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Enhancement of the Business Environment in the Southern Mediterranean

Concept paper

« Innovation: Collaboration and Networking »

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1. INTRODUCTION

Linkages and partnerships among enterprises are initiatives to create synergies, address common problems and materialise opportunities. Firms can undertake joint actions to increase quality, achieve economies of scale and scope, create export consortia, access and provide business support services and promote technology transfers. Linkages and partnerships can be especially important for SMEs given their limited resources. When undertaken among foreign and local firms, partnerships and linkages can also enhance the positive impacts of Foreign Direct Investment (FDI), such as increased business opportunities and employment in local enterprises¹

2. COLLABORATION AND NETWORKING

Purpose

Generally speaking, SMEs collaborate to reduce innovation cost, time, or risk of access to unfamiliar technologies or markets. There is no clear cut paradigm of collaboration, and the form of collaboration will be determined by the motives and preferences of the partners, but their choice will be constrained by the nature of the technologies and markets complexities.

Key Findings of Relevant Studies on Linkages and Networking in the MED Region

Studies showed that networking is considered a very useful tool at the disposal of MSMEs [in Palestine] to build, manage, and maintain relationships with large enterprises, suppliers, and distributors. Recent study conducted by Palestine Economic Research Institute (MAS) showed that the managers of MSMEs are keen on developing strong personal and professional relationships with individuals in large enterprises, competing firms, and suppliers. The study also showed a discrepancy amongst the different respondents in expressing their reluctance to develop relationships with competitors and large enterprises. Conversely, most of the respondents do not believe in the positive influence of their relationships on their performance. This is also in relation with the respondents' perception of the importance of professional relationships over personal ones.²

Overall, since 2008 there has been modest progress in terms of the promotion of Euro-MED enterprise networks and partnerships according to recent OCED report focusing in implementation of the Small Business Act for Europe in the Mediterranean Middle East and North Africa. All MED economies have at least one pilot project to promote the development of clusters and networks, although a connection to Euro-MED initiatives is missing in some cases. The report noted that Israel, Egypt and Tunisia offered relevant examples of how Euro-Mediterranean business co-operation can be encouraged in a strategic and sustainable manner. The report also noted that Jordan, Morocco, Lebanon and Palestinian Authority (PA)

¹OECD/The European Commission/ETF (2014), *SME Policy Index: the Mediterranean Middle East and North Africa 2014: Implementation of the "Small Business Act" for Europe* in OECD Publishing, Paris, p. 118

² *Poverty Reduction through Private-Sector Development: Policy Research for MSMEs (MAS)*, p.75

had an ad hoc (i.e. non-strategic) approach in this area. The current assessment reveals a similar situation, with only Morocco registering significant progress.³ SMEs in Palestine have access to a network of public and donor-funded business service providers, which has slightly improved since the 2008 assessment. Specific business services focusing on export opportunities and international marketing are provided by the Federation of Chambers, the Federation of Industries, Paltrade and the Shipper's Council. The Federation of the Palestinian Chambers of Commerce, Industry and Agriculture is currently establishing a "Businesswomen Support Unit", providing specific services to women, including capacity-building, start-up support and marketing courses. Information about business support service providers can be found on their respective websites or the websites of regional chambers, but there is no central database or online portal. This is also the case of information for SMEs, which is not systematically collected and is sometimes inconsistent. Online information is limited and not centralised. Establishment support programmes are in the pilot phase. There are very few initiatives to promote linkages and partnerships with Euro-Med SMEs, among them the European Palestinian Chamber of Commerce, and the European Economic Chamber of Trade, Commerce and Industry.⁴ The Al-Nayzak organisation offers some pre-incubation services such as technical training, financial support and business plan writing training. Several business incubator initiatives have been launched, mainly with donor support. So far, the Palestine Information and Communications Technology Incubator (PICTI) and the Al Bireh-Ramallah incubator managed by Leaders – Qiadat are operational.

Such linkages and partnerships are always recommended for successful innovation system and healthy business environment. Moreover, with the Palestinian case and context, it is a must. However, the next section will shed the light on the state of play in Palestine in terms of innovation and SMEs including the collaboration and networking and its importance.

3. STATE OF PLAY IN PALESTINE

In addition to the facts and key findings mentioned earlier including the available linkages and partnerships which are unfortunately limited, the fact is that there is a willing to enhance the business environment, innovation and entrepreneurship system in Palestine by all stakeholders. However and despite the progress until now to promote enterprises' networks and partnerships in Palestine, Portland Trust issued special feature bulletin on "Paltrepreneurship" stated that the economy as a whole does not seem to be oriented towards innovation: low productivity / low value added activities, including services, retail and construction, dominate both GDP and job creation⁵.

