Can the Triple Helix Model be the Champion for Innovation in the Countries with Low Private R&D Spending? Evidence from the Palestinian Industrial Sector

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It becomes clear that nation's economic growth depends on its capacity to educate, innovate, and compete. Palestine suffers from weak R&D and innovation performance in the industrial sector. Based on the last Palestinian R&D survey in 2013, the total expenditure on R&D was only US$61.4 million which are less than 0.01% of GDP in 2013. Only 3.7% of the R&D expenditure in 2013 was through the industrial sector. In a recent study by Morrar and Abdelhadi (2016), less than 5% of Palestinian firm introduced innovation (product and process) in 2015, which reveals the weak innovation capabilities and the lack for innovation system in the Palestinian industrial sector.

In a recent survey implemented by the Palestinian Higher Council of Innovation and excellence (HCIE) and An-Najah National University on a random sample of more than 400 industrial firms, they found that a significant part of the industrial firms recognize that the previous knowledge production infrastructure, represented with separate institutional actors of university, industry and government is inefficient, and should be replaced with a growing overlay of reflexive communications between them. For example, around 18% of the industrial firms collaborated with one or more of the local universities, and 25% collaborated with public institutions between 2014-2016.

The main objective of this study is to investigate the efficiency or the outcome of the triple helix concept in the Palestinian industrial sector, i.e. to what extent the industrial firms succeed to exploit their collaboration relationship with the universities and public institutions and to translate the exchanged knowledge and skills into new innovation output. Therefore, this paper will test empirically the impact of cooperation with universities and public institutions on the innovation output of the Palestinian industrial firms.

Methodology and analysis

In this work our aim is to make a quantitative analysis of the effect that cooperation with universities and public institutions has on the innovatory effort of the Palestinian

industrial sector. To achieve this aim, it might be possible to formulate four regression equations for the comparison of four models, corresponding to the four dependent variables: product innovation, process innovation, organizational innovation and marketing innovation. However, as the error terms of the three models are likely to be correlated, an extension of a regression model known as multivariate model (Greene 2000) is usually a more appropriate estimator. The multivariate regression model has the following specification:

Y1 = α + β1 X1i +… + βn Xni + εi (1)
Y2= α + β1 X1i +… + βn Xni + εi (2)
Y3= α + β1 X1i +… + βn Xni + εi (3)
Y4= α + β1 X1i +… + βn Xni + εi (4)

Where Y1…4 refer to the innovatory effort or output and Xi1…n corresponds to the triple helix cooperation relationships, and a set of control variables.
The triple helix cooperation relationships are represented by three variables. The first represents the industry-academia relationship; it is a dummy variable (D1) which equal one if the industrial firm collaborate with any of the universities in Palestine. The second represents the industry-government relationship; it is a dummy variable (D2) which equal 1 if the industrial firm collaborate with any of the public institutions. The third represents the interaction between the first and second variables (D1*D2). The set of control variables include the number of employees, age of the firm, if firm export its products or not, and the obstacles of innovation which is divided into three factors: cost, knowledge and demand factors.
The data was collected through respondent completed questionnaires in paper format sent to a random sample of 560 firms which make up the group of manufacturing firms in the Palestinian economy. The response rate was around 71%, i.e. around 400 questionnaires was considered. The information has been provided through a survey implemented by the HCIE in the beginning of 2017 in collaboration with the Economic department at An-Najah National University. The survey is part of an on-going effort by the HCIE to measure innovation in Palestine.

Policy implications

The research findings are expected to be translated into a set of concepts, strategies and action plans that are important to understand the triple helix concept and its role in the development of Palestinian economic and more precisely in the enhancement of the industrial sector’s innovation and economic performance. Among these policies:

1. This work will be introduced mainly to the Palestinian Higher Council of Innovation which is a public institution that is responsible for building the innovation system in Palestine. Thus, this work is expected to introduce the policies about how to build the innovation system in Palestine to include the three main stakeholders: academia, industry and government.

2. It will provide the industrial sector with the policies that they should adopt to realize an efficient open system of innovation (triple helix logic), and how to increase its absorptive capacity to absorb the knowledge comes through the academic and public institutions.

3. It will provide the industrial firms with the type and extent of collaboration relationships they should create with the universities and public institutions.

4. What are the policies to encourage the industrial sector to open its door to the knowledge from external institutions like universities and public institutions.

5. It will clarify the reforms and policies that the Palestinian universities should adopt for their educational systems to bridge the gap with the industrial sector (market-based educational system), and to attract new industrial firms to come into the university seeking for knowledge and R&D.