

INNOVATION IN NORTHERN IRELAND'S TRADABLE SERVICES SECTOR

Background

1. Increasing productivity levels (i.e. output per worker) is vital if Northern Ireland is to improve its global competitiveness, grow the economy and increase wealth creation. Innovation has been identified as one of the key drivers of productivity. Encouragingly, the level of R&D in Northern Ireland, which is closely associated with innovation¹, has been increasing over recent years – but this has been primarily focused in the manufacturing sector.

2. However, Northern Ireland is becoming a largely service dominated economy - the service sector accounts for 73% of output and 79% of jobs. Services, and in particular high value-added tradable services (listed in Box 1), have been identified as the main source of wealth creation for Northern Ireland in the years to come. Therefore it is important that policymakers have a sound understanding of how innovation, as a key driver of productivity, influences the performance of service sector firms and whether government support is tailored appropriately.

Box 1: Tradable Service Sectors

Tradable services are high export potential service sectors as defined by DETI:

- Computer & Related Services (SIC 72);
- Research & Development (SIC 73);
- Market Research (SIC 74.13);
- Business & Management Consultancy (SIC 74.14);
- Architecture & Engineering (SIC 74.2);
- Technical Testing & Analysis (SIC 74.3);
- Advertising (SIC 74.4); and
- Creative Entertainment (SIC 92.1 – 92.3).

3. Studies of innovation in Northern Ireland², to date, have generally been focused on R&D in the manufacturing sector. Therefore, DETI commissioned InnovationLab to carry out research into 'Innovation in Northern Ireland's Tradable Services' to improve the evidence base for policy development in the service sector. The main aims of the research were to:

- Identify the **key drivers** of innovation in service sector firms;

¹ Service innovation is defined as the market introduction of new or significantly improved services. Service R&D is expenditure carried out to increase the stock of knowledge and devise new and improved services.

² DETI carried out research in 2004 on 'Research and Development Business Expenditure in Northern Ireland'

- Determine the **extent of innovation** in Northern Ireland's service sector, and in particular in tradable service firms;
 - Clarify the **relationship between innovation, exports and productivity**; and
 - Assess the **current support** on offer to stimulate innovation in tradable service firms in Northern Ireland.
4. In addressing these research aims, InnovationLab analysed information from the Innovation Survey 2005 and the 2004, 2005 Annual Business Inquiry databases. This research was completed in two phases, and the following reports were producing documenting the findings:
- **Phase 1:** Innovation in Northern Ireland Tradable Services (Final Report - June 2007); and
 - **Phase 2:** What determines Innovation, Exporting and Productivity in Northern Ireland Services? (Final Report – November 2007)
5. This paper aims to draw out the main findings from this research in relation to the main aims outlined above.

Key Research Findings

(i) Identify the key drivers of innovation in service sector firms

6. The research considered two fundamental questions:
- What is service innovation?
 - What are its key drivers? Or, put another way, what are the characteristics which mean a particular firm is more likely to innovate?
7. There is no generally agreed definition of service innovation. However, the report provides a conceptual model which revealed the difference in how the manufacturing and service sectors innovate. While manufacturing innovation tends to be more technologically based and R&D focused, service innovation is more dependent on 'softer innovation' such as customer / supplier interaction, organisational change or the development of new services.
8. The research identified the following firm characteristics as being associated with greater service innovation:
- The **age** of a firm, with newer firms more likely to innovate;

- The **size** of a firm, with larger firms more likely to innovate;
 - **External ownership**, with firms that are part of a larger group more likely to innovate;
 - Firms **undertaking R&D** are more likely to innovate; and
 - Having **external customers** outside of Northern Ireland also increases the probability of innovating
9. The analysis also revealed that a firm's local linkages³ play little consistent role in stimulating innovation; while access to finance was not a significant barrier either.

(ii) Determine the extent of innovation in Northern Ireland's service sector, and in particular in tradable service firms

10. The measures of innovation considered in the research revealed that, overall, service sector firms in Northern Ireland have significantly lower levels of innovative activity than their UK counterparts (see summary data in Table 1) – with the exception of the sale of innovative products to new markets, where Northern Ireland performed better.

Table 1: Comparison of NI / UK summary innovation indicators

	NI	UK
Service Innovation (% firms)	14.7	19.4
New to market innovation (firms)	53.2	55.0
Sales of innovative products:		
% new to market	2.2	2.8
% new to enterprise	2.5	3.6
% improved	3.2	3.7
% unchanged	90.9	85.5

Source: Innovation in Northern Ireland Tradable Services (Final Report - June 2007)

11. In broad terms, these indicators show that innovation in Northern Ireland's service sector is either at, or below, the level of the local manufacturing sector.
12. However, there is a wide range of sectoral diversity in Northern Ireland's service sector. For example firms in motor trades, wholesale & retail trade, hotels & hospitality, and financial services tend to display low levels of innovation. Conversely, Computer services / R&D and other business services emerge as sectors which are more innovative in Northern Ireland than the rest of the UK. This is particularly

³ Local linkages are those within approximately 100 miles of the firm.

encouraging, as these areas represent high value-added tradable services sectors.

