

Special Issue of INVENT: Local Needs

In this special issue of the INVENT Newsletter, we will focus on two very important studies conducted as part of the INVENT activities to identify the local needs for training in topics related to the technology transfer and bridging the gap between academia and industry. Two surveys were developed; one for the industry, and the other for academia. Both surveys focused on identifying the barriers between the industry and academia in Jordan in order to develop a mechanism to bridge the gap between academia and industry. More than 125 surveys for the different industrial sectors and more than 130 from different higher education Institutes (HEIs) in Jordan have been analyzed. The analysis of the data will enable identifying the local needs for training of the staff who will be working in the Centers for Transfer of Innovation (CTIs), thus, training programs will be developed by the EU partners accordingly.

INTRODUCTION

The importance of relations between universities and their socio-economic environment has become a topical issue in Europe in the last two decades, and has also been stressed within the implementation of the Bologna process. Because of the limitation in natural resources and the relatively weak innovation-based industries, Jordan is expected to face economic difficulties during the next few years. Moreover, the rapid growth in population due to the normal increase and the forced migrations due to the political unrest in the region are expected to put the Jordanian economy under substantial pressure. The Jordanian economy is a developing-economy with most of its GDP comes from the services sector. The current national strategies focus on enhancing manufacturing and raising production in order to achieve a sustainable economic growth. According to the most recent (2013-2017) National Policy and Strategy for Science, Technology and Innovation, the weak coordination between the stakeholders of innovation, the lack of innovation and entrepreneurship culture, and the technological backwardness are some of the obstacles and weaknesses that hinder the contribution of innovation in the Country's economy.

Whereas in most European countries, relations between Universities and industries have been developed and intensified during the past decades, Jordanian Universities just recently recognized the importance of building bridges with the local industry and most of them have started to create strategies and instruments in this domain. Local industries in Jordan lack the instrument to create competitive-edge products and compete in the global market that is expanding rapidly. Many Jordanian enterprises have realized the importance of employing innovation in their business in order to survive the global competition. However, these enterprises are still reluctant to build real collaboration with the Jordanian universities; probably due to the lack of trust and lack of proper communication tools between the two sides.

Generally speaking, In Jordan, universities are expected and supposed to be in a leading position in issues related to technology transfer and innovation fostering. Thus, in order to take the innovation and technology transfer in Jordan to the next level, we want to promote the innovation culture in these universities and create strong partnership with Jordanian industrial and business sectors. This will be achieved by expanding and enhancing the connection between the scientific research findings, enterprises and business sector and building effective partnership with the well-known universities and innovation centers in Europe. There is a big gap between the scientific production in Jordan and the

business sector; this can be related to the weak contact between the academic and industrial sectors, the small market size, and a belief in many small businesses that there is no need for improvement and development. These problems can be overcome by building an informational and infrastructural system that can determine the needs of the local market and link it with the research priorities, creating a mechanism that can help the enterprises to work on innovative bases and establishing a training course/system for innovation and entrepreneurship culture.

METHODOLOGY

In order to identify the needs the local needs for the CTI, two surveys have been developed carefully; one survey targeted the faculty members in the different Jordanian universities, and another one targeted the local industries.

The two surveys were revised by the INVENET Quality Committee before they were circulated. The final surveys are shown in Annexes I and II.

The faculty members' survey was developed after visiting many surveys conducted in other countries. The survey comprises of three sections:

1. General: which includes data about the faculty member: age, rank, university, etc., etc.
2. Previous experience with industries: which includes evaluation of previous experience of the respondent with the industry
3. The general opinions on: reasons for the weak relationship with the industries; reasons for not undertaking industrial projects; etc.

The survey was uploaded to Google using Surveys Templates and faculty members were asked to fill in the survey on line. The target number of surveys was 100 participants; and the actual number of participants was 130.

The local industry survey was developed by collaboration between JUST and Amman Chamber of Industry (ACI). The survey comprises of three sections:

1. General: which includes data about the company, the respondent, etc.
2. Previous experience with universities: which includes evaluation of previous experience of the respondent with the universities
3. The needs of the local industries

In order to obtain enough feedback from the industry, JUST team, with the Applied Scientific Research Fund (ASRF) and MONOJO organized and participated in many workshops involving representatives from the local industry. These workshops included; pharmaceuticals, cosmetics, food industries. In addition, ACI organized a workshop with its members where the INVENT project was introduced and the survey was filled by the attendees. The target number of participants was 70; and the actual number of participants was 126.