Entrepreneurship and Innovation Eco-system

Policies are one of the main pillars of "innovation" which is a main pillar of the "knowledge-based-economy" which Palestinians believe in so much as the right way toward prosperity and better economy. Unemployment rate is the real challenge with more than 26%

³ OECD/The European Commission/ETF (2014), *SME Policy Index: the Mediterranean Middle East and North Africa 2014: Implementation of the "Small Business Act" for Europe in OECD Publishing, Paris, p. 120*

⁴ OECD/The European Commission/ETF (2014), *SME Policy Index: the Mediterranean Middle East and North Africa 2014: Implementation of the "Small Business Act" for Europe in OECD Publishing, Paris, p. 280*

⁵ *Paltrepreneurship (May 2014), Portland Trust, special feature bulletin, p. 2*

unemployed (Ministry of Labour, November 2014). However, and despite the huge efforts on the ground supporting the entrepreneurship and innovation eco-system, these efforts are mostly fragmented and on ad-hoc basis and sectorial level. For example, there is a strategy for the information and communications companies and another one recently launched by the Ministry of Telecommunications and IT. As an indicator, Palestine ranked 143th out of 189 economies in the ease of doing business (World Bank Doing Business Report 2015). Also, low entrepreneurship culture ranking based on the Global Entrepreneurship Monitor (GEM). It is always good to benchmark and assess the country innovation performance and policies for positioning and enhancement purposes. In addition to the mentioned above benchmarking platforms as well as the Small Business Act Assessment:

- Global Innovation Index (www.globalinnovationindex.org)
- Regional Innovation Monitor (www.rim-europa.eu)
- OECD STI scoreboard (www.oecd.org/sti/scoreboard.htm)

According to the 2008 assessment, innovation was identified as a relatively weak area among all the MED economies but “Israel”. Based on the SBA and in terms of innovation, Palestine was ranked among the lowest countries in the region due to the lack of related policies and strategies as well as the weak framework as the main assessment criteria considered. Also, it was noticed that and based on the assessment conducted in 2013, noticeable progress in SME specific policies and measures in the Middle East , but not in Palestine and Algeria.

There are dozens of local and international institutions including non-governmental organizations (NGOs) and community-based organizations (CBOs) as well as the government and the academia sectors working and investing in the innovation and entrepreneurship field. Business incubators, pre-incubation programs at the centers of excellence of the universities, accelerator, venture capitalist firms, equity fund and others are exists and the past few years witnessed huge efforts and launching of many initiatives (examples are below).

Figure 1: SMEs Supporting Organizations in Palestine



Talking about the institutional framework, a Private Sector Coordinating Council (PSCC) was established representing many sectors and associations in order to improve policy

coordination among government agencies, NGOs and private sector organisations. Also, the private public dialogue was initiated through two initiatives supported by USAID and GIZ through DAI and Paltrade respectively. A new public private dialogue (PPD) program is under implementation now by the French Development Agency (AFD) in cooperation with the Federation of Palestinian Chambers of Commerce, Industry and Agriculture (FPCCIA) and the Ministry of National Economy (MNE) through the clustering concept and the bottom-up approach. It is a real opportunity for the members of the cluster which are mainly small businesses to be part of the dialogue and contribute in the advocacy and lobbying process. They will be represented equally, join the focus groups, create their own voice and make it heard. The National Development Plan (NDP 2011-13) focused on private sector growth (agriculture, tourism and ICT) and the Palestinian Authority through its public organizations especially the Ministry of National Economy are supporting the competitiveness of the Palestinian private sector recently.

Innovation is a priority especially with the Palestinian context and challenges. The Higher Council for Innovation and Excellence was initiated by the president Mahmoud Abbas in 2012 as a tool to take care of innovations and talents in Palestine. However, it is noticed that most of the available initiatives and programs are targeting the technology sector while innovation is not about ICT and R&D or scientific papers only but the business models, the processes and other creative sectors. Palestine Economic Policy Research Institute (MAS) in "Bridging the Gap Between Research and Policy Making In the Palestinian Territories: A Stakeholders' Analysis Bridging the Gap Between Research and Policy Making In the Palestinian Territories: A Stakeholders' Analysis", shed the light on good practices and international success stories and introduces some recommendations on research and policy making.

Taking the mentioned above initiatives and efforts into consideration, the culture of innovation, entrepreneurship and skills development are not yet promoted.

- There is no measure of the impact and the return on investment (RoI) of such efforts and investments in terms of their contribution to the job creation, high unemployment rates and the GDP.
- Access to information and information dissemination is weak with no centralized location (physical or virtual) informing SMEs (entrepreneurs and businessmen) on the financial and non-financial services provided by the government, NGOs, associations and private organisations in order to increase awareness of those services and participation.

Also, there is no monitoring and evaluation (M&E) measures and follow up system to promote innovation impact. A pre-condition for this is an improved data collection and regular follow-up system which is also not there.

Having said so, there is a need for national vision, leadership, strategies and policies for innovation. Occupation is a fact which should not be neglected and the progress of developing public policies supporting private enterprises is weak due to many reasons including political instability and external factors. Though, a complete framework to support innovation in SME is still weak and Palestinians have many things to do in this regard, and not only developing of this framework but the most important is the implementation.

Innovation and Education

Palestinians are ranked among the top educated people and literacy rate in the region with 12 universities and 30 university colleges (university and community). However, it is not the case with the innovation:

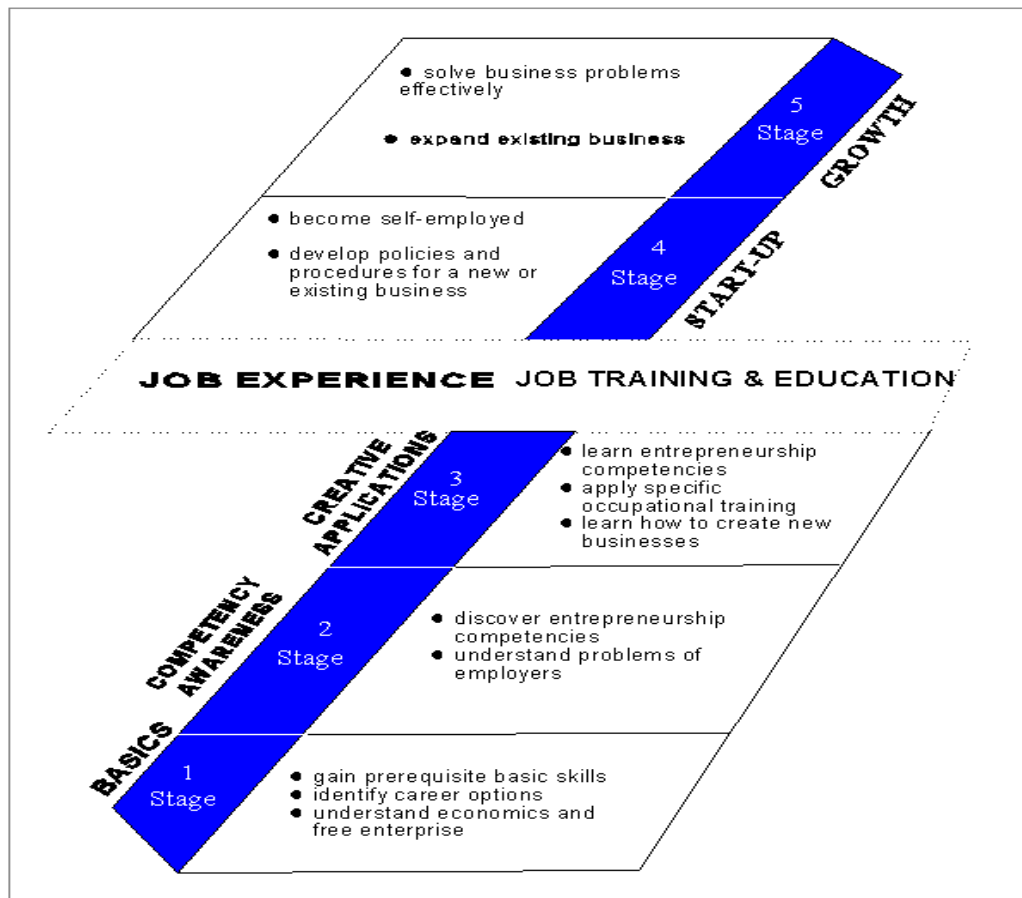
- The education system in Palestine does not support innovation and entrepreneurship culture and lifelong entrepreneurship learning (LLEL) in all levels including schools and higher education.
- Applied research and commercialization of research and development (R&D) and translating of findings into commercial products, processes and services is still under development.
- Talking about training and capacity building programs on innovation and entrepreneurship, most of available programs are non-governmental and outside the formal education system. Such programs are mainly divided into:
 - Soft-skills: communications, leadership, teamwork...
 - Business skills: start and build your business, presentation skills and pitching, marketing and others.

Examples on such organizations which organize and deliver such training programs are: Palestine Information and Communications Technology Incubator (PICTI), Palestine Education for Employment (PEFE), Sharek, Partnership for Sustainable Development (PSD), Universities, Leaders, Johoud. However, some of the universities started recently introducing similar programs as elective courses such as Palestine Polytechnic University in Hebron.

What is needed?

- Policies to guarantee innovative education system supporting and motivating innovations are needed. Such policies should encourage cooperation among the educational institutions themselves and between them and other sectors including the private sector. Motivation is a powerful tool which should be utilized for both schools and students and contests is one of these tools.
- Applied Research and Commercialization of R&D and university graduation projects: it is recommended to translate findings into commercial products, processes and services.
- Strengthening the Intellectual Property Rights (IPR), Licensing and Patents Culture.
- Technology Transfer initiatives which lead to commercialization and internationalization.
- Co-operation across the various levels of education, among higher education institutions and links with businesses (the world of enterprise) to foster entrepreneurship.
- Academia-Private Partnership: pull, internships, joint projects and co-funding.
- University curriculum considering the market needs as well as entrepreneurial skills.
- Sustainable funding model, i.e access to loans with affordable pre-requests as well as a guarantee fund.
- The below figure illustrates a model of lifelong entrepreneurship education which aims at supporting the entrepreneurship system toward growth SMEs model and job creation.

