

# Open innovation and Scottish SMEs

Summary findings from a study of 30 Scottish firms interviewed between January & June 2012



This brochure summarises the results of a study to understand how small and medium sized firms in Scotland engage with open innovation, and how they use it to their benefit. This project summary has been sent to all businesses interviewed up to June 2012, with thanks for their time, as well as others for whom this may be of interest.

The project was designed to answer several questions:

- How **open** are Scottish SMEs when it comes to innovation?
- What are the **barriers** preventing Scottish SMEs from practicing open innovation?
- What **changes** have firms made to benefit from more open innovative behaviour?

This summary also includes two **fictional** case studies of two Scottish firms – one operating in IT and one operating in Renewable Energy (the two industries investigated in this study) – each of which has benefited from making the transition to a more open model of business innovation. Our focus here is on what firms have told us about how they operate and what works for them, rather than what the theory says about how firms should innovate.

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## *What is open innovation?*

Open innovation is the idea that firms should avoid a 'closed loop' innovation process, in which each step of new product or service development is carried out *only* in-house. Instead, firms should open up the process to external input such as, for example, expert advice, purchasable IP or informal knowledge exchange, the benefits of which are that existing resources in the business environment are taken full advantage of. They should pursue collaboration with partners (other firms, or research organisations such as universities), not only in R&D but also across the wider innovation process - because an innovation is not successful until it is profitable. In parallel, firms should look at a broad range of ways to maximise profits from the information they own (such as licensing or venturing). The central focus here is on maximising the use of knowledge for successful innovation.

Open innovation is a broad concept. There are some common misconceptions about it:

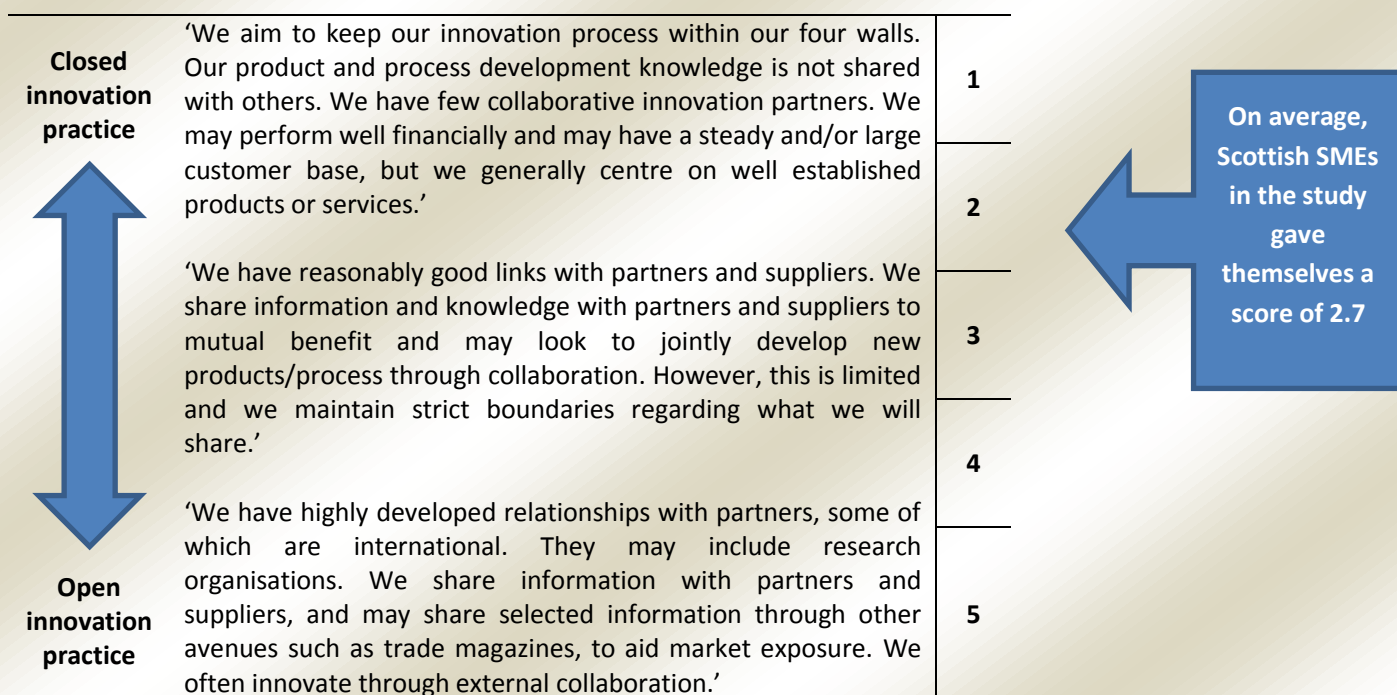
- It is not about unrestricted knowledge sharing. It is about exchanging information selectively, and often in a formalised way (e.g. on a contractual basis), to share the risks and rewards of innovating.
- Open innovation is not free. Time, money and effort are still needed. But additional options may be available to the innovating business when the innovation process is opened up, rather than if it remains closed to external inputs and opportunities.
- Open innovation can be put into practice in many ways. For example, it can be about equal collaborative partnership between firms or between firms and universities; outsourcing part of the innovation process to a specialist; or acquiring knowledge from IP or expertise in the marketplace.

