As we stand on the brink of the Fourth Industrial Revolution, it is clear that innovation will play a major role in reshaping the global economy. Governments and businesses around the world are fast realising the need to respond to this trend in order to maintain growth and remain competitive.

Dubai’s government has been pro-active in this regard by embarking on an ambitious strategy to become the world’s most innovative city by 2021. The emirate has taken an inclusive approach that involves stakeholders from the public and private sectors, as well as civil society.

Recognising the importance of measuring our own progress, the Dubai Chamber of Commerce and Industry launched the Dubai Innovation Index last year. The Index, which covers 28 global cities, is an integral pillar of our innovation strategy.

The Index has become an important tool for benchmarking efforts within the public and private sectors. Most importantly, it enables us to look at the areas where we can improve, and provides us with recommendations for boosting our competitiveness.

In this year’s cycle, we have seen increased efforts in the areas of public-private sector collaboration and innovation-focused investment, which led Dubai to improve its ranking on the index and outperform major business hubs such as Shanghai, Beijing and Madrid.

We also can see more awareness and eagerness within the private sector to adopt new technologies at a faster pace to respond to external changes. We are pleased to report that our progress towards innovation in Dubai has continued despite the challenging conditions that have been impacting the global economy.

We still see plenty of room for more involvement from the private sector, and we encourage businesses to play a more active role in the emirate’s innovation initiatives. By using the Index as a guide, companies can work towards adopting viable strategies that help drive innovation and sustainable growth within their organisations.
Dr. Anil Khurana  
*PwC Partner, Strategy & Innovation*

This 2nd edition of the Dubai Innovation Index comes at an interesting time for Dubai, the region, and the world. Though the region and the world are going through significant economic uncertainty, and several sectors are badly hit, the role of innovation in Dubai and the world has kept its pace.

The momentum from 2015, the Year of Innovation, is evident in the ongoing initiatives and progress in the UAE and Dubai. Dubai has strengthened its position among the 28 global cities included in the Innovation Index, primarily based on its continued political and social strengths, and ongoing investments in the city’s soft and hard infrastructure.

On the private sector side, of particular interest is the improvement in the building of companies’ innovation capabilities – strategy, process, and people. In 2015, our observation was that the private sector was benefiting from the innovation investments made by the Dubai Government, but was itself lagging in investing in capabilities. In 2016, we observe a strengthening of public and private sector collaboration, the theme of this year’s study. Aside from the government, several leading companies are now investing significantly not only in greater R&D activities, but also in emerging technologies such as blockchain, Internet of Things, virtual reality, 3-D printing, drones, and various others that are often known by the moniker of Industry 4.0.

Prof. David Gann, CBE  
*Vice President, Innovation & Development*
*Imperial College London, United Kingdom*

It is good to see Dubai rising up the Dubai Innovation Index to 15th place. This is to be applauded. Maintaining its focus to improve productivity growth and create the conditions to attract new business will be essential for Dubai’s competitiveness in the years ahead.

The global economy has been extremely volatile with low oil prices and political and economic uncertainty, particularly among some of Dubai’s major trading partners, such as Europe. We are also beginning to see the emergence of restructuring and new pressures on competitiveness caused by technological change. These changes create opportunities, such as the advent of new services and better access to markets. Dubai needs to develop its innovative capacity further if it is to benefit from these new waves of technology-based changes.

Innovative mega-cities like London and New York have multiple private and public-sector collaborations focusing on areas such as digital infrastructure and creation of data scientists capable of delivering innovative solutions to the challenges of economic growth in resource-constrained, densely packed urban environments. Dubai has excellent opportunities to strengthen partnerships with organizations in these areas and other leading cities to harness the fruits of innovation and continue to improve its own position in the Dubai Innovation Index.
The Dubai Innovation Index was conceptualized in 2015 as an effort to baseline Dubai’s position compared to other leading global innovative cities along with measuring Dubai’s private sector innovation maturity. In the 2015 study, “Building innovation capability for the future” emerged as the key theme.

The 2016 study emphasizes on the importance for Dubai to continue to build on the foundation established. This requires greater emphasis on the collaboration between public and private sectors in Dubai to achieve higher performance in innovation outputs.

“Dubai has risen to #15 among 28 global cities in the Dubai Innovation Index”

Hence, “Strengthening public and private sector collaboration” is the theme of this year’s study.

