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Conceptualising the Role of the UAE Innovation Strategy in University-Industry knowledge Diffusion Process

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Abstract: Universities are considered one of the primary sources of knowledge and an essential component of the triple helix theory. They fuel the industries with the required expertise and pool of resources to operate efficiently. Moreover, entrepreneurial universities successfully contributed to regional development and employment growth by supporting entrepreneurial activities and incubation programmes. Thus, university-industry collaboration is vital for enhancing knowledge-based industries' knowledge diffusion as well as the regional innovation atmospheres. On the other hand, countries and regional authorities strive to stimulate their regional development by encouraging innovation and entrepreneurship activities. For example, the UAE announced its 2015 innovation strategy that focused on seven industries: education, technology, renewable energy, transportation, education, health, water, and space. The strategy stressed the role of universities R & R&D, first-class research, and promoting incubation services as one of the country's main innovation enablers. Thus, universities, scholars and industry should concentrate on the identified sectors to achieve the strategic innovation goals. This work aims to conceptualise and test the relationship and collaboration between industry and universities in the UAE and the impact of the innovation strategy on this relationship. Therefore, we critically analyse literature on the university-industry relationship and connect it with the UAE innovation strategy that resulted in a conceptual university-industry relationship model where the innovation strategy and UAE government act as a moderator of this relationship. The initial results show that the conceptual model includes research and curriculum collaboration. Research collaboration includes joint research, research fund, commercialisation of the research output, while curriculum collaboration includes the programmes and courses updates and joint training programmes. The developed model is still in its early stage of development and requires further updates based on interviews with the HEIs researchers and the survey results.

Keywords: University-Industry, Knowledge Spillover, UAE Innovation Strategy, Innovation Management

1. Introduction

Governments and regional authorities strive to enhance regional innovation capabilities. Thus, many theories evolved to stimulate regional innovation and entrepreneurship. For example, business clusters and Science and Technology Parks (STPs) were identified as a key player in connecting main innovation players. Moreover, it has been proved that locating on-cluster will help firms produce more innovation and therefore has more employment and financial growth (Al-kfairy et al., 2017; 2018; 2019a, 2019b). One of the key components of regional innovation development (and STPs theory) is Higher Education Institution. The classical role of research institutes and universities has been changed since the theory of Silicon Valley. For example, Stanford University and Cambridge University have played a crucial role in regional economic development. They are a very integrated part of Silicon Valley and Cambridge business cluster (Moore et al., 2004) and the triple helix theory connecting industry, with HEI as well as the governments (Etzkowitz and Leydesdorff, 2000; Leydesdorff and Etzkowitz, 2003). The following summarises the role of HEI institutions in regional and innovation development.

First of all, universities should deliver the required knowledge into their surrounding regions. It is vital to building the right pool of skilled labour, which is considered a critical factor for any industry's success and growth, while labour shortage is a declining reason (Davis et al., 2006). Secondly, commercialisation/productization of research outputs/patents and make them available for the industry through what is called “universities spin-offs” or “knowledge spillover” (Smith and Bagchi-Sen, 2012). For example, Delgado et al. (2014) proved that patenting positively impacts overall regional economic development. Moreover, when companies start to license patents and products, this indicates a recognised product/company.

Research collaboration is another factor influencing the relationship between firms and universities, which is shaped by the type of targeted knowledge (“explorative” or “exploitive”). Explorative knowledge comes though research, which leads to more radical innovation (developing new idea), while exploitive knowledge is more

related to improve knowledge stock of firms. Firms may seek either type of knowledge through university-firm networking (Huggins et al., 2011).

Provide the needed training and consultation services for the start-ups and mature firms within the targeted industry. Moore et al. (2004) determined that many start-ups struggle to manage businesses, and many of the entrepreneurs have difficulties understanding business processes. Therefore, some universities have developed training programs which were very efficient in preparing the "new" business leaders. For example, Klofsten (2000) reported 80 new establishments all over Sweden, resulted from the development program designed at Linköping University. The programme was delivered at 7 different places in Sweden [see (Smith and Bagchi-Sen, 2012) for Oxford University entrepreneurial program, for recent reviews on the role of universities in business clusters see (Valero and Van Reenen, 2019) for general role of HEI on the overall economic development)].

Generally, universities are considered as one of the primary sources of knowledge benefiting firms. It is contribution to knowledge stocks is widely acknowledged. However, the amount of university impact depends on many factors. For example, close proximity is very important for regional firms benefiting from new universities. In contrast, old and prestigious universities may have a broader relationship exceeding the university's geographical boundaries (Huggins et al., 2012), which is emphasising the role of HEI as part of the triple helix theory.

The goal of this work in progress paper is to conceptualise the role of UAE national innovation strategy in shaping the collaboration between industry and academia in UAE. First, we will review the literature covering the HEI institution and industry collaboration, then, a summary of the UAE national innovation strategy will be presented, after that, the conceptual model of UAE HEI – industry collaboration will be discussed, final section concludes.