Workshop with Cosmetics Industry

Dead Sea, April 6-7, 2016



**Workshop with Food Industry
Amman Crown Plaza, April 12-13, 2016**



Workshop with Local Industries

ACI, April 13, 2016

INSERT PHOTOS: Al-Hasan Industrial City

KEY RESULTS

Faculty Members Survey

1. Results indicated that more than 80% of joint projects are initiated by the researcher not by the industry, with 1/3 of collaboration was with one project, and about 80% of the collaborated projects were funded with less than 10,000 JD.
2. The outcomes of the collaborative projects were: journal publications and registered patents.
3. About 50% of the participants were not satisfied with their joint work with industry!!
4. The reasons for the un-satisfied collaboration were shortage of the fund (38%), difficulties in dealing with the industrial partner's management (25%), lack of productive communication (22%) and different priorities (16%).
5. More than 51% of the participant think that universities should take the initiatives to establish partnerships with the industry.

6. Top 5 reasons why researchers get involved in joint projects with the industry are: getting funding (25%), acquiring practical knowledge (22%), having a field to test theories (20%), students internship (18%), and obtaining patentable innovations and business opportunities (16%).
7. While 51% of the participants indicated that they know that their universities have a specialized center for establishing university-industry partnerships, about 25% of the participants do not know about such center.
8. About 84% indicated that they would support their university decision to establish a specialized center as a liaison between faculty members and the industry.
9. Among the factors preventing faculty members from undertaking industrial projects are: high teaching and administrative load (more than 50% agreed); the lack of the labs in the industry (more than 50% agreed); the geographical location (about 50% agreed); the absence of clear procedure for the collaboration with the industry (more than 60% agreed); industrial collaboration is not considered a part of the duties (more than 65% agreed); and the lack of confidence to undertake industrial projects (55% agreed).

Industrial Survey

1. More than 44% of the respondents represented the technical departments with more than 55% with a BSc. Degree.
2. More than 45% of the participated industry have 50-250 employees, with more than 50% are in the food, chemicals and cosmetics sectors, more than 65% have R&D departments that have budget less than 10,000 JD
3. More than 57% of those who had previous collaboration with universities indicated that the universities started the first contact.
4. Most of the collaboration projects with universities were through students training (49%); and graduation or thesis projects (17%).
5. More than 60% of the collaboration with the universities was with only one project, and with a budget less than 1,000 JD (87%).
6. About half of the participants indicated that their experience with collaboration projects with universities was successful.
7. Among the reasons for unsuccessful collaboration are: difficulty with dealing with university administration (31%); different priorities (31%); and lack of communication (19%).
8. About 70% of the direct impact on the companies from the collaboration with universities was either developing new products or improving current products.
9. More than 60% of the participants indicated that they would like to collaborate again with universities.
10. According to the participants, among the best ways to establish a partnership with universities are: meetings with faculty members (27%); support applied research (14%); and consultations (27%).
11. More than 75% of the participants indicated that they are not aware of the presence of TTOs at the universities.
12. According to the participants, the services needed by the industry from the TTOs are: Awareness of modern technologies (24%); applied research to develop/upgrade products (23%); and connection with other companies (17%).
13. According to the participants, factors to promote innovation and industrial inventions are: Establishment of TT centers (30%); improving communication and building trust (23%); and improvement of mechanisms to promote applied research outcomes at universities.
14. More than 95% of participants indicated that they are interested to communicate with TTO at universities.

CONCLUSIONS

While both surveys results indicated the need for effective collaboration among local industries and higher education institutions in Jordan; each survey results identified different reasons for the weak collaboration. However, two common results from both surveys for the lack of collaboration were the lack of communication, and the priorities of each of them. The surveys' results emphasized the need for having an office or a center to act as a liaison between the university and the industry. Effective communication, building the trust among academia and industry, and changing the mentality of the administration in both academia and industry are needed to build effective and productive partnerships. The local industries need to be introduced to the TTO at the HEIs in Jordan in order to be updated on modern technologies, develop applied research and upgrade products, and connect with other companies; these should be incorporated in the training programs that will be developed by the EU partners.