POLICY PAPER

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SUMMARY

This policy paper describes the role of UAE universities in local networks to support research and innovation. UAE leaders have recently stated intentions to develop a knowledge economy (Emirates Competitiveness Council, 2011). With higher education widely recognized as a key driver in innovation economies (Aubert & Reiffers, 2003; Etzkowitz & Dzisah, 2008), the UAE's universities have a central role to play in sustaining active networks among universities, industry, and government. Such networks support innovation by promoting the flow of information and ideas across institutional boundaries (Etzkowitz & Dzisah, 2008).

This qualitative study, based on interviews with 62 higher education stakeholders in the UAE, finds possible advantages to developing networks across institutions and sectors, as well as a number of barriers to their development. The policy paper first provides an overview of the role that universities play in innovation networks, followed by a presentation of the study's findings regarding stakeholders' perceptions of the value of local networks and the barriers faced in developing them. Lastly, policy recommendations are presented to address the challenges faced by universities in building networks among and between universities, industry, and government.

Universities and Innovation Networks in the UAE

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Introduction

The United Arab Emirates is a young country with a developing higher education system. The country's first university was founded in 1976, but there has been rapid growth over the past four decades and today the higher education system has grown to over 100 universities, including public, private, and foreign institutions (CBERT, 2011; Commission for Academic Accreditation, 2011). Through most of its history, the focus of higher education development has been on increasing the availability and quality of education offered to students. This has been done by establishing universities to increase the number of seats available to Emirati and expatriate students, and by bringing in foreign-trained personnel to create universities that emulate Western models of higher education. This development strategy has created a higher education system that is predominantly focused on teaching rather than on research and knowledge production.

In recent years, leaders in the United Arab Emirates have stated their goals to develop a knowledge-based economy by developing research, innovation, and science and technology (Emirates Competitiveness Council, 2011). Higher education is widely recognized as a key driver in developing and sustaining an innovation economy (Aubert & Reiffers, 2003; Etzkowitz & Dzisah, 2008; Razak & Saad, 2007; Villasana, 2011), but for the UAE's universities, developing a research environment sufficient to support an innovation economy represents a significant shift in their operations. Thus far, higher education has contributed to the UAE's economic development through the production of a skilled and educated workforce. However, the development of an innovation economy requires universities to go beyond training workers to incorporating knowledge generation as a core activity (Villasana, 2011).

An innovation economy entails the generation of new ideas and technology and the mechanisms to move them to the market (Datta & Saad, 2011). Such a process requires a robust network of people, firms, universities, and government organizations to share knowledge and generate new ideas that are relevant to local realities and cognizant of international contexts (Razak & Saad, 2007; Villasana, 2011). Etzkowitz and Dzisah (2008) describe the central role that universities play in promoting networks that circulate individuals among academia, government, and industry. Flexible institutional boundaries provide the means for individuals to circulate across sectors, promoting an exchange of perspectives and fostering new ideas (Etzkowitz & Dzisah, 2008; Villasana, 2011). The growth of new ideas and innovation is particularly important for the UAE, as locally-generated knowledge can facilitate the country's continuing development.

Aims and Methods

The aim of this policy paper is to review the factors that limit the development of innovation networks within the UAE through a qualitative analysis of stakeholders' experiences in the higher education sector. The views presented in this paper are based on 62 interviews conducted between January and April 2012 in Abu Dhabi, Dubai, Ras Al Khaimah, and Sharjah. Interviewees include administrators and faculty members from federal universities, domestic private universities, international branch campuses, and organizations charged with higher education oversight. Reflecting the composition of the workforce in the higher education sector, the majority of study participants are expatriates. 51.6% are Western expatriates, 16.1% are Arab expatriates, 11.3% are Asian expatriates, 14.5% are Emirati nationals, and 9.7% are unspecified. It should be noted that regardless of origin, the majority of interviewees received higher education in Western countries, primarily the US and the UK.

The Status of Academic Networks in the UAE

In the UAE, the development of international networks in higher education has been successful at bringing in foreign expertise and resources, but the local impact of such reforms remains limited by the weak linkages that exist among higher education institutions and between universities, industry, and government agencies within the country.

A. Foreign-trained academics provide expertise and links to international networks

Study participants characterize the presence of foreign-trained faculty as an advantage for developing research in the UAE because the expertise they provide is not available locally. One administrator describes the conditions that warrant foreign involvement in the UAE's higher education system:

> "In the UAE, there are not even a million citizens, so if the UAE wants to make this transformation [towards research], there is a strong need to import knowledge, to import the type of people that will be able to support this type of knowledge growth and this type of technology transformation."

There is widespread agreement that research activity is in the nascent stages in the UAE's universities, but study participants view the expertise of foreign faculty as necessary for advancing research activity. A faculty member in a federal university notes the experience that foreign-trained faculty bring to his institution:

> "If we are moving toward an intensive research university, you need to have people who have done research in other countries in order to help create an atmosphere for research in this university."

