

Opportunities And Challenges For Expanding Technology Transfer In United Arab Emirates (UAE)

By Ahmed Alosi, Ph.D., John Fraser and Michael J. Martin

Abstract

The UAE is a relatively young country (established in 1971) with enormous per capita wealth and a strategic goal as expressed in their 2021 vision: “To translate from an economy based on fossil fuel to a Knowledge-Based Economy.” Universities can assist in strengthening the Innovation Infrastructure in the UAE by participating in Technology Transfer; *i.e.*, partnering with the private sector to create and grow technology-based economic business opportunities, as part of a Knowledge-Based Economy.

The Federal Ministry of Higher Education and Scientific Research (The Ministry) commissioned a study of the capacity and interest in the UAE universities to generate inventions with commercial potential and the interest in improving Tech Transfer Support in the UAE. This study was undertaken with an analysis of the published information on UAE research funding and the existing IP management offices; and a survey of selected faculty with a general e-mail questionnaire and subsequent personal interviews.

The results of the interviews and the analysis of published information was a recommendation to have the Ministry provide Tech Transfer Support, with the mission to “support an Innovation Infrastructure that will help transform the UAE into a Knowledge-Based Economy.” This Technology Transfer Support would provide: access to advice, financial support, education on the technology transfer process and all of the related activities to support university based technology transfer activities. The Success of the Study recommendations will be measured by the enhanced reputation of the UAE as a Knowledge based Economy; increased engagement of universities in the UAE economy; and impact on the economy.

I. Background/Introduction

Innovation Infrastructure

An Innovation Infrastructure includes people, organizations and resources available to assist and support in the creation, growth and sustainability of new companies, plus entrepreneurial mindsets, attitudes, and cultures. The elements for success include productive university research with the potential to generate commercially viable inventions; a commitment by the professors and the universities to provide intellectual property protection for the results of this research; a source of “gap” funding—from research to market place; start-up

company management personnel; pre-incubator and incubator space; technology transfer support; patient risk capital, usually angel and venture funding; start-up and SME business support services and facilities; and a tax and incentive system supportive of knowledge-based economic development. Communications and support between and among these elements are strong for the ideal Innovation Infrastructure. The UAE appears to have some of these components; but, they all are at the inception where it is critical that the government (Federal and Emirate) take the lead as other governments have.

It is essential, even in resource rich environments, to develop Innovation Infrastructures to support and facilitate the efforts of university technology transfer offices; and to nurture and collaborate with the start-up companies being spun out of universities. It is especially important to focus on culture change within the institution itself to encourage entrepreneurial activities and to examine practices and policies which might actually inhibit or discourage entrepreneurship. A key component of success is rewarding, incentivizing and celebrating entrepreneurship and risk taking in the economic development arena.

The Process of “Technology Transfer”

Technology transfer, as it is more effectively practiced, is a process based more on business development than technology implementation. Successful new products or businesses must start with a viable product in a protected market niche that has endured multiple stages of market analysis, pre-market testing, and the identification of customers willing to pay for the product or service more than once.

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Each participant in the Innovation Infrastructure has their own definition of success for the function of Technology Transfer. The definition of success for the:

- **University/Research Administration:** Enhance the local and global reputation of the institution by contributing directly to the local, state, and national economy.
- **Faculty:** Show a return, both in recognition by their peers and financially, on their personal investment in their research by translation into products and/or start-up businesses.
- **Government:** Create new economic resources (jobs, companies, products, and investment) by transfer of inventions from public funded innovation sources to private developers.
- **Businesses:** Increase their financial return to investors by accessing new technology to meet short and long term market needs.

Technology Transfer can serve as a bridging function between these differing goals and measurements of success. In addition, it can manage the expectations of the amount of time is required before there is a positive impact on the economy. University, national laboratories and foundation research dollars are generally committed for discovery research. Industry prefers to acquire ‘off the shelf’ technology and do not invest dollars in technologies untested at a commercial scale. They tend to be satisfied with what they have been previously using and are extremely concerned about cost. This creates a gap in translating discovery (basic) research into products

with identified and ‘ready to buy’ markets. This gap has been called the “Valley of Death.”

