

# Innovation performance of knowledge-intensive business service SMEs within an uncompetitive regional economy: the case of Wales.

## Conference theme:

This paper is related to the following conference themes (by level of relevance)

Very relevant	Relevant
7. Place based innovations <ul style="list-style-type: none"> <li>Regional triple helix spaces</li> <li>Local innovation systems and local key institutions</li> </ul>	4. Universities as interactive partners <ul style="list-style-type: none"> <li>Mapping university-business relationships,</li> </ul>
3. Overall performance of the Triple Helix Approach: From efficiency of factors of production to 'modes of coordination': <ul style="list-style-type: none"> <li>Innovation (S&amp;T, R&amp;D, Intangibles, spin-offs design, etc.)</li> <li>Indicators of productivity and output</li> </ul>	6. Public action to drive private innovation <ul style="list-style-type: none"> <li>National and EU Innovation policies</li> </ul>

## Title:

Innovation performance of knowledge-intensive business service SMEs within an uncompetitive regional economy: the case of Wales.

## Keywords:

Innovation performance, innovation systems, regions, KIBS, SMEs

## State of the Art

The aim of this research is to provide empirical evidence on the innovation performance of knowledge-intensive business service SMEs in a uncompetitive regional economy. Drawing on the latest available UK Innovation Survey, the study uses benchmarking analysis in order to identify the regional variations in innovation performance at the SME level to examine whether the innovation performance of knowledge-intensive business service (KIBS) firms differs across different regions. The analysis of the results can then be used as a reference point for the development of innovation policies within other uncompetitive regional economies.

The KIBS sector covers activities such as computer services, legal, accountancy and management services, architectural, technical and engineering services (Miles, 2005). KIBS are important for a number of reasons. Innovation in KIBS can enable innovation in other organisation (den Hertog, 2000; Muller and Zenker, 2001). KIBS firms within the EU-27 account for 9.8% of total employment and 8.6% of total economic output, with the UK being one of the biggest KIBS employers' accounting for over 3.7 million employees (Huggins, 2011). KIBS firms innovate in a very distinct way and can be approached as such (Corrocher et al., 2009; Gallouj and Savona, 2009).

Whilst there is a growing evidence on both the importance of knowledge that firms possess or create internally as well as knowledge accessed externally (Chesbrough, 2003) prior studies on innovation activities have focused attention on a limited number of these activities and in isolation. That is, studies focusing either only on innovation possessed internally such as R&D (Birkinshaw, 2002), or external R&D (Howells et al., 2004). Furthermore, other important innovation activities such as acquisition of equipment and machinery (Tsai and Wang, 2008), acquisition of external knowledge (Amara and Landry, 2005), training (Macdonald et al., 2007), and marketing activities (Hooley et al., 2005) are researched in isolation.

This paper appears to be the one of the first to include, in a single index, nine innovation dimensions capturing in total fifty-four different indicators in order to undertake an examination of the innovation performance of KIBS firms at the SME level in Wales, drawing on existing evidence related to innovation systems and, more specifically, work related to innovation measurement. From this, a methodology for benchmarking innovation performance in the knowledge-intensive business service sectors is constructed that built upon theoretical conceptualisation based on the recent Innovation Index developed by NESTA (Roper et al, 2009).

## Methodology

The main dataset used was the UK Innovation Survey (UKIS), held by the Office for National Statistics Secure Data Service and derived from surveys conducted across the UK which are part of the wider European Community Innovation Survey. The sample is stratified based on three variables namely regions, sectors, and business size. The twelve UK regional economies are classified into competitive and uncompetitive ones based on the UK Competitive Index (Huggins and Thompson, 2010) with Wales ranked as an uncompetitive regional economy. In terms of sectoral coverage, data from the knowledge-intensive business service sector was utilised with the following Standard Industrial Classification (SIC) codes (64.2, 65 to 67, 72 to 73, 74.1 to 74.4). This resulted in a sample size of 34,637 with 1,018 KIBS SMEs for the region of Wales. In terms of business size, a SME was defined as an enterprise with less than 250 employees.

The index seeks to benchmark the innovation performance of UK SMEs in the knowledge-intensive business service sector. Within the index, regions are ranked in four groups namely; innovation leaders, innovation followers, moderate innovators, and modest innovators. These depict the different levels of SMEs innovation performance located in those regional economies. Further, it includes a detailed list of fifty-four indicators that measure innovation, including traditional R&D measures and other non-R&D measures, which are grouped then under three broader categories namely accessing knowledge, building innovation, and commercialising innovation.

## Findings and interpretations

In terms of overall performance, Wales was one of the four UK regions under the *moderate innovators*' performance group that is below the UK average performance. It ranked 6<sup>th</sup> in the sub-index of accessing knowledge, 6<sup>th</sup> in building innovation and 8<sup>th</sup> in commercialising innovation.