The Dubai Innovation Index was first launched in 2015 as a framework to enable achievement of sustainable economic growth by measuring innovation in Dubai and identifying areas of improvement. The index benchmarks Dubai against 28 global innovative cities. In 2015, Dubai ranked 16th and has climbed up one place to 15th rank in 2016.

Dubai’s inspirational and visionary leadership has greatly emphasized on the importance of innovation across all sectors through various initiatives over the past year. As a result of the continued efforts of Dubai Government towards defining and communicating the innovation vision, strategy and initiatives, Dubai’s position on the global innovation map has strengthened in 2016. In particular, significant increase in funding through FDI has helped Dubai move up one place on the ranking table.

This year, the overall innovation score for Dubai’s Private Sector has increased by 6% from last year, the biggest contribution to which comes from a 10% increase in innovation enabler’s scores. The significant leap in scores is a direct reflection of the private sector benefiting from the Government’s innovation initiatives.
This year’s survey results suggest that the private sector has recognized the importance of innovation and has invested in building innovation capability (score increased by 15% from 2015) across areas of strategy, process and people. There have also been improvements in Dubai’s business environment, laws and legislations, making it easier for existing businesses to operate and new businesses to start.

However, in order to ensure continued progress on the innovation path, a few key areas of improvement have emerged from the 2016 study. Dubai continues to face challenges in attracting and retaining skills and talent as well as developing the right skills for innovation across all professional levels.

Hence, Dubai must place greater focus on enhancing skills for innovation at all professional levels and invest in the education sector, particularly in higher and technical education to ensure a sustainable future of innovation in Dubai. While Dubai has done relatively well in introducing new products and services this year, intangible innovation outputs such as patents, trademarks and published scientific and technical articles have dropped significantly from last year. This is a trigger for the Government to make policies that support the creation and protection of Intellectual Property and investments in R&D institutions.

At a global scale, the economic environment has been challenging with low oil prices, political uncertainty across major countries and volatile markets. This has resulted in triggering innovative thinking and new ways of working among both public and private sector. Governments have acted on making and implementing policies that support the creation of Intellectual Property and investments in R&D institutions.

New York has risen to the #1 spot from #5 while London has lost its #1 position to #4 in 2016. The increase in joint ventures and venture capital deals have made New York a new favorable destination for businesses and start-ups. Furthermore, US cities have benefitted from “cross pollination” whereby a large number of fortune 500 companies were founded by immigrants or children of immigrants. London dropped three places due to a significant decrease in market capitalization and total value of stocks traded. This could be attributed not only to the declining global economic climate but also anticipation of Brexit referendum. On the other hand, Paris has made a giant leap from #10 position in 2015 to #2 position in 2016. This rise is credited to the vast increase in funding, mainly from FDIs and from the city’s new policies that support innovation in businesses.
2. Dubai has risen to rank #15 amongst 28 global innovative cities

<table>
<thead>
<tr>
<th>City</th>
<th>2016 Innovation Index Ranking</th>
<th>2015 Innovation Index Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>New York (USA)</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Paris (France)</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Hong Kong (Hong Kong)</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>London (UK)</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Tokyo (Japan)</td>
<td>5</td>
<td>6</td>
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<tr>
<td>Singapore (Singapore)</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Stockholm (Sweden)</td>
<td>7</td>
<td>7</td>
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<tr>
<td>Seoul (South Korea)</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Zurich (Switzerland)</td>
<td>9</td>
<td>8</td>
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<tr>
<td>Copenhagen (Denmark)</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>San Francisco (USA)</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Berlin (Germany)</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Toronto (Canada)</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Sydney (Australia)</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Dubai (UAE)</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>Madrid (Spain)</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>Riyadh (Saudi Arabia)</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>Doha (Qatar)</td>
<td>18</td>
<td>19</td>
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<tr>
<td>Shanghai (China)</td>
<td>19</td>
<td>17</td>
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<tr>
<td>Kuala Lumpur (Malaysia)</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Beijing (China)</td>
<td>21</td>
<td>18</td>
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<tr>
<td>Milan (Italy)</td>
<td>22</td>
<td>25</td>
</tr>
<tr>
<td>Moscow (Russia)</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Mexico City (Mexico)</td>
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<td>24</td>
</tr>
<tr>
<td>Johannesburg (South Africa)</td>
<td>25</td>
<td>27</td>
</tr>
<tr>
<td>Sao Paulo (Brazil)</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Nairobi (Kenya)</td>
<td>-</td>
<td>27</td>
</tr>
<tr>
<td>Bangalore (India)</td>
<td>-</td>
<td>28</td>
</tr>
</tbody>
</table>

Note: In the 2016 study, Istanbul and Mumbai are replaced with Nairobi and Bangalore.

