7.1	7.0	0.8	14.7	8.9	9.3
Non-Innovation Active	11.2	1.3	-3.4	-8.3	-7.6	1.2	2.6	13.1
Product Innovator	1.2	-23.5	-8.5	16.3	0.4	0.7	11.4	21.4
Process Innovator	7.7	3.1	-13.9	5.7	7.3	8.8	16.8	11.7
Product and Process	4.7	-9.3	-18.8	9.3	16.6	4.0	10.4	10.3
Organisational Innovator	2.0	-7.4	-7.3	-1.4	0.2	16.7	8.5	8.9
Broader Innovator	3.0	-8.8	-7.1	-0.8	-0.3	14.7	11.1	6.9
Investment Activities	2.0	-8.8	-8.9	4.0	1.0	17.0	9.8	13.2
Innovation Active and Investment	7.4	-9.7	-8.9	-2.4	-1.2	17.1	9.4	14.4
Organisational Only	18.3	-10.1	8.7	-8.6	5.0	17.9	5.1	0.8