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Integration between industry and university: Case study, Faculty of Engineering at Rabigh, Saudi Arabia

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ABSTRACT

Collaboration between university and industry has long existed, but the rapid increase of global knowledge has increased the demand for strategic relationships that go beyond the conventional funding of research projects. University research should be developed in future to play an important role in industry and in turn economic growth. For a successful collaboration, both sides should overcome the communication and cultural divide that impair university–industry relationships across all categories and undercut their potential. Faculty of Engineering at Rabigh (FER) – King Abdulaziz University (KAU) is strategically located near major industries and facilities such as Petro Rabigh, desalination plant, steel fabrication, and cement industries, which makes FER a nucleus to solve technological problems for all these industries. Much effort has been made at FER to collaborate with these industries through mutual reciprocal visits of university and industry personnel as well as student internships. These are aimed to solve both short- and long-term technological issues at the industrial units. This will not only improve the local knowledge base and skills, but also bring confidence and trust between the two partners. It is well known that innovation does not take place in vacuum: a context – the economy, society, and policy – determines how easy or difficult it is to innovate. In this context, the role of government is also very important to create legislations that make the university–industry relationship a win–win situation.

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1. Introduction

The role of universities has become very dynamic and entrepreneurial in the 21st century. Models and indicators are available to judge the entrepreneurial orientation of a university. Universities and industries (UI) are collaborating to

explore the new horizons of opportunities through research and development (Philpott et al., 2011). This mutual relationship benefits both organizations and strengthens economies of the countries involved by industrializing the obtained products. Therefore, the academia–industry relationship has become a subject of research and is continually being refined

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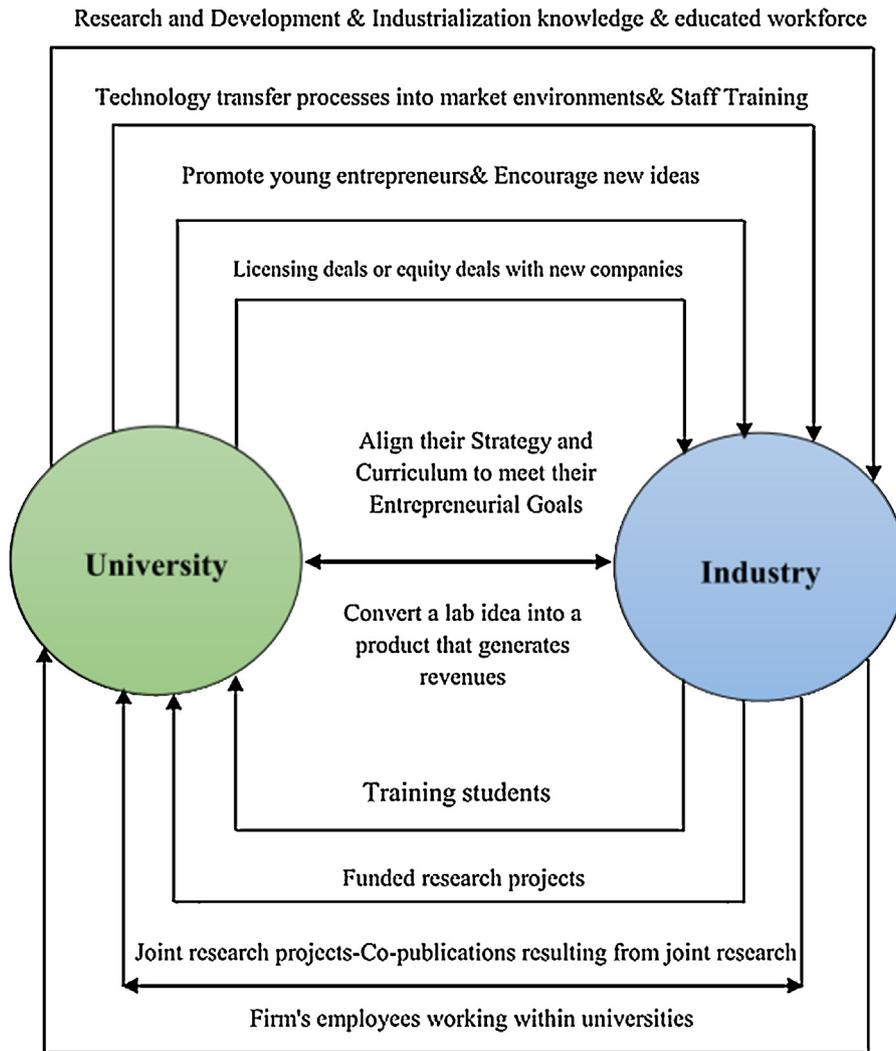


Fig. 1 – University industry links.

and consolidated. The public–private relationship between the UI is examined to study the outcomes of cooperation. One bibliometric study was conducted to analyze the relationship between the universities and the local industries. Sometimes, the number of patents coauthored by UI personnel was set as a quantitative indicator of the effectiveness of collaboration.

Several articles have addressed the relationships between the UI to illustrate the benefits of such cooperation. For example, an interesting trend indicated by [Veugelers and Cassiman \(2005\)](#) in an analysis of manufacturing companies of Belgium was that chemical and pharmaceutical industries, which involve fewer risks, are more likely to have research and development (R&D) ties with universities. Furthermore, a study of the R&D cooperative agreements between Spanish firms and organizations of research revealed that the previous links, the key for the success of such companies, provide the definitions of aims and commitment that are confirmed by a similar study in European universities ([Abramo et al., 2009a](#)). Some studies have described an interesting aspect of knowledge spillover from university to industry and revealed that the informal contacts between UI are more than formal contacts ([Panda and Gupta, 2014](#); [Freitas et al., 2013](#); [Muscio et al., 2013](#)). A study has analyzed the triangle of university–industry–government relationship in South Korea and concluded that the country is in a transitional phase of industrial knowledge and national innovation system ([Park](#)

and [Leydesdorff, 2010](#)). In addition, the University of Coimbra in Portugal used a triple helix model to study the effectiveness of the trilateral relationship between UI and the government and realized that the relationships developed by the university made a mesh of networks and hybrid organizations ([Motohashi and Muramatsu, 2012](#)).

It is important to know that governmental policies play an important role in establishing UI relationships. Hence, serious effort has been made in the establishment of UI relationships, and several empirical models and performance indicators are available in addition to the policy discussions. The number of patents coauthored by the UI is a direct indication of the degree of relationship between both organizations ([Petruzzelli, 2011](#)). [Fig. 1](#) summarizes the links between UI from different perspectives.

2. UI relationships in Saudi Arabia and Gulf Region

Saudi Arabia's future innovation platforms cannot be isolated from the current changes in its economy. Saudi economy has been long known for its chronic dependence on natural resources ([Al-Sultan and Alzaharah, 2012](#)). Saudi Arabia is one of the several countries whose economy depends on natural resource wealth. The factors affecting economy of these countries include, but are not limited to, the R&D levels

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