The global economy has been extremely volatile with low oil prices and political and economic uncertainty but has triggered innovation, investments in R&D and new technologies such as Internet of Thing, 3-D printing, big data, drones, Industry 4.0 etc. Cities in emerging economies are relatively making faster progress in developing infrastructure for innovation and building capabilities, whereas the cities in developed economies are making investments in developing and adopting new technologies.
3. Diversification of economy in non-oil sectors and other structural reforms have helped Middle Eastern cities improve their positions in the index

North America

- New York City (1st)
- San Francisco (11th)

US continues to be one of the most-innovative countries, with an improvement in political, economic and social environment and particular strengths in computer software spending and creation of innovation culture. A common theme between the American cities that has helped boost their rankings is the increase in cultural exports, such as film and TV tape distribution, and favorable corporate employee policies.

New York City’s success can be attributed to the significant increase in joint ventures and venture capitals, making it a new favorite for start-ups.

Inward FDI for San Francisco improved significantly and the city continues to invest in the ecosystem. For example, a new innovation lab, dubbed Superpublic, that aims to bring together different levels of government, private technology firms, nonprofits and universities to solve problems facing urban communities, was inaugurated in July this year.

Europe

- Paris (2nd)
- Madrid (16th)
- Milan (22nd)

Europe has seen an improvement in its political, economic and social environment. The region has witnessed an increase in funding, particularly from Chinese investors who poured a record c.$40bn in Europe in 2015. It has also seen an improvement in tangible and intangible outputs, including rise in knowledge-intensive jobs, increase in labor-force participation rate and manufacturing value added.

A common theme in the European region is the increase in business density and higher investments in existing firms. This has created jobs for people at all skill levels, thereby increasing investments in skills and talent.

In particular, Paris’ success is primarily due to the huge increase in funding, mainly from foreign direct investments, resulting from the city’s new policies that support innovation in business.

Asia Pacific

- Singapore (6th)
- Seoul (8th)
- Kuala Lumpur (20th)
- Beijing (21st)

Kuala Lumpur has declined significantly in ranking due to a large drop in tourism, resulting from high political uncertainty. Common themes that arise in Asia are the decline in political, economic and social environment and a decrease in funding and labor force participation.

The political, economic and social environment was also a challenge for Shanghai and Beijing. Generally, China’s economy is slowing down, with credit growth continuing to outpace real GDP growth by significant margins. Imports are continuing to decline, reflecting the decrease in domestic spending. China is trying to move from a manufacturing and export driven economy to a service and domestic driven one. Hence, Shanghai experienced a drop in private investments, specifically value of Greenfield investments; whereas Beijing experienced a drop in inward FDI flow. China’s private investment has grown by only c. 2.1 percent in the first seven months of 2016.

Middle East

- Dubai (15th)
- Riyadh (17th)
- Doha (18th)

Despite the economic slowdown, which has impacted the Middle East region, Middle Eastern countries have managed to improve innovation ranking in this year’s study.

Dubai has moved up one place, primarily due to an increase in funding, specifically through an increase in foreign direct investment. Dubai continues to be an attractive hub for foreign investment due to its flexible business laws and legislations.

Riyadh has also seen a significant improvement in ranking, moving up 3 places this year. Research shows that despite the oil slump, Saudi Arabia has seen economic growth of c. 1.4% since last year, which, although slower than developing Middle East and North African countries, is still at pace with the global average.

