

The Innovation Gap: Opinion piece in Gulf Business, Nov 2015

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The United Arab Emirates Government declared 2015 to be the 'year of innovation'. It announced a new 'national innovation strategy' with the aim of becoming among the most innovative nations in the world within a seven-year period. The idea is that innovation will also drive economic diversification and job creation. International evidence shows that innovation leads to higher overall productivity growth and thereby enhances economic development. For firms, it generates additional added value, new products and activities that increase market share, build brand names and profitability. For advanced economies, investment in intangible assets and multi-factor productivity growth together accounted for between two-thirds and three-quarters of labour productivity growth in the decades before the financial crisis. The implication is that innovation is a key source of future growth for emerging economies seeking to enhance competitiveness, diversify and move towards higher value-added activities.

What is innovation?

The Organisation for Economic Cooperation and Development defines innovation as the implementation of a new or significantly improved product, or process, a new marketing method or a new organisational method in business practices, workplace organisation or external relations. For advanced economies with ageing populations facing diminishing returns from labour inputs and investment in physical capital, future

growth must increasingly come from innovation-induced productivity growth. For the Arab economies to remain competitive in the 21st century, it will be increasingly important to invest in the knowledge economy. More than half of gross domestic product in the major OECD economies is now knowledge-based, given growth in high-tech investments, hightech industries and highly skilled labour, and related, productivity gains.

Arab countries face a large innovation gap

With National Innovation Week in the UAE scheduled to take place in November 2015, it is important to understand where the Arab world stands and what is holding back innovation. What should the UAE, given its avowed ambitions, do to catapult itself into the ranks of the most innovative nations?

The Global Innovation Index evaluates countries on various measures of innovation. Inputs include factors that enable innovative activities like laws and institutions, human capital and research, infrastructure, market and business sophistication. Output indicators focus on knowledge, technology and creative activities and industries. The 2015 report finds Switzerland, the United Kingdom, Sweden, the Netherlands and the United States to be the world's five most-innovative nations. So, how well does the Arab region embrace innovation? Only Saudi Arabia (ranked 43), the UAE (47) and Qatar (50) are present in the top 50 countries. They scored 40.65, 40.06 and 39.01 respectively compared to 68.3 for Switzerland. Given the wealth and resources of our region, old civilisation and a history of achievement this is a dismal result. What should be done to bridge the innovation gap?

Education and critical thinking is key

Multiple factors are at play in the region's gloomy performance when it comes to technological innovation. First and foremost is the quality and effectiveness of investment in

human capital. Education is the fundamental enabler of innovation and knowledge. One needs an integrated education system that lays the foundation for learning, develops core skills and technical tools – and encourages creative, and critical thinking.

An OECD study analysed the quality of education based on Programme for International Student Assessment test scores and the Trends in International Mathematics and Science Study. It found that over 40 per cent of pupils in the UAE were not meeting the basic level of skill in mathematics and science (ranking 45th among 76 countries in the study). The report further estimated that the UAE could increase its gross domestic product by 29 per cent by 2095, if pupils increased their PISA score by 25 points. A similar result would apply for other Gulf Cooperation Council and Arab countries.

Educational curricula across the GCC and the wider region need reform. The emphasis should be on science, technology and e-knowledge. Finland, Korea and Singapore's transformation of their education systems are good case studies to follow.

Second is culture. Our children are sometimes brought up in an environment that does not encourage the questioning of authority. Rote learning and deference are concepts that are the enemies of innovation. As Thomas Kuhn puts it in *The Structure of Scientific Revolutions*: "All significant breakthroughs are break- 'withs' old ways of thinking".

The role of institutions

Innovation is not only about individuals and networks. It must be supported by an enabling institutional environment. Innovators and entrepreneurs in the Arab world are not always supported by laws and institutions that protect intellectual property and knowledge. The legal and tax systems do not offer incentives to innovate. As a result, we find very low levels of spending by the private sector on research and development

and even less by state-owned enterprises that do not face competition.

A recent OECD study found that research and development spending in the OECD countries represented some 2.4 per cent of GDP. By contrast, in the Arab countries only 0.3 per cent of GDP was spent on research and development. To move forward, our governments should partner with the private sector to ensure structures that enable innovation and provide financing for long-lead research.

Globally, some 250 multinational corporations account for more than 60 per cent of research and development, more than 70 per cent of patents and 44 per cent of trademark filings. This underscores the need for private sector participation. China is an example where the government has been very proactive. The country continues to raise its research and development spending and has the world's second largest R&D volumes, according to the OECD. It now has a higher average annual number of doctorate graduates in the natural sciences and engineering than the US. The GCC countries could benefit from China's experience in achieving large changes in a short time frame.

What should be done?

The bulk of economies in the Arab world are factor-driven or resource-based. They need to transform themselves into knowledge, digital and innovation-driven economies. A new generation of information technologies – including artificial intelligence, the internet of things and quantum computing – plus a wave of inventions in advanced materials, nanotechnology, robotics and life sciences are ushering in a new industrial revolution. The Arab countries need to be ready to embrace the new industrial revolution or risk relegated status.

The GCC has the resources to develop strategies that favour

innovation and the digital economy. A UAE-centric strategy, for example, could focus on:

- Resetting the educational system to focus on science and technology, digital and quantitative skills with dedicated institutes that foster research and development.
- Appointing a chief scientific officer to advise and develop government policies for science and technology, and oversee government funded research and development.
- Attracting and retaining qualified foreign human capital, scientists and knowledge workers by providing incentives including long-term and permanent residency.
- Developing the financial system to cater for innovation by providing the enabling legal, regulatory and institutional framework.
- Providing further incentives for research and development driven multinational companies – like Google – to establish in the free zones.
- Joining the OECD to benefit from the accumulated stock of scientific and technology capital and networks.

The knowledge economy

The road to economies and societies that value and strive from innovation requires vision and a willingness to embrace change, and transformation. Barriers to competition must be removed and vested interests challenged. Public-private partnerships and cooperation must be embraced. For the Arab states, economic development, growth and job creation require a new developmental model. Knowledge-based digital economies with a radical shift away from unsustainable dependence on natural resources and wealth are the future.