Figure 2: LIFELONG ENTREPRENEURSHIP EDUCATION MODEL⁶

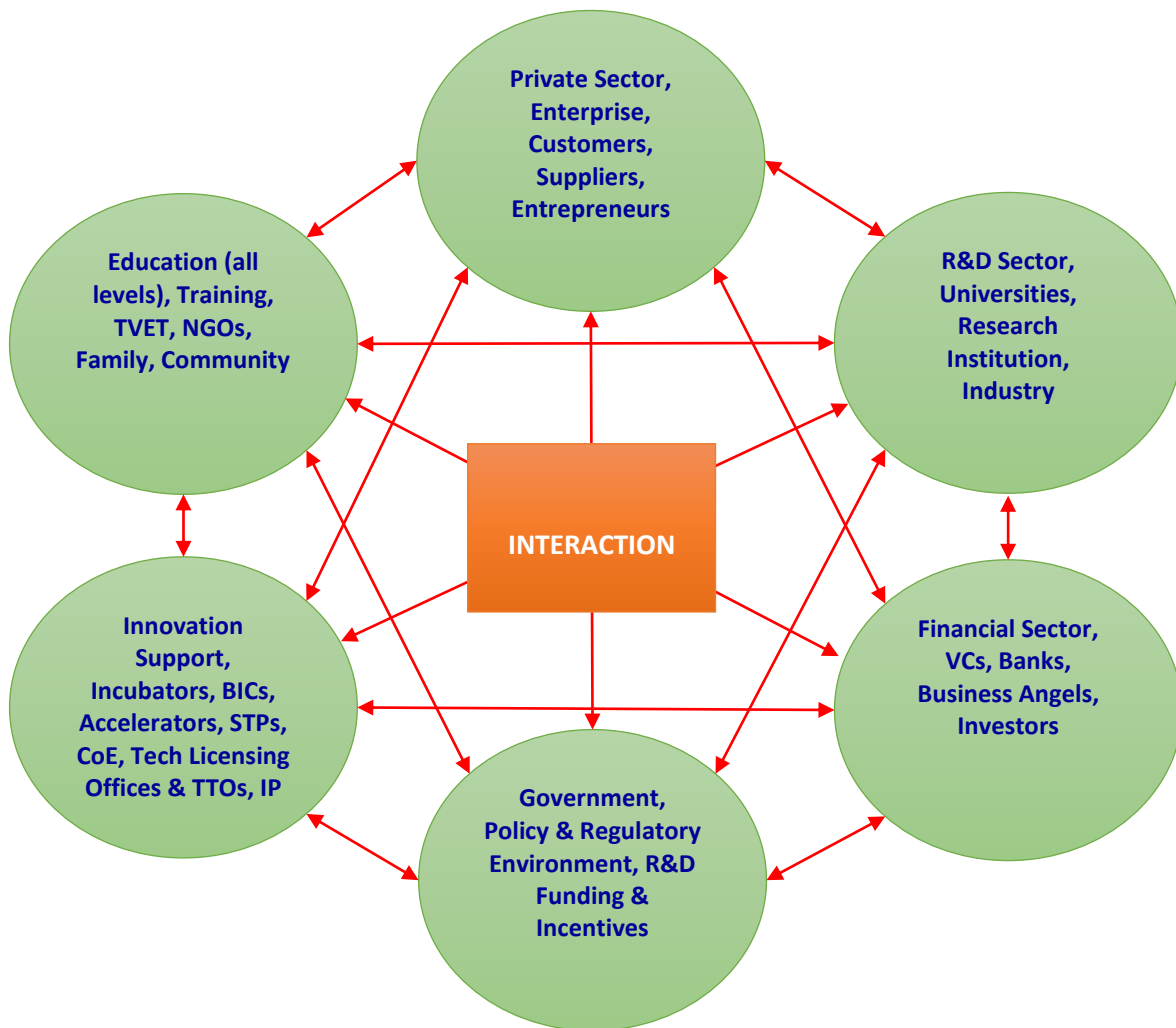


Co-operation and Innovation:

Innovation and entrepreneurship is all about cooperation and will not work unless there is a coordination scheme and promoted cooperation between all stakeholders and players on the scene. Interaction between different organizations and initiatives as illustrated below is a need. Innovation centers and networks should be linked together on one hand and with other related organizations of the innovation eco-system on the other hand. For example, R&D should not be limited to universities and academic research for academic promotion purposes only. Private sector should be encouraged and motivated to participate heavily in the R&D and co-funding such initiatives and project and also work closely on that with the academia sector through existing faculties and innovation centers or centers of excellence. Market-pull strategy to be followed rather than pushing which requires proper market research and studies. In fact, research institutions are limited in Palestine due to many reasons including lack of financial resources and funding. However, despite the existing few number of companies with research and development departments, the culture is not there and one of the solutions is to attract international firms and joint projects with international companies to do so.

⁶ Developed by the Consortium for Entrepreneurship Education

Figure 3: Entrepreneurship and Innovation eco-system: Co-operation and Interaction⁷



4. THE REASON TO COLLABORATE

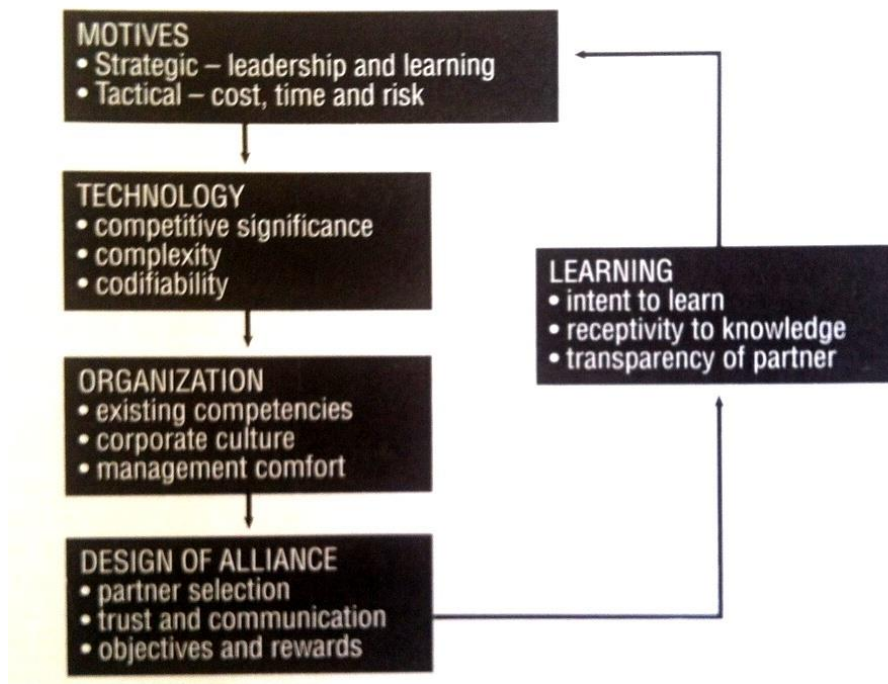
[SMEs] firms collaborate for a number of reasons:

1. To reduce the cost of technological development or market entry.
2. To reduce the risk of development or market entry.
3. To achieve scale economies in production.
4. To reduce the time taken to develop and commercialize new products.
5. To promote shared learning.