North American cities’ success is attributed to their investments through venture capital funding, while European cities have made significant investments in “Skills and talent”. Asia pacific cities have suffered due to declined in Political, Social and Economic environment, and decrease in funding. In Middle East, structural reforms and diversification in non-oil economy have improved in-flow of FDIs that has led to investments in the development of infrastructure and ICT.
4A. Dubai as a city has done well in a number of areas and can benefit from the practices of global leaders

This year, Dubai climbed up one place to the #15 spot. In 2015, Dubai ranked #16 among 28 global innovative cities. Dubai’s position strengthened in 2016 as a result of the continued efforts of the Dubai Government towards defining and communicating its innovation vision, strategy and initiatives. This in turn led to diversified investments and major developments in infrastructure. Furthermore, the city’s least demanding tax framework with the lowest average total tax rate has helped increase funding in the region, particularly through FDIs.

The 2016 study has highlighted Dubai’s continued challenges in attracting and retaining skills and talent as well as developing the right skills for innovation across all professional levels. Although Dubai has done relative well in introducing new products and services this year, intangible innovation outputs such as patents, trademarks, published scientific and technical articles have dropped significantly from last year. In order to ensure continued progress and sustainable future of innovation, Dubai must place greater focus on enhancing skills for innovation at all professional levels and invest in the education sector, particularly in higher and technical education. This is a trigger for Government to make policies that support the creation and protection of Intellectual Property and investments in R&D institutions.

What characterizes the leading (#1) cities in each element of Innovation Performance (Outputs)

<table>
<thead>
<tr>
<th>New York City</th>
<th>Paris</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tangible Outputs</strong></td>
<td><strong>Intangible Outputs</strong></td>
</tr>
<tr>
<td>56.81</td>
<td>53.38</td>
</tr>
</tbody>
</table>

**New York City**
- New York City’s ever strong value of stock trades and market capitalization has made it one of the top contenders this year.
- Other factors that contribute to the city’s success are the increase in media and entertainment output and the rise in creative and culture exports on a global stage.

**Paris**
- A drastic increase in the number of joint venture strategic alliance deals that have taken place over the year, such as the Renault-Nissan alliance and the KLM-Air France Alliance with China Eastern Airlines, have contributed to Paris’ rise in intangible outputs rank by 10 places.
- These JVs have created jobs within the city that involve more of the city’s workforce aged 15+.

Where Dubai stands in comparison to global leaders

<table>
<thead>
<tr>
<th>Dubai</th>
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</thead>
<tbody>
<tr>
<td><strong>Tangible Outputs</strong></td>
</tr>
<tr>
<td>37.31</td>
</tr>
<tr>
<td>#13</td>
</tr>
</tbody>
</table>

- Dubai has increased its tangible outputs this year by two places. Significant improvements for technology readiness include better access to ICT.
- Other areas of growth include market capitalization and an increase in value of stocks traded.

<table>
<thead>
<tr>
<th>Dubai</th>
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</thead>
<tbody>
<tr>
<td><strong>Intangible Outputs</strong></td>
</tr>
<tr>
<td>19.66</td>
</tr>
<tr>
<td>#20</td>
</tr>
</tbody>
</table>

- The number of trademark applications issued to residents by the national office has gone up by 21 places to #5 globally.
- Low scores for collaboration, including decrease in number of scientific and technical articles and a decrease in the strategic joint ventures, have caused Dubai to go down four places.
4B. The scores indicate that Dubai ranks above average for “funding” and “culture of innovation”, and below average for “skills & talent” and “infrastructure for innovation”.

What characterizes the leading (#1) cities in each element of Innovation Enablers (inputs):

- **Zurich PES Environment 75.58**
  - Zurich ranks 1st place for PES environment for a second year in a row, largely due to high political environment stability which includes lack of violence, order and security, and government effectiveness.
  - The ranking can be attributed to its municipal political structure which gives voters of the city more power to change laws and policies, on a municipal level.

- **New York City Infrastructure 57.26**
  - New York improved by four places from last year, ranking first in both computer software spending and ICT imports. One example of this is the joint venture between Cornell and a Middle Eastern Institute of Technology to create a $2 billion university campus and business complex.
  - New York also ranks first in research development practices that are either financed from abroad or performed by business enterprises.

Where Dubai stands in comparison to global leaders:

- **Dubai PES Environment 51.31 #14**
  - Dubai increased its ranking by two places due to the diversified nature of the emirate’s economy which supports economic growth.
  - The unemployment rate has also decreased drastically, taking #7 place. This can be due to the increase in cost of living, shortening the gap people take between jobs.