A unique feature of the UAE higher education landscape is its large number of international branch campuses. Branch campuses offer sustained links to international networks through their affiliations with their home campuses. Several interviewees at branch campuses report that their home campus ties are helpful in conducting research. One university administrator described the role of the home campus in facilitating research activity at the branch campus:

> "[Our home campus] is a research university, so it's part of their institutional purpose. The vision for [our branch campus] is that we will have to engage in research. Our campus encourages faculty research collaborations with individuals on the home campus through virtual research groups. But there is a long way to go."

Branch campuses typically have much smaller research facilities than the home campus and in some cases they lack research facilities entirely. In some cases, home campus research facilities are used to carry out the branch campus' research, making the relationship between the two campuses vital to the branch campus' research program.

While study participants see many advantages to foreign involvement in the higher education system, many view the foreign presence as a temporary situation that is bound to shift as more Emiratis progress through higher education and become trained and qualified to fill university professorship and leadership positions. Many respondents see the growth of locally based PhD programs as key in developing UAE higher education and research:

> "In the UAE, the focus should be on training PhDs and bringing more Emiratis into research training . . . Research training through PhD programs is an important path to research because it develops capacity that stays within the country."

Currently, many of the brightest and most ambitious Emirati students travel abroad for higher education. While many of these students return to the UAE, the knowledge and technology they develop while overseas does not contribute to a home grown knowledge base. One participant describes a common

requirement placed on students in technology fields in the US:

> "When the best students go abroad, to Stanford or MIT, they sign agreements that everything they do belongs to the institution, not to the student, so their work doesn't get returned to their home country."

This administrator holds the view that developing high quality PhD programs in the UAE will serve as an attraction for bright Emirati students to pursue doctoral training in their own country where the research and innovations they help produce will benefit the local environment.

B. Frequent turnover of workers

The frequent turnover of expatriate staff mediates against the establishment and maintenance of local networks. Most foreign workers enter the UAE on short-term work visas, so there is a continuous flow of foreign workers entering and leaving the country. One study participant describes the UAE as, "a fairly transient society, so people are in and out. And there's . . . little continuity." While the constant inflow of people is a source of fresh ideas, the constant outflow of workers means that there is a regular loss of local knowledge. One study participant describes the effects of the outflow of workers:

> "On the one hand, it's great to be able to welcome in talent from abroad, but you are constantly losing talent as well because people who perhaps may stay if there was more permanency are just, 'Well, I'm going to go back now,' and you are always losing talent that you might otherwise be able to keep and to build on."

This participant observes that the outflow makes it difficult to develop a workforce with local knowledge. One manifestation of this weak local knowledge is that study participants find it difficult to locate individuals who are interested in collaboration. They report that much time and effort must be spent to identify appropriate individuals, develop relationships of trust, and maintain those relationships over time. Often, when one party leaves the country, the relationship between organizations disintegrates because it was perpetuated primarily by individuals' relationships and not supported by organizational structures.

The constant flow of workers is a concern for research and innovation, particularly in science and engineering, because research requires significant investments of time and collaboration over many years, conditions which are difficult to meet in the UAE because of frequent staff turnover. One participant describes the effect of the impermanence of foreign workers on local research:

> "One of the things that encourages [faculty] to stay, obviously, is the continuous support infrastructure and collaboration between universities and government on research, so faculty members who are active in research and need equipment, resources, who have to work in teams and so on are less encouraged to come to [UAE] universities. So you end up with [faculty] who are self-driven, self-motivated and working in areas where they can do [research] with one or two [researchers]. But a lot of the areas, like science, which require collaboration and teams and a lot of funding – these types of people are less likely to stay for long."

This study participant sees that academic staff in collaboration-oriented fields like science and engineering have little incentive to stay in the UAE where sustained collaborations are difficult to maintain.

C. Organizational barriers within universities

Within universities there appears to be little incentive to network or collaborate with other institutions. Some respondents report that a culture of competition and distrust limits interactions and information sharing among universities. One administrator at a branch campus describes the culture in the UAE higher education environment:

> "This environment is so secretive. You go onto any university website [in our home country] and you can pull up policies and all sorts of things, and here – well, they don't even want to give out their academic dates. . . I just think that it's [the] mindset. We have to keep our information secret. I think it's cultural. . . And I think competition is pretty fierce here. So I think people like to keep things fairly close to their heart. The less others know the better."

For this study participant, the lack of information about other institutions is attributable to a culture of competition and secrecy. Dubai has a particularly competitive higher education market in which a large number of private institutions offer largely similar programs. Some respondents perceive that collaboration with peer institutions is not welcome by administrative leaders. The joint programming that does exist is often focused on pooling resources

to provide services to students, such as student activities and athletics, and not on fostering joint research and scholarship, or sharing information or best practices.