13. Data limitations prevented a detailed sub-sectoral analysis of innovation in the tradable service sectors, listed in Box 1, however, the research does include a qualitative assessment based on individual firm interviews. Key findings from these highlight:
 - Business & management consultancy is the most innovative tradable service sector, with all firms developing new and improved services. Many innovations in this sector are leading-edge, providing services new to the UK or world;
 - Computer services is the only tradable services sector which combines high levels of innovation with a strong export focus – only one third of sales are in the NI market;
 - Advertising, architecture & engineering and technical testing all have high levels of service innovation, however sales are dominated by the NI market; and
 - Creative entertainment is the least innovative tradable services sector, with almost half the firms interviewed not introducing any form of improvement to the services offered.
14. Comparisons with the Republic of Ireland indicate that there are few significant differences at either an aggregate or sectoral level. Broader EU comparisons were limited due to data availability. In terms of new to market innovative activity, Northern Ireland has similar levels to countries such as Finland and the Netherlands. However, some other countries, notably France, Italy and Austria have significantly higher levels.

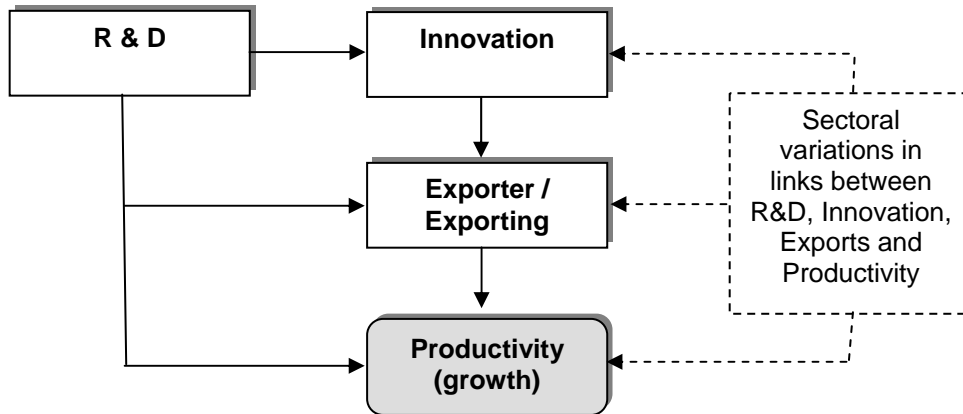
(iii) Clarify the relationship between innovation, exports and productivity

15. The research considered separately the relationship innovation has with exporting and productivity. The key findings in terms of the relationship between innovation and exporting are as follows:
 - Engaging in innovation will not make a firm become an exporter;
 - However, of the firms that do export, those undertaking innovation export a significantly larger proportion of their sales outside Northern Ireland; and
 - Service innovation has a small, but positive, effect on export growth.

16. This suggests that undertaking innovation and introducing new services will not turn non-exporters into exporters, but more positively, it will improve the export performance of those firms that are already exporting.
17. The findings of the analysis of firm-level data, in terms of the relationship between innovation and productivity, appear somewhat counterintuitive. It would be reasonable to expect that innovation would improve productivity. However, the findings suggest:
 - When benchmarked against non-innovating firms, labour productivity was found to be a quarter higher in those service sector firms that do innovate; but
 - Once firm specific factors (e.g. sector, size etc.) were taken into account, innovation was found to have no direct impact on productivity (in the following year).
18. However, these findings need to be qualified. Firstly, the impact of service innovation might take longer to manifest itself than the relatively short period considered in this research. Secondly, firms undertaking R&D were found to have rates of productivity growth 9.6 percentage points higher than those with no R&D. Therefore, rather than suggest that there is no link between service innovation and productivity, it is possible that this link is masked in the statistical analysis by R&D which has a strong association with innovation.
19. Furthermore, it must be noted that the findings outlined above are the results of separate analysis of the impact of innovation on exporting and productivity. However, it must be appreciated that these aspects of firm performance are closely intertwined and difficult to fully unravel.
20. The analysis suggests that innovation in the service sector might not directly improve productivity. However, innovation does lead to growth in exports and also increases the export intensity⁴ of service firms. Being an exporter is associated with markedly greater productivity and productivity growth. On average, an exporter in 2004 was estimated in the next year to have productivity growth 10.9 percentage point greater than a non-exporter.
21. Innovation, it is suggested, has a positive impact on productivity, through its effect on exports. This relationship is illustrated in Figure 1.