Relative strengths for Welsh knowledge-intensive business service SMEs in the accessing knowledge category were found in knowledge creation for innovation and in particular: internal R&D and acquisition of computer software, hardware and advanced machinery. However, from a Triple Helix perspective, in the same measure linkages with external organisations were a source of weakness with below average scores in market research, external R&D and acquisition of external knowledge indicating that Welsh SMEs in knowledge-intensive business services were not engaging in innovative activities outside their own organisations.

KIBS SMEs in Wales posted a below average performance in the building innovation category, coming under the *moderate innovators* grouping. They posted strong showings in training and design, management techniques and corporate strategy, but were lacking in engagement with external sources. This is surprising as it would be reasonable to assume that knowledge-intensive business services would be more likely to engage with other knowledge creators in the pursuit of economic value. Certainly with a functioning Triple Helix model there would be strong linkages between knowledge intensive sectors and knowledge creators such as universities and public research organisation.

In terms of Welsh performance in commercialising innovation category, Wales was one of five UK regions with a below average performance under the *moderate innovators* performance group. Relative strengths (marginally) for Welsh KIBS SMEs were found in innovation intensity, with innovation output primarily *new to the business*, and to a lesser degree *new to the market*. Some strengths were found in market networks such as utilising information from clients and suppliers. However, this is mitigated by a poor performance in innovation protection, such as patents and trademarks, with limited strengths on confidentiality agreements as protection mechanism. This was the worst performance of all the different groups and results observed for Wales and paint a relatively bleak picture of innovation for SMEs in the knowledge-intensive business services sector.

## Conclusion and policy implications

This research offers a benchmarking analysis for measuring the innovation performance of SMEs based in less competitive and peripheral regional economies. The methodology developed, by introducing a comprehensive list of innovation indicators and operationalising it in a distinctive manner, provides a holistic account of the relative innovation performance of Welsh SMEs in the knowledge-intensive service sector. This is the first attempt that reveals and map the dynamics of

innovation within a less competitive and peripheral regional economy such as Wales. The study therefore has the potential to provide important insights for policymakers and sets out a new agenda for the development of a fresh strategy for innovation policy. It is argued that the innovation support needs to be tailored and bespoke. Based on this policy recommendations are offered.

This research addresses the lack of evidence of innovation performance in less competitive and regional economies. It therefore makes a methodological and policy contribution in terms of the business innovation and policy literatures. Future research will examine the different innovation processes that take place within knowledge-intensive business service SMEs through adopting a detailed case study approach.

## References

- Amara, N., & Landry, R. (2005). Sources of information as determinants of novelty of innovation in manufacturing firms: evidence from the 1999 statistics Canada innovation survey. *Technovation*, 25(3), 245-259.
- Birkinshaw, J. (2002). Managing internal R&D networks in global firms: what sort of knowledge is involved? *Long Range Planning*, 35(3), 245-267.
- Chesbrough, H. (2003). *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Boston: Harvard Business School Press.
- Corrocher, N., Cusmano, L., & Morrison, A. (2009). Modes of innovation in knowledge-intensive business services evidence from Lombardy. *Journal of Evolutionary Economics*, 19(2), 173-196.
- den Hertog, P. (2000). Knowledge-Intensive Business Services as Co-producers of Innovation. *International Journal of Innovation Management*, 4(4), 491-528.
- Gallouj, F., & Savona, M. (2009). Innovation in services: a review of the debate and a research agenda. *Journal of evolutionary economics*, 19(2), 149-172.
- Hooley, G. J., Greenley, G. E., Cadogan, J. W., & Fahy, J. (2005). The performance impact of marketing resources. *Journal of Business Research*, 58(1), 18-27.
- Howells, J., James, A. D., & Malik, K. (2004). Sourcing external technological knowledge: a decision support framework for firms. *International Journal of Technology Management*, 27(2), 143-154.
- Huggins, R. (2011). The Growth of Knowledge-Intensive Business Services: Innovation, Markets and Networks. *European Planning Studies*, 19(8), 1459-1480.
- Huggins, R., & Thompson, P. (2010). UK Competitiveness INDEX 2010. Cardiff: Centre for International Competitiveness, University of Wales Institute, Cardiff.
- Macdonald, S., Assimakopoulos, D., & Anderson, P. (2007). Education and Training for Innovation in SMEs A Tale of Exploitation. *International Small Business Journal*, 25(1), 77-95.
- Miles, I. (2005). Knowledge intensive business services: prospects and policies. *foresight*, 7(6), 39-63.
- Muller, E., & Zenker, A. (2001). Business services as actors of knowledge transformation: the role of KIBS in regional and national innovation systems. *Research policy*, 30(9), 1501-1516.
- Roper, S., Chantal, H., Bryson, J. R., & Love, J. (2009). *Measuring sectoral innovation capability in nine areas of the UK economy*. London: NESTA.
- Tsai, K.-H., & Wang, J.-C. (2008). External technology acquisition and firm performance: A longitudinal study. *Journal of Business Venturing*, 23(1), 91-112.