

Knowledge flows and networks in the ICT sector : the case of Pakistan

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Chapter 9. Valorization

In accordance with Article 23 of the regulation governing the attainment of doctoral degrees at Maastricht University, this section discusses the valorization opportunities offered by this doctoral thesis. Following the corresponding guidelines, these opportunities are analyzed in terms of the social and economic relevance of the thesis, the potential target groups to whom the results can be interesting and the degree of innovativeness of the research methods used.

The social relevance of our thesis mainly lies in the fact that a better understanding of the channels and mechanisms of spillovers guides governments to design policies which would help domestic firms in effectively learning from their MNC counterparts.

The main results, practical findings, and policy recommendations of this dissertation can be relevant for a wide target audience: scientific, technical, business, institutional and governmental audiences as well as the general public at large. This is particularly true for audiences in a developing country context. Though similar research has been carried out elsewhere, our study is unique for Pakistan and other developing countries. Moreover, studying a developing country's high tech-sector for spillovers is fairly novel as well and the network analysis makes it even more worthwhile.

In short, the social value created in this dissertation is most relevant for two target audiences in the following ways:

9.1 For policy makers

Some findings of our dissertation are quite relevant for policy makers. Our analysis of Pakistan's socio-economic trajectory establishes the need to ensure the continuity in macro-economic policies at national level. Results of the shift and share analysis could help policy makers identify growth enhancing and growth reducing structural change, which in turn could guide them in selecting sectors which should be focused on more. The unavailability of data pointed out also highlights serious statistical shortcomings in Pakistan. The analysis of the evolution and growth of Pakistan's ICT sector deepens the understanding of its role in economic development. It also identifies some of the strengths and weaknesses of the sector.

Similarly, our firm-level survey reveals that foreign qualified and experienced staff positively affect productivity of firms. This calls for policies that would encourage and ensure a brain-gain and a reverse brain-drain. Moreover, the positive effect which trainings for technical staff have on innovative performance highlights the importance

of holding such trainings. For a developing country with ambitions to tap into the knowledge economy but where domestic firms can not readily afford to arrange trainings on their own, it would be of paramount importance that technical training institutes are fostered and trainings imparted for free or at subsidized rates. Our network analysis revealed the positive impact of frequent firm to firm interaction on both productivity and innovativeness. As interaction is easier (and usually more frequent) in geographically closely located firms, this highlights the importance of science and technology parks.

9.2 For firms (MNC and domestic)

From a firm's perspective, some of our findings are very relevant as they lay down some guidelines which firms could incorporate in their respective business strategies. Firstly, the findings relevant for policy makers are equally valuable to firms, as they can benefit in terms of innovative and economic performance gains by utilizing them. Most of the findings are equally applicable to MNC and domestic firms such as the business opportunities highlighted in the ICT sector. Similarly, corroborating Burt's hypothesis of structural holes in a developing country context means that firms' corporate culture should discourage wasting time with redundant ties. The importance of interaction frequency for both innovativeness and productivity calls for providing employees with opportunities to interact with partner firms, be it through co-location or other practical means. Moreover, some findings are particularly pertinent for domestic firms, such as the fact that firms which point to MNCs as their primary source for technology are more productive.

9.3 Dissemination

Effective communication, dissemination and exploitation of the results of this research play an essential role in succeeding to reach the maximum social value creation. In addition, it is necessary to exploit a wide range of tools to reach such a diverse target audience. These tools include publications in peer-reviewed journals (open accesses wherever feasible), specialist website and presentations in scientific conferences and seminars (scientific community); commercial, financial and industrial publications (business organizations), popular newspapers, magazines, blogs, social media, and the Internet (the general public); reports and policy briefs (international organizations and policy makers).

We not only hope that our recommendations for valorization will be useful for the target audiences e.g. policy adoption at governmental level, but also do our own efforts in this regard by engaging with various actors at different forums. In this regard we have already succeeded in a few engagements such as presentations of our results

and findings at academic conferences, lectures are policy institutes and publishing in national dailies. Excerpts from findings were presented at an IEEE conference at Institute of Business Administration Karachi on 24th July 2011, in the 1st IEEE Engineering Management Conference at NUST on 20th March 2012, and the COMSTECH International Conference on Science Policies and Restructuring of National Systems of Innovation, Islamabad, Pakistan held 3rd to 5th October 2012. Similarly, a lecture was delivered at a COMSTECH Training Course at the COMSTECH Head office in Islamabad held between the 5th and 9th March, 2012. Chapters 4, 6 and 7 will be adapted for publishing in international peer-reviewed journals.