Respondents indicate that few structured opportunities exist for faculty to network with other universities because of a lack of formal groups or associations that bring together faculty or administrators to share research or best practices. The following quotes present one faculty perspective and one administrator perspective on the obstacles to learning about their colleagues in other UAE institutions:

> *Faculty*: "We don't have the foundation for networking . . . Like usually in the U.S. there are a lot of conferences that take place. And professors meet each other at a conference. They don't go, knock on the door and say I'm Professor ___, can I meet you? It doesn't work like that. Here you don't have the foundation, so you only can know about the professor if you Google him. It's difficult. You don't have that platform. And you have more societies in the U.S. as well. . . The society is a major place where people meet."

> *Administrator*: "In [our institution's home country] there would be a group of registrars. There's a group for the [Vice Chancellors], . . . the [marketing group] and there's so many different opportunities for people to go and meet. . . Here there's nothing formal. . . [I have not] come across people who are interested in wanting to form a group."

Both the faculty member and the administrator find that the UAE does not contain groups or associations that facilitate interactions among academics with similar research interests or administrators with similar roles.

There is also a reported lack of incentives for faculty to spend time building networks outside of their university. The time spent soliciting and developing relationships is "invisible time" that is not valued for faculty evaluation or promotion. This serves as a disincentive for faculty to build external relationships. One faculty member describes the barriers she sees for faculty interested in working with organizations outside their universities:

> "[Time for] organizing conferences [and] schedule flexibility to allow for consulting for industry . . . need to be given by universities and articulated in their policies. These things need to count for promotion to make it worthwhile for faculty to engage in them. Faculty are reluctant because such activities do not count for promotion. . . [If] you want people to network, that means you must give people enough time to network. [This should be] a component for accreditation, but we don't have it now, so it's not important for the universities."

This faculty member suggests that for robust network-building to occur, universities must recognize the time that building such relationships requires. If faculty's work with outside organizations does not count for promotion, then they will not be motivated to do it. Likewise, if outside engagement is not part of accreditation requirements, universities will not be compelled to promote faculty activity outside the university.

D. Industry and government prefer outside consultants rather than locally-based experts

Study participants see little interaction between industry and higher education in regard to research or consultation. The perception is that industry and government prefer to hire consultants from abroad rather than consult local academics. One institutional leader says, "If you want things to go fast you will hire a consultant. You pay him money, he has deliverables." A professor sees that "there is no culture here of inviting universities in, so [companies] are . . . reluctant to talk to a professor." Many top multinational companies in the UAE "already work with Harvard and with Yale, and all of these guys from outside," so they do not seek out relationships with local universities.

The common view among study participants is that international consultants lack a robust knowledge of the local context and thus produce consultation reports that are of little practical value and often cannot be implemented. One participant states that the trend towards outside consultants limits the UAE's capacity to generate locally-based knowledge:

> "The goal is not to create a research environment, the goal is just to purchase an existing solution. So it's not about developing new technologies, it's not about bringing your country or your environment to a new edge in terms of knowledge. It's about purchasing what's out there, putting it to work, and just push on the button."

Some firms that do engage with local universities are perceived as doing so in the spirit of community outreach rather than seeking universities to address core business problems:

> "It's a two way process. One, industry thinks they are doing us a favor and we think we are doing industry a favor. . . For them it's a lot of time and investment and they don't see a direct result. . . So for an industry to get involved, they are only getting involved for maybe corporate social responsibility or because someone there has a really personal feeling of wanting to give."

Reliance on foreign consultants suggests that the knowledge capacity of the faculty residing in the UAE is being underutilized and that the knowledge being produced is not always relevant to the local context. One professor who has been working in the UAE for nearly ten years states, "You can't fly in a professor from outside and expect them to understand how this market operates. . . [It takes] six years or five years of trust-building." Outside consultants do not invest enough time in the country to understand the local organizational and cultural systems so they often present "shortcut research" that companies cannot implement because it lacks a robust understanding of the local context.

Study participants emphasize the value of locally-generated knowledge. One participant sees local knowledge as necessary to make progress on complex issues facing the UAE:

> "The big problems of the government will never be solved if you don't have thinking – a segment of leaders that is doing a little research, doing a little policy advice, doing a little outreach beyond teaching kids."

Supporting locally-embedded research that is tied to local needs and is informed by a deep, realistic understanding of the environment is viewed by participants as necessary for developing the country. One university administrator describes the potential of locally-embedded research to benefit the university and the local environment:

> "Some projects that can be taken up at the early stages can be interesting for us because they can bring additional perspectives to what a regular consultant will do. At the same time, it will also network our people with the local structures, and this is very important because that means . . . the person maybe can be hired by that company afterwards and contribute in the most significant way to what technology transfer really is. . . Technology transfer is mediated by people. It is what you know, what you have acquired that you transfer with you . . . that will fertilize that new environment."