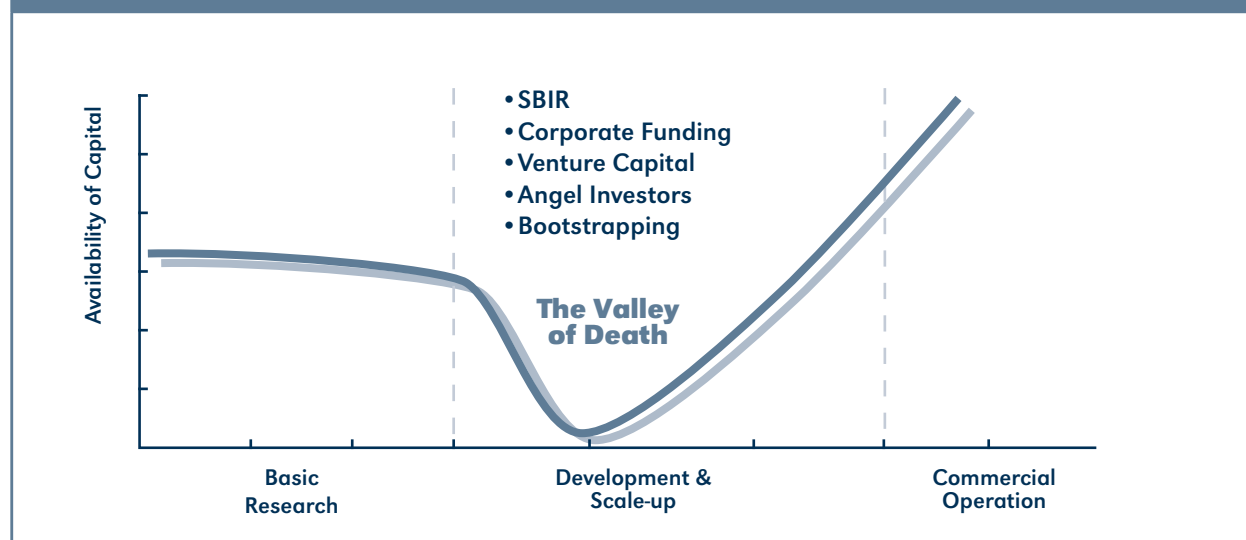
University Innovation Infrastructure in the UAE Support for Start-ups and SMEs in the UAE

The UAE is home to more than 500 training programs for entrepreneurship and leadership skills. There are nearly 100 government grants and incentive programs, more than 100,000 Small, Medium Enterprises (SMEs) and total commitment to making SMEs the core of the nation’s success.² Government efforts to foster the Knowledge Based Economy in UAE are exemplified by The Abu Dhabi and Dubai Emirates. They have established government programs to increase technology based Start-ups, assistance to SMEs, and Inventions from Universities.

The Government of Dubai has launched Dubai SME in 2002 as a division of the Department of Economic Development (DED), which supports the development of entrepreneurship. SMEs represent 95 percent of all firms registered in Dubai, 42 percent of the labor force and 40 percent of the emirate’s GDP.

Takamul is a strategic initiative by the Abu Dhabi Technology Development Committee supporting innovation and the development within the UAE. Takamul’s mission is to help Emirati individuals, universities and enterprises in Abu Dhabi and the wider UAE, to protect and commercialize their innovative ideas. See more at: <http://takamul.gov.ae/home#sthash.81TMWZWG.dpuf>. Takamul has been providing technology transfer services

Figure 1. Funding Resources For The “Valley Of Death” Gap¹



1. Source: Richard Palmer, National Institute of Standards and Technology.

2. <http://www.smebeyondborders.com/agenda/>

to multiple universities, each with their own culture, for 4 years successfully. Their services have been described by University Inventors as working “beautifully” and “very well.” They said that Takamul offers a list of services and they can choose what they need at no cost to their university. Takamul also does not require any return on the grants or services provided.

The Takamul program was recently awarded as “Best National IP and Licensing Policy 2013” by the Licensing Executives Society International in Geneva. It has expanded its support activities within the entire UAE, making it a national innovation program.

During 2011-13 the Takamul program has provided legal and financial support to 66 UAE inventions with a further 40 in the pipeline entering 2014. They assisted in the formation of a new advanced materials company in Abu Dhabi.

Research Capacity in the UAE

Research expenditures are the foundation stone of the Innovation Infrastructure process. Nothing in a Knowledge Based Economy starts without invention. It has been the experience of many countries that for every 2 million dollars in research expenditures there is an expectation of one invention disclosure.