In any specific case, a firm is likely to have multiple motives for an alliance. The following diagram (Figure 4) represents the rationale for collaboration into technological, market, and organizational motives:

⁷ Source: ESCWA, EIB

Figure 4: A Model for collaboration for innovation⁸



5. THE APPROPRIATE FORM OF COLLABORATION

Joint ventures, whether formal or informal, typically take the form of an agreement between two or more firms to co-develop a new technology or product. Whereas research consortia tend to focus on more basic research issues, strategic alliances involve near-market development projects. However, unlike more formal joint ventures, a strategic alliance typically has a specific end goal and timetable, and does not normally take the form of a separate company. There are two basic types of formal joint venture: a new company formed by two or more separate organization, which typically allocate ownership based on share of stock controlled; or a more simple contractual basis for collaboration. The critical distinction between the two types of joint venture is that an equity arrangement requires for the formation of a separate legal entity. In such cases management is delegated to the joint venture, which is not the case for other forms of collaboration. Tidd and Bessant covered the following forms of strategic collaboration and method to exploit each:

1. To build critical mass through co-option.
In a co-option alliance, critical mass is achieved through temporary alliance with competitors, customers or companies with complementary technology, products or services. Through co-option a company seeks to group together other relatively weak companies to challenge a dominant competitor. For example, mobile telephony and airlines.
2. To reach new markets by leveraging co-specialized resources.

⁸ Tidd, J. and Bessant, J. (2009) *Manging Innovation : Integrating Technolgical Market and Organizational Change*, pp. 478, John Wiley & Sons, England

In co-specialized alliance, partners bring together unique competencies to create the opportunity to enter new markets, develop new products or build new businesses. However, there is a risk associated with the co-specialization. Partners are required to commit to partners' technology and standards.

3. And lastly to gain new competencies through organization learning.⁹

Guidelines that turn Collaborative research in Action

Actionable guidelines can be obtained from these principles. Companies and also governments should take steps that:

1. Treat collaboration strategically
It is important to develop a strategic view of the part that collaborative R&D and knowledge transfer are expected to play in meeting the publicly-funded research organizations (PRO's) and company's objectives. This allows each to establish explicit policies and take steps to ensure that these policies are communicated, understood and acted upon. The place to take these decisions is at the highest level of the organization.
2. Align interests
Effective knowledge and skills transfer depends upon being able to align the various partners' interests. Companies and PROs can only collaborate effectively when their researchers and other staff are empowered to work in this way and can spend sufficient time and effort to understand what each has to offer and each requires.
3. Organize for lasting relationships
There is abundant evidence that collaborative research is most effective within long-lasting relationships. The commitment to sustain and fund such programmes depends upon developing a general sense of trust and understanding that results will match expectations.
4. Provide the right professional skills
Effective management of collaborative R&D and knowledge transfer requires high quality professional supporting skills, and hence a commitment to establish or provide access to these resources and to train people to an appropriate level.
5. Establish clear intent
When planning collaboration, the first priority is for the partners to explore and agree what they expect to accomplish. This implies the adoption of open processes that establish clear intent and eliminate hidden agendas and abuse of bargaining power.
6. Use standard practices and communicate regularly
Adopting standard practices helps to encourage the development of effective frameworks for long-term collaboration. The stumbling blocks in developing good

⁹ Tidd, J. and Bessant, J. (2009) *Manging Innovation: Integrating Technolgical Market and Organizational Change*, pp. 483, John Wiley & Sons, England

collaborative research projects are widely recognized. The best way to avoid them is to work with others who have already discovered what works and why. This also frees up time to discuss the points that are most germane to the current collaboration. Regular sharing of good practices, at a high enough level and as part of professional management development is an important accompaniment to operational effectiveness.

7. Achieve effective management of intellectual property

Effective management of Intellectual Property (IP) is central to the knowledge transfer process, particularly since the emergence of new types of knowledge-based industry is straining the IP system, and involves protecting their Intellectual Property in ways that facilitate value creation in a context of Open Innovation and maximise the potential for commercialisation, and using (and contribute to improving the relevance, quality and understanding of) public IP systems in ways that encourage future investment in public and private research.

8. Provide relevant training

Effective knowledge transfer requires competencies and skills in many fields beyond knowledge and IP management. For example, project management, entrepreneurship and business development skills are also important. Providing these competencies requires that companies as well as PROs develop programmes and safe learning environments in which people can learn the skills and common language appropriate for the world of open innovation.

9. View innovation as a trans-disciplinary activity

Innovation is not simply about technological advance. The development of innovative business models, designs or organizational structures is sometimes more important than being the first to discover or invent. Similarly, scientific skills must be combined with the humanities, economics, sociology and law. It is important to recognize this transdisciplinary nature of innovation and organize accordingly.