- **Dubai Infrastructure 16.98 #23**
  - Dubai increases it’s ranking by two places, due to growth in the areas of research and development.
  - Imports on ICT, ranked #23, are very low compared to the other cities, which is related to the increase in ICT production and infrastructure in the Dubai Free Zones.
Singapore manages to stay at #1 place for another year, due to its success in remaining efficient and transparent in its business market, making Singapore top of the list for ease of doing business. Singapore’s well-structured tax rates and their quality of regulations make them 1st across the board when it comes to government innovation.

New York retains its place at number one in funding due to its private sector and banks. The high number of venture capital deals and ease of acquiring credit make New York City a desirable place for several new tech start-ups. The public sector has a large percent of debt when compared to its overall GDP, and a small amount of funding put towards research and development by the public sector.

Seoul improved by one place from last year, due to factors such as having the highest percentage of adult literacy. Seoul also has fourteen universities included in this year’s QS World University Ranking, has the highest percentage of university enrolments and the third highest government expenditure on education per pupil by percent of GDP per capita in the index.

Dubai increased its ranking by one place, due to the increase in paid vacations given to employees, ranking at #5 between the cities of the index. The entrepreneurial culture and the introduction of the innovation culture, sets Dubai to grow in the future.

Dubai has decreased its rank by two places, due to the continued low rate of adult literacy. However, government spending on education per pupil by percent of GDP per capita is ranked #4, which is also supported by a growing number of public libraries.

Dubai’s rank has increased by four places, due to the increase in inward FDI flow. This can be attributed to the city’s vision of future plans. The government’s debt is also the lowest when compared to its overall GDP.
5. DUBAI’S PRIVATE SECTOR FIRMS HAVE STARTED TO EMBRACE INNOVATION AND TAKE INNOVATION INITIATIVES FORWARD

The overall innovation score for Dubai’s private sector has increased by 6% from last year. To benefit from the Government’s innovation-friendly policies and agenda, the private sector is building innovation capability across areas of strategy, process and people, as well as making proactive efforts towards accessing and implementing new ideas.

<table>
<thead>
<tr>
<th>Overall Private Sector Innovation Score</th>
<th>2016</th>
<th>2015</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>60.51</td>
<td>57.10</td>
<td>6%</td>
</tr>
</tbody>
</table>

<table>
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<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Capability</td>
<td>61.61</td>
<td>56.34</td>
<td>Impact: Tangible</td>
<td>59.41</td>
<td>57.79</td>
</tr>
<tr>
<td>Organization Enabler Strategy</td>
<td>61.82</td>
<td>53.96</td>
<td>Growth &amp; Revenue Generation</td>
<td>47.91</td>
<td>43.79</td>
</tr>
<tr>
<td>Leadership &amp; Culture</td>
<td>61.27</td>
<td>48.29</td>
<td>New Products &amp; Services</td>
<td>63.81</td>
<td>59.35</td>
</tr>
<tr>
<td>Management of Innovation</td>
<td>59.27</td>
<td>51.11</td>
<td>Technology Readiness</td>
<td>66.51</td>
<td>70.22</td>
</tr>
<tr>
<td>Skills &amp; Talent</td>
<td>62.75</td>
<td>65.15</td>
<td>Impact: Intangible</td>
<td>57.25</td>
<td>59.45</td>
</tr>
<tr>
<td>Collaboration</td>
<td>52.19</td>
<td>44.83</td>
<td>Intellectual Capital</td>
<td>63.23</td>
<td>69.82</td>
</tr>
<tr>
<td>Activity</td>
<td>73.60</td>
<td>60.42</td>
<td>Collaboration</td>
<td>58.62</td>
<td>57.79</td>
</tr>
<tr>
<td>Accessing New Ideas</td>
<td>61.40</td>
<td>58.72</td>
<td>Talent &amp; Culture</td>
<td>78.95</td>
<td>77.22</td>
</tr>
<tr>
<td>Implementing New Ideas</td>
<td>68.83</td>
<td>62.30</td>
<td>Collaboration</td>
<td>53.96</td>
<td>46.68</td>
</tr>
</tbody>
</table>