It is difficult to estimate University R&D Expenditures in the UAE. UAE Universities estimated that 80-90 percent of R&D funding came from internal annual operating budgets or is coupled with pay structure of the faculty, which is 50 percent for teaching and 50 percent for research. All universities apparently award internal research grants on a competitive basis, some for multiple year with multiple disciplines focused on strategic technology sectors. The most recent research expenditures estimate for UAE is 0.5 percent of Gross Domestic Product as found in the World Development Indicators: Science and Technology report. The U.S. National Science Foundation Estimated the R&D expenditures in the UAE as \$1 billion in 2002. (see Table 1).

All of the universities contacted stated that their research expenditures have increased over the past 5 years. In some universities, the amount of internal funding has doubled, and some have said that their university have quadrupled their support of research. Another bit of evidence that university research funding has increased in the UAE is the growth of the number

of published papers from the UAE universities. The number of research papers in peer reviewed journals have grown from 474 in 2000⁵ to 4,221 in 2013.⁶ That number increases significantly to 7,340 when you include: conferences, books, book chapters, creative works, patents, and exhibitions.

In the report “Innovation Capabilities of Nations: Five Key Performance Indicators,” according to the latest Global Competitiveness Report, the UAE is ranked 15th internationally in terms of the availability of scientists and engineers. The authors of the report also observe an increase in the number of programs, funds and awards geared towards scientific and technological activities. They provide the following examples of research and innovation awards that include the Young Emirati Innovators Prize, the Patent Filing Award, the University-Industry Research Collaboration and the Zayed Future Energy Prize, a U.S. \$4M prize—the world’s largest award for innovation in the development of sustainable energy solutions.⁷ It was estimated that the Research Budget at United Arab Emirates National Research Foundation (NRF) is 5 million AED, which appeared to be down from the original budget in 2008. The Program Objectives of the NRF program as reported on its web site are:

- *Facilitate the participation of scientists and scholars from UAE in the expansion of frontiers of knowledge and in the most sophisticated problem solving.*
- *Build and enlarge a solid core of knowledgeable, capable, and well-trained researchers in UAE.*
- *Support activities that focus on developing and enhancing research talent in UAE so that the nation retains the finest researchers that are working in or are attracted to it.*
- *Enable the UAE academic institutions to recruit and retain top researchers and, through them, the most talented students.*
- *Develop interdisciplinary links among researchers to catalyze team research for solving difficult scientific, industrial, economic, and societal challenges.*
- *Promote UAE’s participation in the international research community.*

Table 1. UAE Estimated R&D Expenditures

	R&D expenditures as % of GDP 2005-14³	R&D estimated \$US billion 2002⁴
United Arab Emirates	0.49%	\$1 billion

3. <http://wdi.worldbank.org/table/5.13>

4. <http://www.nsf.gov/statistics/seind14/index.cfm/chapter-4/c4h.htm#s2>

5. Thomson ISI (Intellectual Property & Science Business of Thomson Reuters) provided by Dr. Randy Wynne, Professor Virginia Tech.

6. *UAE Higher Education Fact Book*, 2013/2014, 90.

7. *Innovation Capabilities of Nations: Five Key Performance Indicators, An Analysis of Select GFCC Countries*, 24.

Estimate of Current Intellectual Property Inventory

The UAE has made the protection of intellectual property a priority. In 2011, the UAE established an independent office for intellectual property rights (IPR) at the Ministry of Economy and appointed an assistant undersecretary position for IPR for the first time.⁸ The current UAE university and research center intellectual property inventory is difficult to estimate. The World Intellectual Property Office reports that Patent Corporation Treaty (PCT) applications from the UAE have increased from 17 in 2004 to 61 in 2013 as shown in Figure 2.

Takamul lists 33 technologies and will be adding approximately 60 more, mostly from Universities. Masdar Institute of Science and Technology has obtained three patents with an additional 39 patent applications pending and over 70 invention disclosures. A representative of Khalifa University stated that they are receiving about one disclosure every two weeks. Presently, they have four issued patents. They file on most disclosures using Takamul patent funding support. Since 2010, UAE University (UAEU) has more than 55 inventions disclosures. UAEU has obtained about 20 patents granted under its name.

Of the 25 universities that are listed as offering graduate degrees and joint research centers that have inventions listed with Takamul only five have Intellectual Property Policies that could be accessed over the web, and only four have TTO offices.