10. Foster strong institutions

Continued access to world-class knowledge and skills depends upon maintaining strong, well-managed and well connected public institutions able to carry out advanced research, provide high standards of education and training, and the effective commercialisation of this knowledge requires competent knowledge transfer professionals, investment in knowledge transfer offices and related support services particularly in universities, and an effective IPR system consistent with current approaches to innovation.¹⁰

6. CO-OPERATION BETWEEN SMES RESEARCH INSTITUTES & UNIVERSITIES

Industry and Research Institution – Working Together Towards Knowledge Economy

¹⁰ *Guidelines for collaborative research and knowledge transfer between science and industry, p.12*

Recent studies showed the need for sharing knowledge between research institutions and industry has become increasingly evident in recent years. Historically, research institutions were perceived as a source of new ideas and industry offered a natural route to maximising the use of these ideas. However, the past decade has seen a significant change in the roles of both parties.

Many companies are developing open innovation approaches to R&D, combining in-house and external resources, and aiming to maximize economic value from their intellectual property, even when it is not directly linked to their core business. In particular, they have begun to treat public research as a strategic resource.

In parallel, it has become clear that research institutions need to play a more active role in their relationship with industry in order to maximize the use of the research results. This new role requires specialist staff to identify and manage knowledge resources with business potential, i.e. how best to take a new idea to market, ensure appropriate resources (funding, support services, etc.) to make it happen, and to obtain adequate buy-in by all stakeholders.¹¹

Creating the conditions for Successful Knowledge Transfer

A recent study by the European Commission titled: *Improving knowledge transfer between research institutions and industry across Europe* stated it has been recognized that the involvement of business in the governance of research institutions can help to orient research and education activities towards the needs of society, bring expertise to support knowledge transfer activities, and signal willingness to introduce innovation-oriented approaches in all activities. Such interaction has helped to facilitate inter-sectorial mobility, namely through temporary staff exchanges as well as through the hiring of young graduates by industry. Furthermore, many European research institutions have set up knowledge transfer offices in recent years, aiming to improve collaboration and exploitation of research results and their uptake by business. Their success is largely dependent on the skills and competencies of their staff as well as the strategic role assigned to them and their managerial autonomy. The personnel working on knowledge transfer must possess a wide range of skills in order to carry out their tasks effectively. However, relatively inexperienced staff is often appointed to such positions. Continuous professional development exists in a limited number of countries but it is often inadequate in terms of cost and/or delivery.

To perform knowledge transfer activities effectively, research institutions need to have sufficient autonomy to recruit experienced knowledge transfer staff on a competitive basis. Increased mobility between the public and private sectors will help research institutions' researchers and managers identify shared needs with industry. However, certain rules and administrative obstacles can discourage such mobility. For instance, rules relating to internships and labour-market regulation, in particular those dealing with social security and pension arrangements, can impede staff exchanges. Furthermore, in some countries, public-sector researchers are not allowed to work for industry on a part-time, consultancy or other basis.

There is also a need for existing resources to be made more accessible. This can be partially achieved through co-ordination. At present, certain research institutions have staff who actively pursue links with industry, but who do not interact amongst themselves. By pooling their knowledge transfer competencies, they can ensure that such skills are made more widely available throughout the research institutions. Furthermore, significant benefits may arise by outsourcing certain specialised functions or by pooling resources or R&D results (and associated IP rights) between several research institutions. Examples of pooling resources between several knowledge transfer offices include the patent marketing and knowledge transfer agencies established in Germany, the North of England Science Initiative or the Belgian VIB. Alternatively, such pooling can address a single industry sector (for example the White Rose Consortium) or a single knowledge transfer activity.

It is particularly interesting to note the range of benefits which can be obtained by pooling patents between research institutions. A patent pool can help create a critical mass of intellectual property which is necessary for an innovative idea to be attractive to the private sector. If marketed properly, every relevant industry player could be made aware of the research centres that generated the IP and this would help catalyse links with industry. Furthermore, building a patent pool can lead to stronger relationships between knowledge transfer offices and provide a basis for further inter-institutional endeavours. Such pooling of resources appears to be particularly appropriate for those research institutions that do not have the scope and volume of exploitable research results to justify the establishment of a knowledge transfer office. Where it is appropriate, Member States should actively promote and support the pooling of resources among research institutions. However; helpful such pooling of resources can be at a national or regional level, these initiatives rarely address the transnational dimension. To address this shortcoming, the European Commission created a trans-European network aiming to facilitate transnational technology transfer, namely the Innovation Relay Centers (IRCs) network. The IRCs are based in 33 countries and provide personalized assistance for universities and industry (especially SMEs). By collaborating closely with a leading European university knowledge transfer association they have created a simple and effective system which allows universities to share information on new, commercially relevant technologies in a structured manner with companies across Europe.¹²

Promoting an Entrepreneurial Mindset

The need to publish and make results freely available is often viewed as being incompatible with industry's need to keep information confidential and protected by intellectual property rights such as patents. However, experience shows that promoting innovation and disseminating new knowledge can be compatible, provided that intellectual property issues are understood and managed professionally. Interaction on these points can be facilitated by tools such as the CREST decision tree, model contracts such as the UK's Lambert agreements¹³, or guidance such as the Danish document on Contacts, contracts and codices, as well as through awareness initiatives by the European and national patent

¹² *Improving knowledge transfer between research institutions and industry across Europe, European Commission.*

¹³ *Report of the CREST Expert Group "Promote the reform of public research centres and universities in particular to promote transfer of knowledge to society and industry" – http://ec.europa.eu/invest-in-research/pdf/download_en/final_crest_report_march2006.pdf*

offices. The Responsible Partnering initiative, developed by four major European university and industry associations (EIRMA¹⁴, EUA¹⁵, PROTON¹⁶, EARTO¹⁷), presents key insights into how effective research collaboration can be created. EU Member States have a role in the development and delivery of such initiatives and should support them actively.