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## *How 'open' are Scottish SMEs when it comes to innovation?*

In this study we asked 30 Scottish SMEs in two sectors – IT and Renewable Energy – a range of questions about how open their innovative practices are. Every business has its own unique approach to innovating, and there is no single fixed way of using open innovation to gain competitive advantage. In addition, industry-specific pressures mean that optimal patterns of behaviour differ between sectors. The two sectors in this study have major differences in approach despite being high tech and operating in very competitive national and international markets. Firms told us about a wide range of their open innovative practices, and how they worked. The figure overleaf ('Open innovation ratings') shows where they ranked themselves in terms of overall openness.

## Open innovation ratings



The diagram above shows that on average, Scottish SMEs do not rank themselves as being very open in terms of innovation. This does not mean that such firms are unsuccessful (many are profitable and well established), but some also consider that adopting open innovation practices could enable them to improve their innovation performance.

## What are the barriers to open innovation?

Open innovation was seen as difficult to achieve by many of the firms surveyed, and there are barriers which inhibit its adoption. Eight broad categories of barrier were identified (see diagram below). An important point of note is that these barriers are often interdependent and rarely stand alone. For example, a lack of finance may reduce the ease with which IP can be protected, or limited partnering may constrain access to specialist knowledge (which a complementary partner could have in-house). This diagram aims to highlight some of the main reasons why firms may not innovate openly. The obvious subsequent question is – what works for Scottish SMEs making the transition to a more open model?

### Barriers to open innovation\*


Barrier	Examples
Resources (including human resources, but excluding fiscal resources – see 'Finance' below)	Company time constraints; insufficient R&D facilities; difficulty in sourcing skilled labour
Finance	Limited availability of balance sheet capital for open innovation (e.g. cost of patents); poor access to external finance (loans, investment, etc.)
Knowledge	Low awareness of the benefits of open innovation
Intellectual property	Conflict over IP ownership of collaboration; indefensible IP; capacity/ability to source and utilise external technologies
Partnering (with firms and with HEIs)	Inability to find partners; partners are not ideal; partners are not reliable; few network connections to clients or suppliers
Enterprise and commercialisation	Challenges in bringing to market
Administration	Low administrative capacity; lack of time for administrative open innovation necessities
Cultural/attitudinal barriers	A 'not invented here' or 'only used here' attitude; preference for closed innovation; excessive risk avoidance

\*Drawn in part from a study by van de Vrande *et al.*, 2009


## Good practice in open innovation

A number of common areas of good practice became evident from the interviews. These are listed and summarised under the five sub-headings below. For each area, this page looks at where firms have moved from and where they have moved to (or want to move to) in achieving good practice. 'RE' is used as an abbreviation for Renewable Energy.


- **INNOVATION PARTNERS** – other firms or organisations with whom collaborative innovation is undertaken

<i>Move from:</i> Innovating without the use of partners or external input, and maintaining a 'fortress mentality' in the business		<i>Move to:</i> Collaboration with partners. This may be at the R&D stage or at the bringing to market stage, but can provide a fresh perspective, complementary skills, financial inputs, or new market access opportunities	<i>IT sector examples:</i> Partnering with hardware suppliers; pursuing distribution agreements with much larger firms to achieve a 'step change' in market exposure and open up new sales channels	<i>RE sector examples:</i> (Depending upon specialism) vertical partnering with site developers (downstream) or OEMs (upstream); buying in expertise on a contractual basis
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- **INNOVATION NETWORKS** – building external relationships and linkages to facilitate flows of knowledge

<i>Move from:</i> Poorly developed networks of relationships with other actors and organisations		<i>Move to:</i> Engaging in networking activity which could facilitate collaborative innovation (both formal and informal networking)	<i>IT sector examples:</i> Engaging with relevant information providers or associations (e.g. ScotlandIS, GlobalScot); business networking	<i>RE sector examples:</i> Pursuing links with institutional actors/agencies (e.g. Scottish Renewables); developing verticals
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- **ABSORPTIVE CAPACITY** – the firm's ability to absorb and make use of information to help it to innovate