II. Methodology, Survey Results and Gap Analysis

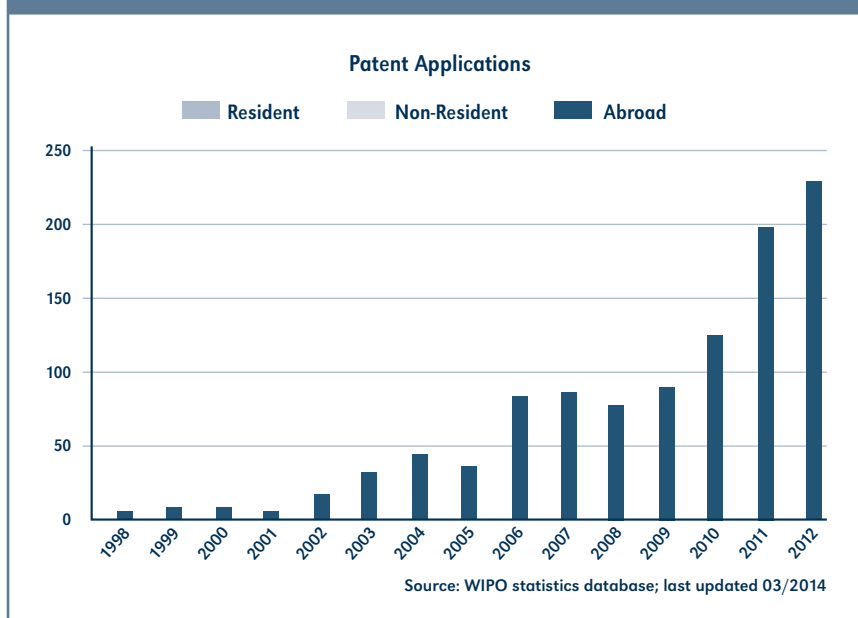
Methodology

This study was undertaken with an analysis of the published information on UAE research funding and the existing IP management offices; and a survey of selected faculty with a general e-mail questionnaire and subsequent personal interviews. The two different survey instruments were used to measure the interest, potential and expectations of the UAE research community about invention disclosures, the technology transfer process, and any potential NRF Tech Transfer Support. NRF selected over 40 faculty and research administrators to be surveyed. The first instrument

8. <http://www.state.gov/e/eb/rls/othr/ics/2014/227300.htm>

9. <http://ipstats.wipo.int/ipstatv2/searchForm>

Figure 2. Patent Applications in UAE⁹



was an e-mail survey to measure general interest and expectations. There were 29 respondents. The next instrument was administered during personal phone or Skype interviews of faculty and research administrators which were conducted during the period November 1, to December 22, 2014. There were 23 personal interviews. These interviews covered 9 different universities, the Abu Dhabi Technology Development Council, advisor to the Prime Minister's Office, and the UAE Genetic Diseases Association.

Survey Results

All of the published information indicates that the UAE Innovation Infrastructure is in the embryonic phase of its development.

- Universities that are involved in research are increasing their funding and peer reviewed publications are on the increase on the tech transfer operations.
- Abu Dhabi and Dubai have established assistance for University inventors, start-ups and SMEs.
- Those Universities that have Tech Transfer Offices and IP policies are growing their disclosures, patents, licenses and start-ups.

The purpose of the e-mail survey was to measure the expectations of UAE faculty and research administrators concerning the role of Technology Transfer in the University and the support that should be provided by the NRF. Most of the respondents to the e-mail survey were in favor of the NRF providing a number of services to the University inventors, with the average rating of 3.5–3.9, where 1 is strongly disagree, three is neither disagree or agree and five is strongly agree. The one function that

only received 44.8 percent support (agree or strongly agree) was: NRF should represent the interests of the inventor when negotiating licenses. A majority of the respondents (55.1 percent) agree or strongly agree that the NRF should provide Tech Transfer Support. The four functions of a proposed technology transfer services that over 65 percent of the interviewees rated as agree or strongly support were:

- Education in intellectual property issues for research contracts and commercialization of inventions. (66.6 percent agree or strongly agree);
- Assist the university TTO to represent the interests of the inventor when negotiating licenses (69.0 percent agree or strongly agree);
- Encourage the formation of inventor start-up businesses (65.1 percent agree or strongly agree); and,
- Assist the university TTO in the formation of inventor start-up businesses (72.4 percent agree or strongly agree).

