Communication, Professional Networks and Productivity

The publication of findings is the ultimate outcome and purpose of scientific research. As the chief end product of a scientist’s work (Price, 1965a), publication carries greater meaning and value in the professional life of scientists. Publication is widely used as a measure of research productivity (Eslami et al., 2013, for instance). The publication productivity of scientists seems to be sustained by collaboration as seen in the previous chapters. Reprising the connection between productivity and collaboration, Price very succinctly notes that ‘the most prolific man is also by far the most collaborating’ (1986: 126). The most productive authors collaborate frequently and are inclined to collaborate with highly productive authors (Katz and Martin, 1997).

The general assumption is that collaboration increases research productivity, but very few studies provide empirical evidence to support this proposition (Bozeman and Boardman, 2003a). The correlation between productivity and the degree of collaboration has been established by Beaver and Rosen (1978) and Katz and Martin (1997) in their studies, to cite but two examples. Bonaccorsi et al. (2006) reported a trade-off between academic publications and industry-oriented research and suggested that collaboration with industry leads to an initial increase in productivity. Bordens et al. (1996) found among researchers in biomedical research (gastroenterology, cardiovascular system, and neurosciences) a positive correlation between the total production of authors and their international, national and local production. The analysis of Abramo et al. (2009) showed positive correlation between the degree of international collaboration and the scientific production of universities.

There is a sectoral pattern in productivity as well. In a study of Canadian universities Landry and Amara (1998) noted that the researchers brought in more publications when they collaborated within
research institutes than within research teams. Collaboration between researchers and industry has more impact on productivity than collaboration between researchers and their research peers in other institutions (Landry et al., 1996). Glänzel and de Lange (2002) suggested a strong relationship between the number of international links of countries and the number of full and fractional counts of publications. A trade-off between writing articles and engaging in collaborative research and development (R&D) is observed, and publication increases as the collaboration network gets progressively larger (Barjak, 2006). Scientists in some European countries with larger collaboration networks have written relatively more journal articles (Barjak, 2006). In some African countries, the count of publication is associated with the increasing level of international collaboration (Narváez-Berthelemot et al., 2002). They found that there was a 54 per cent increase in publications of papers co-authored with scientists from overseas.

Productivity is uneven due to the nature of disciplines and the geographical locations of authors. Book publication is lower for experimental physicists than social scientists, while multi-authored papers are the highest among experimental physicists (Roe, 1972). In the productivity of collaborative partners, variation is effected by geographical proximity or fields of research (Landry et al., 1996). Barjak (2006) gathered a host of factors from the literature that determine the productivity of scientists: research motivation, stamina, creativity, age, gender, rank and professional recognition, burden of other obligations such as teaching and administration, communication with colleagues, participation in collaborations, training environment, size of the research group, prestige and research focus of the institution, organizational freedom, liberty to select the content of the research, scientific discipline, and the country of the scientists.

Productivity is also a function of the time that is effectively spent (or can be spent) on research. In a study of South African scholars, Jacobs and Ingwersen (2000) identified the length of time in teaching and doing research as a decisive constituent in their productivity. Senior scientists and professors, as opposed to their junior colleagues, are able to devote a larger share of their time to research that eventually translates into conference presentations, workshop participations and publications. Nevertheless, this is contingent upon the roles and functions attached to positions and how they are expected to be performed by the incumbents. A respondent of our study revealed that he had experienced a perceptible change in his productivity when he was relieved of some of his non-research functions at a university. While serving as the