

# Effect of knowledge sources on firm level innovation

Policy brief DFID/Tilburg University research: *'Enabling Innovation and Productivity Growth in Low Income Countries' (EIP-LIC)*.

<http://www.tilburguniversity.edu/dfid-innovation-and-growth/>



Ideas and inventions are at the centre of innovation, and these in turn are significantly influenced by knowledge. Knowledge is thus a prerequisite for innovation: the generation, exploitation and manipulation of new forms of knowledge by firms to create new products. There are two main sources of knowledge for innovation that impact innovation differently: internal and external sources.

Internal knowledge development happens within the boundaries of the firm through in-house knowledge dissemination, research and development, and internal education and training. External knowledge acquisition involves the introduction of new knowledge from outside sources via the purchase of machinery and equipment, recruitment of qualified personnel, conferences, training, and licensing. External knowledge acquisition is useful to a firm only if it possesses an existing base of knowledge that enables it to utilise the external knowledge. In the literature, scholars differ in their views of the extent to which different knowledge sources (internal and external) contribute to firms' innovation performance.

In the framework of a DFID-funded research project entitled *'Enabling Innovation and Productivity Growth in Low Income Countries' (EIP-LIC/PO5639)*, researchers from Dar es Salaam and Tilburg University investigated knowledge sources and their relevance for innovation. The team focused on the impact of internal and external knowledge and the combined impact of both on a firm's likelihood of introducing product innovations. Their original working paper is entitled *'Effect of Knowledge Sources on Firm Level Innovation in Tanzania'* (2016) by Otieno Osoro, Godius Kahyarara, Joris Knobben and Patrick Vermeulen<sup>1</sup>.

## Research findings

The main finding of the research is that the impact of internal knowledge (ignoring external knowledge) on product innovation is greater than the impact of external knowledge (ignoring internal knowledge). The main source of internal knowledge in Tanzanian firms is firm spending on internal research and development. The purchase of equipment, machinery or software is the main external source of knowledge.

Furthermore, the development of an internal knowledge base is better undertaken by investing in internal research and development than by acquiring external business and codified knowledge. The latter is only effective once an adequate internal knowledge base is already developed. The sector and age of the firm are differentiating factors: external knowledge acquisition and firm spending on internal research and development facilitates product innovation more effectively for older firms and firms in the services sector than for relatively younger firms.

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<sup>1</sup> The paper is accessible at the project's website (<http://www.tilburguniversity.edu/dfid-innovation-and-growth/>).

The age effect is probably because younger firms generally have a poor absorptive capacity, which limits their capacity to identify and exploit technological opportunities emanating from outside the firm. The interaction of external and internal knowledge raises the probability that a firm will undertake product innovation because apart from a firm utilising external knowledge to undertake product innovation, it also uses it to enhance the internal knowledge base required to effectively identify and utilise external knowledge for product innovation.



### **Policy implications**

Policies and programmes focus on developing an internal knowledge base – thus absorptive capacity – as a priority for the optimal use of internal and external knowledge. The qualitative studies of EIP-LIC in Tanzania also show that firms undertake research and development in an informal and unorganised way, which does not include a systematically built internal knowledge base. Very few of the SMEs interviewed had a formal R&D department or a systematically organised internal knowledge development base. Business management strategies, policies and programmes should focus on raising awareness or offering management training that emphasises the importance of developing an internal knowledge base and formalising an explicit internal R&D strategy and capacity. The research also suggests that policies and programmes should take into account the age difference in companies.

The qualitative studies of EIP-LIC often show that the SME owner is a technically educated person who is the sole repository of technical knowledge in the company – “they [workers] can’t compete because they don’t have the knowledge, skills and experience that I have.” The fact that one individual holds the entire knowledge base constitutes a risk and a limitation for the company. Policies and training programmes could promote the idea of codifying and institutionalising knowledge into an internal knowledge base within companies, to be shared among the staff.

Staff training is a critical element in the development of such an internal knowledge base, whether formal or on-the-job training. One should also be realistic and acknowledge that staff may leave the company shortly after completing their training, as signalled in the qualitative study – “three former workers, whom I trained, have established their own business, which brings new competition.” This is one reason why owners are reluctant to provide formal training because they are afraid that workers will move to other jobs.

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This policy brief is the product of a research project funded by the British Department for International Development (DFID) entitled ‘*Enabling Innovation and Productivity Growth in Low Income Countries*’ (EIP-LIC). The project is implemented by Tilburg University (The Netherlands) and explores SME-level innovation in Low Income Countries (LICs) and factors that contribute to or limit its diffusion. Data collection and research collaborations took place in 10 African and Asian countries (Bangladesh, Ethiopia, Ghana, India, Indonesia, Kenya, Tanzania, South Africa, Uganda and Vietnam). The policy implications of this research are presented in a series of policy briefs, targeted at a broad audience of policy makers within governments, business and development agencies with a view to quantifying research outcomes and promoting evidence-based policy making.