Most of the interviewees felt that the organization of any Tech Transfer Office is for public benefit and to serve society. Overall, they rated their university's Intellectual Property Policy, if they had one, as acceptable with sufficient flexibility to accomplish the university objectives. All of the respondents believe that the university should actively seek to commercialize the results of its research work. A number of the faculty and directors of research thought this could be improved. They believed that the university could improve providing advice and education on intellectual property issues. They do encourage the submission of disclosures but, again, it could be improved. Those universities with TTOs do involve the inventor during their evaluation of the disclosure, and they are made to feel that they are part of a "Team." Communication about the status of disclosures is improving. All of the interviewees thought that presently universities could improve their marketing of inventions.

There is some interest in becoming personally involved in a start-up based on an appropriate technology for a start-up company, and that the university encourages and supports the formation of Faculty start-up companies. If there is a TTO, they consider the IP office to be "entrepreneurial" in its approach to commercialization.

They believe that the TTO office should receive funding to enhance its resources and improve the service it provides to faculty. Most respondents do see the generation of sponsored research funding as an objective of the TTO program if the TTO office is created from Federal funds or funds coming from Ministers. A majority of the respondents thought it would be best for any TTO to be located in the university and funded by the university.

A number of interviewees were concerned that the NRF has moved away from funding larger efforts to funding mostly mobility grants. Most of the interviewees

were concerned about the "sustainability" of university research since it is dependent on an annual budget from the Emirate. The concern was not only about the continued commitment to research because the budgets are annual and there is a need for multi-year large centers. However, UAEU, which has doubled its research budget over the past five years, do provide the opportunity for competitive grants for three years for multi-discipline centers. They now have six such centers. A number of the interviewees made the observation that NRF needs to return to its original mission—provide sustainable (more than one year) federal source of basic and applied research funds, possibly for large multi-discipline, multi-institutional centers not just individual grants. Some were concerned that:

- NRF Tech Transfer support services would be a distraction from funding research; and,
- It would compete and not partner with Takamul.

The interviewees proposed that NRF technology transfer support existing TTOs and partner with Takamul. In addition, they suggested that NRF support the proposal being headed by Khalifa University to bring the Association of University Technology Managers Asia conference to Abu Dhabi.

Interactive Workshops were held in Abu Dhabi and Al Ain for research administrators and technology transfer directors. The attendees started with the role of research in the Innovation Infrastructure, since it is the beginning of the Tech Transfer process, but also discussed the operation of the technology transfer process in the UAE. Their recommendations were: increase the awareness by the public of university Research and how it can impact the Economy; and sustainable (certainty/multi-year) government research funds. The attendees at the workshops also wanted to see more awareness of the how university research works by all of the stakeholders in the Academic research process. This lack of understanding has led to delays in conducting research. The workshop participants recognized the lack of patient capital (three to ten year time horizon for a return), high risk (no product, nor sales in evidence) capital to finance product development and new start-ups based on university research. It was suggested that there could be support provided by NRF to create a grant program similar to the United States National Science Foundation (USNSF) Partnerships for Innovation (PFI) program to the Canadian IP Mobilization program and to the more recent USNSF and United States National Institutes of Health iCorp Commercialization Programs.

III. Gap Analysis of Technology Transfer in UAE

A number of governments have attempted to establish an "Innovation Infrastructure" addressing the "Triple Helix" of government, industry, and academia. Most of the global experience with Federal Tech Transfer Supports is negative to neutral in their effect on in-

creasing inventions disclosure and commercialization. Most success for these Federal Tech Transfer Supports comes from enabling Technology Transfer on individual campuses, which are close to the inventor, by providing support, which ranges from competitive grants to direct assistance. The goals of these national efforts appears to be: increasing the disclosures of inventions; providing evaluations of disclosures as to patentability and commercialization potential; marketing inventions; assistance in negotiations for licenses; and assistance in the post-license entrepreneurial activities. Some local governments and universities have added funding for prototype development, incubators, and sources of patient, early stage investment capital (pre-seed and seed Venture Capital Funds). The UAE universities are still relatively new to establishing both a culture of basic research and to transforming the results of the commercially relevant research results into products or start-ups. Based on the surveys and literature review, it appears that there are missing components to the Innovation Infrastructure:

- Sustainable basic and applied research funding with industry partners.
- Support services for all UAE research universities to commercialize their research results.
- Sustainable Research Funding. Even though the faculty and research administration believe they are an important part of the 2021 Vision, they also believe that they have not been adequately funded, especially from the Federal Government.
- Establish Tech Transfer Offices. Even though there are four university based offices and some discussing establishing more, there is a growing concern about the source of funding for these offices, given the number of pressures on the University operating budget.
- Future potential for Technology Transfer. Even though there is a growing number of disclosures, patents, licenses, and start-ups, there is a concern that this developing effort will not reach critical mass without Federal Funding and Advocacy for:
 - Education of Faculty and Students about the opportunities for Entrepreneurship.
 - Addressing the concerns from non-Emirate faculty about starting businesses.
 - Increasing access for patient risk capital for the early stages of product commercialization.
 - More match making opportunities for entrepreneurial faculty to meet serial entrepreneurs and sources of funding for industry relevant research.

The experience of the authors is that the UAE Innovation Infrastructure lacks a central coordinating facility

for the joining of the Innovation Resource (University Inventions) with patient risk capital and entrepreneurial business management eager to take risk on new products or start-up businesses. The source of innovation, the university research budget, is increasing in the UAE. Most of the research faculty and administration reported that they need additional education on Intellectual Property commercialization to help change the culture from a traditional university dissemination model of publish to one that encourages disclosure for legal protection, then publish. A NRF Tech Transfer Support would provide that resource to all universities in all of the Emirates. In addition, those universities without TTOs and some with an office felt that they needed some additional assistance to review their IP policies and to provide traditional technology transfer services to their faculty: encourage disclosures, evaluate them for patentability and commercial potential, marketing of IP, negotiating licenses, and managing the post license activities. These universities could use a Federal resource rather than rely on a service from the Abu Dhabi Technology Development Council. All of these services should be offered in the spirit of partnership with the focus on making the partners successful.

IV. Recommendations based on Gap Analysis

The results of the interviews and the analysis of published information is a recommendation to have the National Research Foundation (NRF) provide Tech Transfer Support, with the mission to “support an Innovation Infrastructure that will transform the UAE into a Knowledge Based Economy.” The **Vision** of the proposed UAE NRF Tech Transfer Support is to “**support the creation of an internationally competitive innovation system in the United Arab Emirates by enabling the partnerships required for an Innovation Infrastructure and the translation of commercially viable research results into products or businesses.**” UAE NRF Tech Transfer Support has a goal that the businesses and investors of the world and the UAE to come to the UAE universities and the NRF Tech Transfer Support for opportunities to sponsor market relevant research; discover research results that could grow into new businesses or markets; and, be in awe of the ease of establishing partnerships to translate research results into business opportunities. This will be a support effort, focused on making its partners successful.

This Technology Transfer Support would provide: services, grants and policy advocacy:

- **Services**, which include: Providing access to advice, support, education and all of the necessary forms through the web and consultants to enable university invention process; Enablement of business start-ups based on university inventions;

Publication of the Innovation Infrastructure in the UAE. The NRF Tech Transfer Support should be a readily available resource for University technology transfer expertise and to University technology transfer experience. Nearly all interviewed faculty expressed concern about their lack of knowledge and understanding of the intellectual property process. Consequently, the NRF Tech Transfer Support will be a readily available resource for advice and support. The NRF Tech Transfer Support staff should be able to:

- Provide examples of University IP policy if the university needs a policy or review current contracted research projects to ensure applicability of IP clauses appropriate for that university.
- The NRF Tech Transfer Support should maintain a website which should provide pertinent information on all intellectual property matters, provide answers to frequently asked questions, and provide access to IP policy, disclosure forms, evaluation forms, license and research agreements which can be downloaded.
- Education. There should be an ongoing educational program on intellectual property issues. Periodic workshops and newsletters were strongly supported. There should be an orientation program for new faculty.
- **Grants**, which include: Matching grants to industry in Free Trade Zones to fund research at UAE universities; Grants to existing TTOs to expand their services to leverage Takamul funding; Grants to small businesses to support the commercialization of a university invention.
 - **Increase University/Industry Partnerships.** The National Science Foundation in the United States and the Bill and Melinda Gates Foundation provides grants for major inter-institutional research centers focused on strategically important technology, and require an IP commercialization plan. Funds are provided to the academic based center and require corporate or other government funding. Matching grants to companies, regardless of size, targeting those companies in the free trade zones to incentivize their support of research in UAE universities should also be considered
 - **Increase Technology Transfer Capacity.** Create a grant program similar to the US NSF Partnerships for Innovation (PFI) program and Canadian IP Mobilization program. The PFI offers opportunities to connect new knowledge to societal benefit through translational research efforts and/or partnerships that encourage, enhance and accelerate innovation