⁴ Proportion of total sales derived from exports

Figure 1: Innovation, R&D, Exporting and Productivity in Northern Ireland Services



22. Being an innovator assists exporting and this, in turn, assists productivity. Both these effects are underpinned by R&D. By itself, innovating is not enough. Innovation plus exporting is required for sustained productivity growth in services.

(iv) Assess the current support on offer to stimulate innovation in tradable service firms in Northern Ireland.

23. Invest NI operate a comprehensive range of innovation support measures, many of which are directly relevant to supporting innovation in service sector firms.
24. Where detailed sectoral information was available (in relation the Compete, and Start programmes), service sector businesses represented around one-third of users – broadly in line with the contribution of the service sector to Northern Ireland’s overall R&D.
25. It was found that service sector businesses are under-represented among the users of some other support measures (Centres of Excellence, Proof of Concept, NITECH). But it is suggested that this may reflect the types of activities supported by these schemes, which have a technological focus. There is however, a relatively strong concentration of Invest NI support for businesses in Computer Services, and the ICT sector. Outside this sector – with the exception of Compete – direct innovation support for service sector businesses seems relatively limited.
26. InnovationLab’s review suggests that there is considerable scope for developing support measures for services sector innovation in Northern Ireland. There are a number of issues that should be considered in developing this support:

- the **eligibility** criteria and definition of innovation;

- the **timing** of the support and links to other programmes; and
- the **nature** of support available.

Eligibility

27. Eligibility for Invest NI support depends on firms' ability to become client companies. The standard entry gate to Invest NI support, for example, the Business Health Check, is largely generic in its application and is fairly adaptable to identify the strengths and development priorities for service firms⁵. But, becoming a client also depends on a firms ability to demonstrate that currently, or over the following three year period, it will have total sales of over £100,000 per annum; and external sales greater than either 25% per annum, or £250,000 per annum. However, service firms tend to be smaller than manufacturing businesses, and therefore are less likely to be eligible for support.
28. Furthermore, the research suggested that in line with best practice elsewhere, the definition of innovation⁶ needs to be considerably broader than the technologically focused definition adopted by the majority of Invest NI programmes at present.

Timing

29. The findings of the research outlined previously indicated that innovation has a positive impact on productivity through its effect on exports. However, engaging in innovation will not make a firm become an exporter; but rather only has a positive effect on the external sales of those already engaged in exporting. This implies that support for innovation should be focused on service firms already exporting to maximise the impact on productivity. There would need to be a close relationship between the service innovation support and Invest NI's export programmes.
30. Reviewing Invest NI's export programmes was outside the scope of this research, however it will be important to understand how suitable the current range of export programmes are for services given the close link with innovation⁷. If services firms are not participating in or benefiting from Invest NI's export supports, then the research suggests that the value of the innovation support could be limited.

Nature

⁵ An evaluation of the Business Health Check has recently been carried out which concludes that the Innovation WAVE - a tool that assesses innovative capability and performance - is rated poorly by business beneficiaries and needs to be revisited.

⁶ The Finnish Tekes Serve programme adopts a broad definition of service innovation as 'a new or significantly improved service concept that is taken into practice'.

⁷ Invest NI indicate that service companies are well represented in their export programmes.

31. A review of evaluation findings in relation to current schemes suggests that a change in focus is needed to better shape such measures more closely to the needs of service sector firms outside the ICT sector. Any scheme would need to have the capability to be differentiated between sectors, requiring one of two approaches:
 - A series of sector specific strategies, tailored to the needs of individual sectors. This would present an opportunity to develop and target support for each particular sector. The downside of this being that it potentially could lead to a patchwork of different support measures; or
 - Adopt a broader focus, with eligibility conditions which are wide enough to cover a wider range of sectors. This would enable Invest NI to maintain (and perhaps strengthen) the manufacturing focus of current supports, while developing companion supports for service innovation.
32. Much of service innovation is collaborative due to the small size of service firms, therefore a major feature of any scheme would be the capability to support collaborative developments.
33. There may be scope to increase the range of market intelligence services available to services sector businesses. This may require more of a European focus than at present and in a slightly different form.
34. Both universities have a strong history of working with manufacturing firms but have less clear links with service firms. These will need to be strengthened to increase levels of service innovation. Universities and other support organisations should be encouraged to support a service sector innovation agenda in Northern Ireland. To develop the support framework, a separate mapping study of support organisations for service innovation should be considered.
35. Ultimately, it will be important to ensure that any support is holistic i.e. reflects the wide range of factors which shape service sector innovation. This would involve measures having a broad coverage from skills development through to relevant academic research and business model development.
36. The research suggests that, if implemented, these changes in the eligibility criteria, timing, and nature of innovation support offer the potential to increase both the level of service sector innovation, and its overall impact on productivity in Northern Ireland.