<i>Move from:</i> Making little or no use of existing industry information or research and relying mainly on R&D which is carried out in-house		<i>Move to:</i> Establishing systems to monitor and absorb useful external information; making use of collective employee know-how and avoiding 'islands of knowledge' in the firm	<i>IT sector examples:</i> Engaging in external communities of practice; maintaining staff awareness of business plans; using customer feedback in product development (i.e. user-led innovation)	<i>RE sector examples:</i> Circulating information within the firm in a structured manner; actively tracking new industry information; proactively adjusting to regulatory changes
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- **INTELLECTUAL PROPERTY** – maximising opportunities for exploiting IP and selective knowledge exchange

<i>Move from:</i> Minimising any 'leakage' of IP whatsoever; avoiding any knowledge sharing arrangements with other parties		<i>Move to:</i> Sharing knowledge with partners in exchange for their resource, knowledge or input. Recognising that some information exchange can be advantageous if managed appropriately	<i>IT sector examples:</i> IP licensing, which may be combined with ongoing service provision agreements; a focus on remaining innovative and updating through new versions	<i>RE sector examples:</i> Out-licensing any 'spare' IP or selling technological patents which are no longer integral; venturing through SPVs* may be feasible
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- **ORGANISATIONAL CULTURE** – the firm's collective attitude towards using external resources

<i>Move from:</i> A 'not invented here' mindset; unwillingness to exploit externally sourced information, technologies or products		<i>Move to:</i> An adaptive and outward-looking organisational attitude. Evaluating the potential value of external resources which could be legally and ethically used	<i>IT sector examples:</i> Exploring new industry developments such as cloud computing, consumerisation, etc., and generating ideas for innovative tie-in	<i>RE sector examples:</i> A greater regulatory or wider industry outlook; ensuring that staff can express new business ideas; exploring acquisition prospects
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\*Special Purpose Vehicles

## Case studies

The firms interviewed operate in unique and highly individualised ways. There are two main influences on innovation:

- Modes of innovation are heavily influenced by industry sector and specialism. This is especially true for Renewable Energy sector firms, which may be service providers and/or technology developers.
- Small and medium sized enterprises face difficulties to do with economies of scale and/or limited overheads.

The case studies below provide examples of firms which have successfully incorporated some of the principles of open innovation despite these two influences. **These firms are fictional and are not based on any one interviewee.** Instead, each is a combination of a number of successful practices which were described by multiple interviewees.

### Case study: Firm X, in the Scottish IT sector

Firm X is a well established full spectrum website developer which uses existing commercial software, and has long term clients. Its business model is service orientated and focussed upon on-going support agreements, but this means that turnover is limited by staff capacity. So, Firm X's management team has also looked to develop an off the shelf product through which the company can diversify its income stream. To refine a product plan, Firm X monitored forum newsfeeds for industry hot topics and used a group of existing clients to develop new ideas (in exchange for discounts on their existing support contracts). Having fully developed the concept, which it feels has significant market potential, the company needs product development expertise and the capital to finance this commitment. Its aim has been to raise equity capital through a private investor who could also provide product development direction, particularly in the areas of software testing and deployment. Through engaging with a business angel network, Firm X has managed to attract some initial interest, which it aims to finalise in the near future.

### Case study: Firm Y, in the Scottish Renewable Energy sector

Firm Y is a one year old 'hard' technology company which was initially funded through a start-up grant from a Scottish enterprise agency. The MD has an engineering background and follows new technological industry developments through several academic journals. Firm Y is working on developing a new electricity microgeneration device, and sources parts from a wide range of national and international suppliers. Its challenge lies in developing a proof of concept prototype, but it is having some technical design problems in achieving this. The MD has applied to Knowledge Transfer Partnerships scheme, run by the Technology and Strategy Board, to locate a 'knowledge base' partner who can help to overcome the design issues, and is currently in discussion with a KTP advisor. Firm Y has also subcontracted the forthcoming construction aspects to a local engineering company. Lastly, the need to develop market interest has been recognised, so the MD is beginning to make informal enquiries amongst his personal contacts to identify possible sales leads.

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## Further information

Open innovation has become increasingly popular over the past 10 years, because it offers an effective means of gaining competitive advantage. Websites which may be of interest for further information include:

- Openinnovation.eu - <http://www.openinnovation.eu/>
- Innovators' Counselling and Advisory Service for Scotland (ICASS) - <http://www.icass.co.uk/>
- Open Innovation Community - <http://www.openinnovation.net/>
- Scottish Government business support - <http://www.scotland.gov.uk/Topics/Business-Industry/support>

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