Various “creative commons” 24 approaches (open access, open publications, open software...) are increasingly endorsed by many universities. These mechanisms can ensure a more effective dissemination of results although in certain cases formal protection (e.g. design rights, patents or material transfer agreements) may be necessary if a product is to be brought to market successfully. It is therefore important to ensure that researchers are aware of the benefits of both approaches and that decisions are made on the basis of socio-economic impact. Given that the rules governing the ownership of publicly-funded R&D results still vary across Europe, it may be appropriate to revisit in the near future the question of a single European ownership model for publicly funded research.

Fostering an entrepreneurial mindset as well as the relevant skills among researchers can greatly contribute to the reduction of the cultural divide which exists between research institutions and industry. In order to foster interactions between them, researchers need to be provided with basic knowledge transfer and business skills. Entrepreneurship education should be offered to provide training on how to manage intellectual property, interact with industry, start and run a business. Although tertiary education is normally highly decentralised, there are examples of national strategies for promoting entrepreneurship in higher education (e.g. the Science Enterprise Challenge in the UK). To help address the question of content of such courses, the European Commission is currently funding a project to create a core set of training materials to raise awareness of the importance of IP management issues amongst a variety of actors.

In addition, one of the most effective methods of developing such skills and sharing knowledge is the movement of staff between research institutions and industry. The European Commission has been an active proponent of such activities through the “Marie Curie Industry-Academia Strategic Partnership” scheme which supports the development of such long-lasting collaborations via the exchange of researchers.

In many countries, research institutions have created reward systems whereby the inventor receives a share of any profits made when licensing or spinning off inventions. An illustrative model is one where profits are split evenly between the researcher, the research institution and the business partner. However, although some financial incentives may apply, many staff remain reluctant to take part in such activities, especially as they are not taken into account for career progression. It is therefore important that the appraisal criteria also take into account other activities such as patenting, licensing, mobility and collaboration with industry.

¹⁴ *European Industrial Research Management Association*

¹⁵ *The European University Association*

¹⁶ *ASTP-PROTON IMPACT REPORT FOR EUROPE 2015*

¹⁷ *European Association of Research and Technology Associations*

7. CO-OPERATION ACTIVITIES

The European Commission study for improving knowledge transfer between research institutions and industry across Europe highlighted two areas that requiring special efforts are the development of tailored measures to promote research institutions - SME interaction and of tools to measure progress:

Promoting Research Institutions - SME interactions

Most interactions between research institutions and companies involve large firms. This is due to the fact that such collaborations are considered to be more durable and regular than with SMEs. Evidently, SMEs are a very diverse clientele for knowledge transfer services. Manufacturing SMEs in the high-tech sectors typically have proportionally high R&D budgets and close links to academia as a results of the very short product cycles. In traditional sectors, the capacity of SMEs to actively engage in knowledge transfer activities is typically limited by constraints in human and financial resources. It is therefore important to encourage SMEs to absorb new and external knowledge for faster innovation.

An example of existing good practice is the Netherlands' innovation vouchers scheme whose main objective is to enable SMEs to buy knowledge and strategic consultancy from research institutions through innovation vouchers (worth €7500) and thus to stimulate interaction and exchange between the knowledge suppliers and SMEs. The knowledge supplier can then hand in the voucher to the Innovation Agency SenterNovem and receive payment. State aid rules allow supporting such consultancy with public funds.

Measuring Progress

Monitoring knowledge transfer activities has several purposes including helping research institutions promote what has been achieved for the public good. While several university rankings exist, they mostly rely on academic indicators such as publications and numbers of PhDs, and do not consider performance in the exploitation of R&D results. There is evidence that the benchmarking of "innovation-related activities", especially if conducted on the basis of comparable metrics across the PA, would allow research institutions to compare their own achievements at the national level.¹⁸

8. BALANCING THE BENEFITS

The European Commission study for Improving knowledge transfer between research institutions and industry across Europe continued to examine successful research collaborations in SMEs research institutes & universities and showed that sustainable "win-win" arrangements can be obtained, which produce good science, publish results without unreasonable delay, contribute to the general education and training of new graduates, and generate valuable intellectual property that supports innovation by industrial partners.

When managed in a professional and balanced way, knowledge transfer can be beneficial both for the research institutions concerned and society in general.

¹⁸ *Improving knowledge transfer between research institutions and industry across Europe, European Commission.*

Benefits to Research Institutions

Benefits to research institutions resulting from knowledge transfer to industry are not – and should not be expected to be – primarily financial, even though any revenues resulting from knowledge transfer can help fund additional R&D activities, in addition to the knowledge transfer activities themselves. Instead, the main benefits are indirect and should be considered in the longer term. They include for instance:

- The development of mutual trust between the research institution and industry, beneficial to the establishment of long-term strategic partnerships (as opposed to one-off contracts);
- The enhancement of research institutions research activities (access to state of the art industrial equipment, improving research institution project management skills, complementing the research institution competence base by new skills and techniques developed in industry, improved understanding of market needs and of industry problems);
- Gaining status and prestige (resulting from successful partnerships and products);
- The enhancement of research institutions teaching activities (involvement of industry-based lecturers, enrichment of teaching contents and materials with practical examples, learning how to apply skills and knowledge to solve real business problems ...);
- The identification of potential new clients or partners for further research;
- Attracting, retaining and motivating good scientists interested in entrepreneurial aspects or in new professional career opportunities: Contributing to public authorities better recognising the socio-economic relevance of publicly-funded research, potentially leading to increased funding thereof.