Through a comparison of the 2015 and 2016 scores, we see that there has been an increase in innovation output within the Dubai Private Sector. Overall, across majority of the assessment areas there has been an improvement from last year. Moreover, the maximum improvement has been on the enabler scores. The term enablers of innovation refers to all elements of the innovation ecosystem that help create the ideal environment for innovation. A higher enabler score implies investments are being made by the private sector to build a sound foundation to support innovation activities and initiatives in the future.
“Since the launch of the innovation agenda for Dubai in year 2015, innovative thinking has been stimulated within private sector firms”

H.E. Majid Said Al Ghurair

The private sector has started to embrace Dubai’s vision and is now investing more in building capabilities with long-term goals - we see a significant increase in the capabilities score; in particular there has been a rise in collaboration platforms with customers, external partners and academic, greater strategic direction. The private sector has started to recognize that government initiatives to support innovation - such as government support, funding and tax incentives - come with a responsibility from the private sector. Furthermore, they also recognize the importance of finding and retaining the best talent to enable innovation.

As seen through the improvement in scores for accessing and implementing new ideas, the private sector is becoming more proactive, taking actions and reaching out to internal and external stakeholders in order to access and implement new ideas.

Impact scores, however, have been more or less consistent. Impact measures the outputs of innovation across private sector firms in Dubai. Both tangible and intangible innovation outputs are considered and measured. Intangible performance measures refer to the development of talent, intellectual property and collaborative partnerships for innovation, whereas tangible performance measures include development of new products and services, and economic growth. Dubai’s private sector continues to invest in enablers but the output does not yet reflect the investment, particularly the intangible output, such as IPs. However, through the investment in innovation capability and increase in activity there is potential for improvement in outputs.

“Since the launch of the innovation agenda for Dubai in year 2015, innovative thinking has been stimulated within private sector firms”

H.E. Majid Said Al Ghurair

“We need a clear framework for Dubai’s public and private sector collaboration”

Faisal Belhoul

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6. A NUMBER OF USEFUL THEMES EMERGE FROM ANALYZING THE OUTPUTS OF DUBAI INNOVATION INDEX ACROSS THE MACROECONOMIC AND PRIVATE SECTOR LEVEL

The interest and appetite for innovation have developed at both Public and Private sectors

The 2015 index, which served as a baseline, showed that Dubai Government was leading the innovation agenda with minimal interest from the private sector. However, the key insight from the 2016 index has been that the Government, through numerous initiatives in the past year, has been successful in engaging the private sector in the overall innovation agenda. Furthermore, extensive endorsement of the innovation agenda has stimulated innovation related-thinking within the private sector companies. Effective translation of the government’s innovation strategy and vision to the private sector level is a key achievement of the past year.

The global economic challenge has triggered positive response towards innovation at Government and Private sector levels

The Government of Dubai has recognized the global economic challenge and placed further emphasis on the need for innovation at this critical time. The Government has responded to this need by easing local economic policies, as seen through the launch of 3 laws, namely Bankruptcy Law, PPP and SME Law. Moreover, the private sector has begun recognizing and leveraging government’s innovation supporting policies in response to the challenging business environment as indicated by a 20% increase towards respondents in favor of receiving support for innovation from Government funding. Dubai’s increase in score for the ease of doing business indicator and the growth in foreign direct investments (FDI) over the past year further back the above insight. Enhancement of policy and regulation to support innovation by the government has been recognized and leveraged by the private sector. The time to process construction permits, ease of obtaining electricity, mall investor protection laws and legislation, as well as favorable tax policies are all factors that make Dubai’s business environment very favorable for established and budding entrepreneurs and innovators.

Government’s efforts towards enhancing technology platforms have resulted in private sector’s recognition of current state and need for improvement of technology within firms

Government has invested efforts towards building technology platforms to facilitate innovation as indicated by the increase in scores of the ICT access indicator. The government’s enhancement of technology infrastructure can be linked to the drop in scores for technology adoption in the 2016 DII private sector survey. This revelation indicates that the private sector has recognized the inadequacy of current state of technology at their firms and the need to enhance technology platforms in order to see innovation output - as per the analysis of responses to DII 2016 private sector survey.