and entrepreneurship. Projects are supported to demonstrate proof-of-concept, prototype, or scale-up while engaging faculty and students in entrepreneurial/innovative thinking. The Canadian IP Mobilization program offers competitive financing of opportunities to connect new knowledge to societal benefit through translational research efforts and/or partnerships that encourage, enhance and accelerate innovation and entrepreneurship. Projects are financially supported to hire and pay the full salary and fringe benefits for technology transfer officers in the campus based TTO's; training grants for TTO staff; grants to demonstrate proof-of-concept, prototype, or modest scale scale-up while engaging faculty and students in entrepreneurial/innovative thinking. Similar to these programs, the NRF Tech Transfer Support would offer grants which would NOT have a cost match component.

- **Increase support for Small and Medium Enterprise (SME) /University Partnerships.**

A NRF Tech Transfer Support grant program similar to the NSF Small Business Innovation Research / Small Business Technology Transfer (SBIR/STTR) would provide funds for product development at small businesses and startups, in cooperation with universities. This program supports science and engineering technology with high technical risk and potential for significant commercial or societal impact. The grants are done in phases: Phase 1, a short proof-of-concept / feasibility grant (\$150–225k) can potentially be followed by Phase 2, a longer development grant (\$750k–\$1.5million). Grantees prove technical feasibility in Phase I and apply for Phase II funding to focus on scale and development. This method of financing lowers technical risk, making the enterprise more attractive to future investors and partners/customers. In the U.S., over \$500k in supplemental funding is also available for awards. For both the SBIR and STTR program, the applicant is a small company. In the case of the STTR the bulk of the activity is subcontracted to a faculty member to be performed on campus. For the SBIR, the bulk if the work will occur in the company or contracted to third parties other than the university partner.

- **Policy Advocacy at the Federal level**, which includes: Increased funding for on campus Intellectual Property/TTO infrastructure; Creating accreditation requirements which include specific Technology Transfer goals. Establishing long term,

sustainable research funding; Establish Technology Parks near Universities as Free Zones so that non-Emirati can own the majority of a business started with Faculty Technology; Establish Entrepreneurial Sabbaticals so that Faculty can take a leave to start and grow their businesses; Establishing new sources of public/private venture capital partnerships.

Success of the NRF Tech Transfer Support will be measured by:

- The number of partnerships that result in increased commercializable invention disclosures, the number of potential licensing inquiries, and the interest in and the consequent investment in university affiliated start-up companies.
- The enhanced reputation of the UAE as a Knowledge-Based Economy; increased engagement of universities in the UAE economy; and, finally, a lasting impact on the economy.

UAE has a significant opportunity to leap forward to the 2021 Vision by increasing support for University Technology Transfer which will increase the number of UAE university inventions, enhance intellectual property commercialization capacity at UAE universities, and increase university/industry partnerships to commercialize those inventions. The Strategic Vision outlines the role that universities can play in contributing to the growing diversity of the UAE Economy. Universities can contribute highly qualified manpower with formal experience in entrepreneurial skills as part of both formal and informal education. In addition, universities can strengthen the Innovation Infrastructure

in the UAE by partnering with the private sector to create and grow technology-based economic business opportunities, as part of a Knowledge-Based Economy. These activities can range from company sponsored collaborative research in areas of mutual interest, to commercializing academic inventions (technology transfer). Many UAE universities have organized Offices to administer collaborative research, but only a five have Technology Transfer Offices (TTOs). The Plan is to grow this technology transfer activity in the UAE and further enhance the impact of universities on the UAE Economy.

Return on Investment for the NRF Tech Transfer Support

Return on Investment for the NRF Tech Transfer Support will be measured by such Key Performance Indicators as qualitative and quantitative success of its partners: the number of universities that request services, the number of faculty that are encouraged to disclose commercializable and patentable inventions; the number of start-ups that initiate discussions; and the number of visits from global companies looking for research and new product development partnerships and ultimately the measureable impact of such activities on the UAE economy. Success of the NRF Tech Transfer Support will be measured by the enhanced reputation of the UAE as a Knowledge-Based Economy; increased engagement of universities in the UAE economy; and, finally, a lasting impact on the economy. ■

Available at Social Science Research Network (SSRN): <https://ssrn.com/abstract=2855249>