These benefits will have further positive consequences, such as facilitating exchanges of staff between the research institution and industry, or the hiring of new graduates from the research institution by industry.

Benefits to Society

The successful implementation of policies to deal with inventions and collaborations with industry can lead to a number of benefits for society at large and, in particular, the local economy. These benefits include new jobs, new products on the market and better education. An example of such a success story may be seen in Imperial College London, where Imperial Innovations technology commercialization companies generated revenues in excess of £30 million from spin-outs and licenses and created over 1,000 jobs since 1997.

To take another example, among the 36 patented inventions of the 90s selected by EPO on the basis of their economic significance for the 2006 Inventor of the Year Award, about half are based on discoveries by public research institutions. For another 25%, the proof-of-concept was achieved through collaborative research with industry.¹⁹

9. CONCLUSION

¹⁹ *Improving knowledge transfer between research institutions and industry across Europe*

The OCED report pointed out that Palestine could also step up efforts to assist exporting SMEs by, for instance, improving the co-ordination among different agencies and initiatives. The establishment of an inter-institutional committee and a single window or one-stop-shop, including a virtual one-stop shop, could be relevant for disseminating information and dealing with the formalities of foreign trade. Other MED economies such as Morocco and Tunisia could provide relevant insights.²⁰

Interactions between the public research base and industry have been gradually increasing over the past decade. These can vary from contractual research to collaborative research or even to structured partnerships. Most of these interactions involve the transfer of knowledge between the stakeholders concerned, and enhance the socio-economic impact of publicly-funded research, e.g. by creating new useful products, new jobs and sometimes new companies.

²⁰ OECD/The European Commission/ETF (2014), *SME Policy Index: the Mediterranean Middle East and North Africa 2014: Implementation of the "Small Business Act" for Europe* in OECD Publishing, Paris, p. 282.

ANNEX I: SOURCES OF GOOD PRACTICES²¹

EU and other international sources:

The Responsible Partnering initiative: [http:// www.responsible-partnering.org](http://www.responsible-partnering.org)
Results of the first and second OMC cycles (EU): http://ec.europa.eu/invest-in-research/coordination/coordination01_en.htm

Management of intellectual property in publicly-funded research organisations: Towards European Guidelines (EU): <http://ec.europa.eu/research/era/pdf/iprmanagementguidelines-report.pdf>

Turning science into business (OECD): www.oecd.org (direct link)

Tunisia ICT Strategy

Five Stages of Lifelong Learning, Lifelong Learning Model. Cathy Ashmore, The Consortium for Entrepreneurship Education, Columbus, OH. http://www.entre-ed.org/_entre/lifelong.htm

National sources:

Guidelines for Teaching Hospitals entering into Research Agreements (DK): www.forskningskontrakter.techtrans.dk/HS/viewPage.action?site=eng_HS&page=Manual%20in%20pdf

Contracts, Contacts and Codices, Research Cooperation Between Universities and Companies (DK): www.rektorkollegiet.dk/fileadmin/user_upload/downloads/Contacts__contrats_and_cod.pdf

Recommandations pour l'adoption d'une Charte de la propriété intellectuelle par les établissements publics d'enseignement supérieur et de recherche (FR): <ftp://trf.education.gouv.fr/pub/rechtec/technologie/charte.rtf>

National Code of Practice for Managing Intellectual Property from Publicly Funded Research (IE): www.forfas.ie/icsti/statements/icsti040407/index.html

National Code of Practice for Managing Intellectual Property from Public-Private Collaborative Research (IE) www.sciencecouncil.ie/reports/#ipcode04

Partnerships for Research and Innovation (UK): www.auril.org.uk/publications/pfrai

A Guide to Managing Intellectual Property: Strategic Decision-Making in Universities (UK): www.patent.gov.uk/about/notices/2002/manip/index.htm

²¹ *Improving knowledge transfer between research institutions and industry across Europe, European Commission.*

Lambert Agreements – A toolkit for universities and companies wishing to undertake collaborative research projects (UK): www.innovation.gov.uk/lambertagreements

BIBLIOGRAPHY

Cornell University, INSEAD, and WIPO (2013). The Global Innovation Index 2013: The local dynamics of innovation, Geneva, Ithaca, and Fontainebleau.

EIRMA, EUA and others (2009). Guidelines for collaborative research and knowledge transfer between science and industry, Brussels, Belgium.

ESCWA, CMI and ETC (2013). National innovation systems: input, output, and impact, Jordan.

European Communities (2007). Improving knowledge transfer between research institutions and industry across Europe, Luxemburg, Belgium.

Ministry of National Economy and GSBD (2014). How innovative is Palestine?, Ramallah, Palestine.

OECD/The European Commission/ETF (2014), SME Policy Index: the Mediterranean Middle East and North Africa 2014: Implementation of the “Small Business Act” for Europe in OECD Publishing, Paris

Portland Trust (May 2014). Paltrepreneurship, special feature bulletin.

Refaat Chaabouni (2008). Progress towards the implementation of the national innovation system in Tunisia, Tunisia.

The Palestine Economic Policy Research Institute (MAS). Poverty Reduction through Private-Sector Development: Policy Research for MSMEs, Ramallah, Palestine.

Tidd, Joe and Bessant, John. Managing innovation: integrating technological market and organizational change. England: John Wiley & Sons, 2009.