“MIT and the Dubai institute of Design and innovation (DIDI) announced a strategic collaboration in which faculty from the School of Architecture and Planning will help launch the new undergraduate educational institution in Dubai focused on design”
- MIT.edu, October 2016

“Hyperloop One and the Dubai Roads and Transport Authority (RTA) have agreed to jointly evaluate a Hyperloop One system in greater Dubai and the UAE”
- Railway-Technology.com, November 2016

“Dubai Electricity and Water Authority has signed a Memorandum of Understanding with Tata Consultancy Services to support Dewa’s Strategy in Research and Development, sustainability, diversification of the energy mix, in an environment that nurtures innovation and creativity”
- GulfNews.com, May 2016

“New UAE bankruptcy law is a lifeline for SMEs. Amidst global financial uncertainties and sluggish growth in the UAE’s banking sector, this landmark law aims at strengthening the investment environment by improving financial accessibility”
- KhaleejTimes.com, October 2016
7. THE STUDY HIGHLIGHTS KEY RECOMMENDATIONS FOR DUBAI TO IMPROVE ITS INNOVATION LEVELS FURTHER IN THE COMING YEARS

1. Collaboration within the ecosystem

Collaboration is a fundamental element for successful innovation. This is backed by the rise of New York to #1 position in 2016, credited to its substantial increase in joint ventures. Picking up from New York’s success, Dubai must increase awareness of the importance of joint ventures. Dubai’s unique economic character comprises of the appetite for investment in innovation from the public sector and the know-how of innovation from the private sector. In addition, it is essential for public and private sector entities to identify their core business areas and endeavor to innovate and excel in them. Hence added efforts towards public-private and private-private collaboration models are essential for overall growth of Dubai’s innovation ecosystem and subsequently its global position.

2. Education and readiness for innovation

Dubai’s current challenges in education are a combination of underutilization of institutions and continuing need for quality enhancement. Key elements of education include infrastructure, faculty and curriculum. Although Dubai has made significant progress and investments to develop world-class educational infrastructure, faculty and curriculum to support growth in innovation remain as areas of improvement. It is essential for every stakeholder in the education ecosystem, from government and legislative authorities, to public and private sector institutes and individual members of the educational community to make significant efforts towards enhancing skills & talent and risk attitudes for innovation. Educational advancements for innovation must support all talent groups including students, businesses, science and technology professionals and entrepreneurs.

3. Policies that support technology adoption

Although Dubai has made significant efforts towards increasing ICT access and enhancing technology platforms, extensive policies supporting the use of a wide range of technology infrastructure and interfaces that foster and support innovation remains as an area of improvement. Developments such as open data, bitcoin, digital analytics and machine intelligence are growing to be major enablers of innovation, and sound policies surrounding the adoption of these are necessary to see innovation output across public and private sector entities. In addition, since technology is a highly dynamic and rapidly evolving factor, it is essential for the government to develop and implement a mechanism to ensure swiftness and agility in new policy development and updating of existing policies to support global technological advances.

4. Enhance productivity by innovating around core business

The private sector needs to improve its productivity and operational efficiency through the use of innovative tools and operational simplifications. Firms need to redefine their business models by focusing on their core business activities and innovating around it. Private sector should focus on building partnerships among each other in their value chain, which will help in creating new opportunities for new products and services and accelerating innovation.
### Responses by No. of Employees

<table>
<thead>
<tr>
<th>Employees</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 Employees</td>
<td>49%</td>
</tr>
<tr>
<td>21-100 Employees</td>
<td>31%</td>
</tr>
<tr>
<td>101-1000 Employees</td>
<td>8%</td>
</tr>
<tr>
<td>251-1000 Employees</td>
<td>7%</td>
</tr>
<tr>
<td>1000+ Employees</td>
<td>49%</td>
</tr>
</tbody>
</table>

### Responses by Firm Size

<table>
<thead>
<tr>
<th>AED Amount</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 10 Million AED</td>
<td>51%</td>
</tr>
<tr>
<td>10-100 Million AED</td>
<td>34%</td>
</tr>
<tr>
<td>100 Million - 1 Billion AED</td>
<td>11%</td>
</tr>
<tr>
<td>≥ 1 Billion AED</td>
<td>4%</td>
</tr>
</tbody>
</table>

### Responses by Industries

- Agriculture, Fishing & Forestry
- IT
- Transport & Logistics
- Energy & Utilities
- Media & Marketing
- Construction & Real Estate
- Education, Training & Research
- Professional Services
- Food & Beverage, Hospitality & Leisure, Entertainment
- Healthcare
- Wholesale & Retail Trade
- Manufacturing
- Other Services