2. University – Industry Collaboration in UAE

The previous research on the U-I collaboration in UAE suggests a lack of cooperation between both parties. For example, Rowland-Jones (2016) concluded that among 25 UAE universities surveyed, only 10% of them are engaged in industry-funded research caused by a lack of cooperation between the triple-helix actors (Salem, 2017). This low collaboration between universities and local industries resulted in a low employment rate in the private sector, where Emarati fills only 5% of the private vacancies. However, 65% of the vacancies offered in the UAE are from private companies, increasing the dependency on expats (Xanthidis et al., 2020). Therefore, scholars identified several barriers preventing effective collaboration. Those barriers include relational and trust barriers, funding barriers, the usability of the results barriers, intellectual property (IP) policies, shared governance and scientific knowledge (Salem, 2017). As a result, universities tried to enhance the amount of collaboration by implementing Technology Transfer Offices (TTOs), innovation centres, collaboration labs and updating their curriculum to match with the industrial needs, increase university spin-offs and commercialisation of students' products (Iqbal et al., 2018).

Reviewing the literature analysing the University-Industry (U-I) collaboration in UAE reveals that few scholars tackle this research area and there is a lack of understanding the factors that may contribute into enhancing such a relation.

3. Review of UAE Innovation Strategy

UAE innovation strategy published in 2015 has defined three innovation pillars: innovation-enabling environment, innovation champions and priority sectors. The strategy has identified seven priority sectors: education, water, health, space, transportation, and renewable and clean energy. In order to stimulate the priority industries, the strategy stressed that they need to create the right innovative environment by updating the rules and regulations, especially the registration of the patent policies and procedures, encouraging high-quality education and incubators programmes, enhancing the current technology infrastructure and provide funding and incentives for innovative companies and personnel. The strategy stressed the need to promote social innovation, develop specialised zones for innovation sectors, and award innovative companies and institutions.

4. The Conceptual Role of Innovation Strategy in HEI- Industry Relationship in UAE

Figure 1 shows the conceptual model for the relationship between the HEI and Industry in UAE where the innovation strategy act as a moderator between the two main parties.

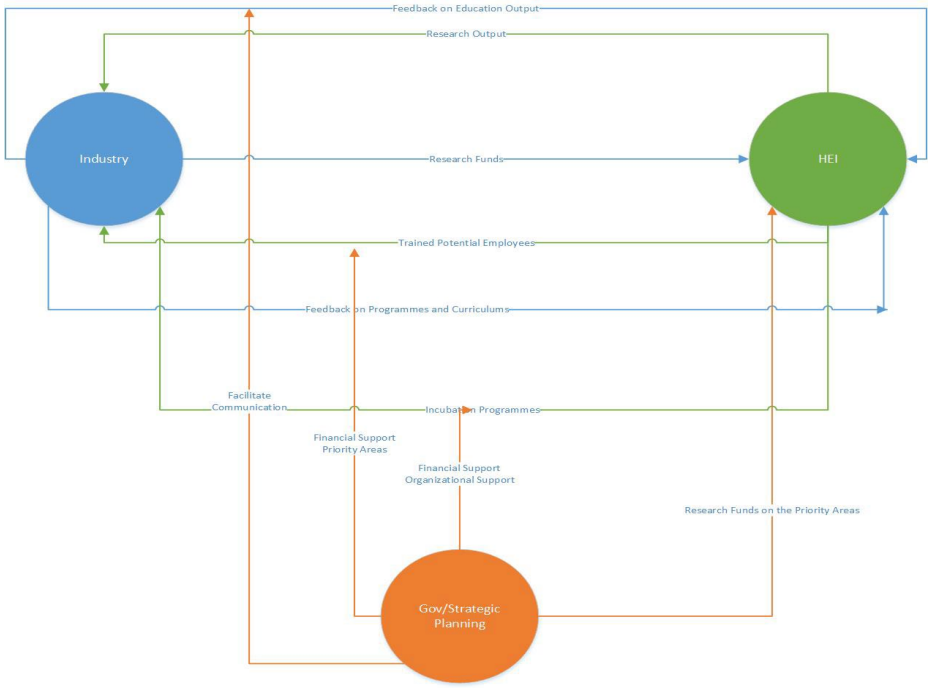

Figure 1: HEI- Industry Relationship (Innovation Strategy as a moderator)

The figure shows that there is a direct connection between industry and HEI. For example, industry is supposed to provide research funds, feedback on education output and programmes and curricula provided by the HEI, on the other hand, the HEI is assumed to collaborate on research output, well-trained employees and incubation programmes to help start-up companies. Based on the above model, we assume that the national innovation strategy impacts the incubation programmes provided by the HEI, training of the students on the right strategic sectors and the feedback on the educational programmes by concentrating more on the innovation sectors.

5. Conclusion

The work in progress paper presented here shows that there is a lack of understanding on how the U-I collaboration is shaped in UAE. However, our hypothesis is that this collaboration has been enhanced and further developed since the introduction of the innovation strategy. Thus, we built the conceptual model presented in Figure 1 to test the role of the innovation strategy in stimulating this collaboration. Next, we will collect data through surveys and interviews to validate the conceptual model and understand the drivers of the U-I collaboration in UAE. This work is still in progress and will go through a number of development phases.

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