In sum, respondents view it necessary to develop locally-embedded research and scholarship that is done in collaboration with local businesses and organizations, in order to generate knowledge that is relevant to the needs of the country. Locally-embedded research is seen as providing insights and understanding that go beyond what is possible through external networks.

E. Lack of critical mass

One perceived obstacle to creating local networks is the lack of a critical mass of faculty, research labs, and corporations available for possible collaboration. Many respondents characterize the concentration of expertise in their particular field as insufficient to support robust research networks. The absence of a critical mass means that faculty research is often an independent affair:

> "We haven't created centers of excellence in certain topics where industries can come when they are having specific problems. We don't have critical mass and I don't think you can operate in isolation."

The view is that there is little strategic attention paid to developing research environments targeted towards desired fields. One participant observes that the focus has been on bringing in high profile universities, but there has been little attention paid to development in targeted fields:

> "On the one hand, there's this sort of idea that . . . to compete I need a Rolls Royce or Ferrari, so I'll bring in INSEAD and I'll put them there, and then I'll bring in Harvard Medical School . . . instead of saying what does this economy really need. And I think here, what's really [the] intent is to bring the universities in, but I don't see the idea yet of developing critical mass in any particular area."

A critical mass of universities and industries centered on targeted fields is seen as a necessary component for creating a suitable research and innovation environment. One respondent states:

> "Every institution should evolve around a Center of Excellence, [which] primarily promotes research and development. When you have that core in a university, only then [can] research [take place]."

Creating a research environment through Centers of Excellence is viewed as a way to attract the highest quality people to the country and to retain the best qualified local students:

> "The people who can contribute to transformation of the society need a research environment because if you're not interested in research it means you are satisfied with what you have…You need to provide centers of excellence to serve as the carrot to attract those who are the most brilliant and those who do not yet know that they are brilliant."

By targeting specific fields and developing networks and research infrastructure around those fields, participants see the potential for creating a research environment that will attract and retain the best talent, will help to support a knowledge-based economy, and will provide knowledge-based solutions to local problems.

Policy Recommendations

The strategy of bringing foreign expertise into higher education in the UAE has contributed much to the development of higher education, but weak networks within academia and between universities, industries, and government leave the knowledge-generation capacity of universities underutilized. This study finds that higher education stakeholders in the UAE perceive numerous barriers to the development of networks across institutions and sectors. The following recommendations aim to overcome those barriers.

1. Establish local research associations and conferences.

The establishment of locally-based research associations would provide fertile ground for fostering meaningful interactions among industry, faculty, and government. Structures designed to span organizational boundaries and bring together interested parties around common interests would help to overcome the obstacles presented by the continuous flow of workers. These groups and their events should be driven by active participation of the members to promote the flow of new ideas and perspectives among the membership. Information about the associations and their events should be well publicized, as a common complaint is that people do not hear about events until after they happen. Detailed information should be available online so that newcomers can easily find it.

2. Offer research grants for joint projects between local universities and industry.

There should be a focus on providing grants that encourage collaborative research between universities, industry, and government agencies within the UAE. This would encourage basic and applied research that is relevant to local needs, as well as the development of business case studies that are built upon local business realities. The National Research Foundation (NRF) has taken a step towards such grants with its University-Industry Collaboration Award, which is open to the federal universities and those accredited by the UAE's Commission for Academic Accreditation (CAA). Similar initiatives should be opened to international branch campuses that are not accredited by the CAA. As well, companies operating within the country should receive incentives to fund local research and seek consultation services from local faculty. This will help companies by providing them with knowledge that is grounded in local realities and will provide perspectives to faculty to help make their teaching and scholarship more relevant to the local context.

3. Create incentives for university faculty to develop relationships with outside organizations.

Faculty evaluation and promotion should take community engagement into consideration. The CAA has made a step in this direction by establishing an accreditation criterion in its Accreditation Standards, but there is great flexibility in how such engagement might be achieved. Community engagement should be viewed as a central component of faculty work and faculty should be given schedule flexibility to pursue research and consultation with outside organizations. As well, the large sector of international branch campuses that do not fall under CAA accreditation should be encouraged to facilitate external activity of its faculty. With the frequent inflow of new faculty from abroad, universities should help facilitate faculty interactions with the local community. This will help to more quickly orient and educate new faculty and will speed the process of building locally-based networks.

4. Develop centers of excellence.

Policymakers should strategically target certain knowledge fields for development by establishing Centers of Excellence. Rather than focusing on broad-based development, a critical mass of individuals and resources from both business and universities can be pooled to help stimulate research development. This would help to create synergy that will advance the development of research and innovation.

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