*Based on responses received by October 31, 2016*
In 2016, Agriculture, Fishing and Forestry industry have improved their scores by 18%, which reflects a higher focus on innovation by representatives of this industry. The education, training and research industry also perceive the innovation agenda strongly as seen by the 15% increase in their score from the 2015 study. There is an increase of ~8% in innovation scores for the professional services industry which had the lowest innovation score in 2015. Most of the other key industry sectors have seen increase in their scores in this year’s study from last year. However, the retail & wholesale industry sector has shown stagnation in its score, while the healthcare industry has dropped its scores by a small margin.
Dubai has set a vision to become the world’s most innovative city in years to come. Dubai Chamber of Commerce and Industry (DCCI) has partnered with PwC to develop a comprehensive innovation index, a framework to enable achievement of sustainable economic growth by measuring innovation in Dubai and identifying areas of improvement. While most innovation studies gather and analyze either macro data or survey data, the Dubai Innovation Index evaluates the macroeconomic data across the 28 selected global cities and contrasts Dubai’s macroeconomic measures with the microeconomic- private sector’s view (collected through surveys at firms’ level) across industries in Dubai.

The categories of data points for both macroeconomic and private sector level studies have been selected to ensure that they can be compared to each other. This year the study is in its second year and will be conducted annually in the following years to track progress and identify opportunities for improvement towards a more innovative Dubai.
**Macroeconomic view**

The macroeconomic view of the index studies ecosystem elements at the city level in two parts, first those that enable innovation and second, those that measure innovation performance.

**Performance:** Performance measures the outputs of innovation across the city. Both tangible and intangible innovation outputs are considered and measured. Intangible performance measures refer to the development of talent, intellectual property and collaborative partnerships for innovation, whereas tangible performance measures include development of new products and services, and economic growth.

**Enablers:** The term enablers of innovation refers to all elements of the innovation ecosystem that help create the ideal environment for innovation. Enablers of innovation include macroeconomic factors such as Political, Economic and Social Environment, Government, Funding, Infrastructure, Skills & Talent and Culture. Measures of enablers are forward looking and are expected to have a long-term impact. A higher enabler score implies investments are being made by the city to build a sound foundation to support innovation activities and initiatives in the future.

**Dubai Innovation Index:** This score is a top-down macroeconomic measure of innovation of a city based on city level data from a range of widely used sources. 28 global cities have been selected for this study. The score takes into account both enablers (as the input) and performance (as the output) as equal contributors towards innovation.

**Macroeconomic Innovation Output Ratio:** The Innovation Output Ratio is defined as the ratio of performance score to enabler scores for a city. This measure indicates the city’s abilities to translate its investments in creating an ecosystem for innovation to successful outcome of innovation.
**Private Sector view**

The private sector view is a measurement of firms’ capability to innovate, its activities and overall impact of innovation. This study is conducted through an online survey and interviews with Dubai’s business leaders for qualitative inputs. This measures innovation across the whole private sector as well as for key industries and varying firm sizes.

**Impact:** Impact measures the outputs of innovation across private sector firms in Dubai. Both tangible and intangible innovation outputs are considered and measured. Intangible performance measures refer to the development of talent, intellectual property and collaborative partnerships for innovation, whereas tangible performance measures include development of new products and services, and economic growth.

**Capability:** Capability measures a firm’s ability to innovate using elements that can sustainably influence innovation activity, i.e., firm’s strategy, leadership and culture, management of innovation, organization enablers, collaborations, skills and talent.

**Activity:** Activity measures a firm’s activities across the innovation lifecycle from accessing, developing and implementing ideas. Activity of innovation is distinctively measured at private sector level since real innovation activity elements can practically be measured at firm level only.

**Note:** The capability and activity measures at private sector level collectively are equivalent to enablers of innovation that can be evaluated and compared with enablers at macroeconomic level.

**Private Sector Innovation Score:** This score is a bottom-up measure of innovation at private sector level. The score takes into account capability and activity (as the input) and impact (as the output) as equal contributors towards innovation.

**Private Sector Innovation Output Ratio:** Defined as the ratio of impact score to the average of capability and activity scores. This measure indicates the private sector’s ability to translate its investments and activities in innovation to successful outcomes.