



Necessity of a Startup Wave

Developing nations need to focus on building a robust start-up eco-system in areas of strategic strengths



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As the saying goes, with every crisis there rises new opportunities. In the wake of Covid-19, it is clear how technology startups, small and medium enterprises and collaborations with established giants have enabled us to wage war against the pandemic. Also, it is quite encouraging to note that countermeasures both medical and nonmedical sprang up in light speed, which was based on strategic investments by private sectors with able backing by national governments. The Covid-19 pandemic has in fact created awareness to the general public on the importance of science, need for investments in research and development and the necessity for an ecosystem that can translate laboratory research into marketplace.

Start-up Revolution

In recent years, due to high number of high-tech start-ups, Israel is touted as 'Start-up Nation,' which is supplying defense technologies to many developing nations. There are several factors that led Israel to be successful in high-tech sectors such as defense and health care. As the adage goes, necessity is the mother of invention. Stressful political situation is the driving force for focusing on research and particularly on translational research. However, high level of investments in research in world-class research-intensive institutions like Technion is paying off, not only by making Israel a leader in sectors such as national defense but also in areas which may not be thought of as its strength such as agriculture given its geographical position. Developing nations needs to focus on building a robust start-up ecosystem in areas of strategic strengths.

Economic Impact and Innovation

Innovative ecosystem has both direct and indirect impacts on the economy. Nations deemed to have a supportive ecosystem for start-ups, rank high in world ranking systems as best places to invest and in Global Innovation Index. Support for research in public sectors, educational institutions and investments by private sectors, skill enhancements for current and future workforce, government schemes that enable risk reductions for entrepreneurs are some positive initiatives to boost the start-up culture. This has been the case with countermeasures technologies, which have evolved to fight the COVID-19 pandemic—interestingly had their birth in start-up ecosystem.

Global Innovation Index (GII) on an annual basis ranks the innovation performance of about 130 countries. International high-tech companies look at such ranks for decisions related to investments and offshore campuses. GII groups countries based on region

The World's Most Innovative Countries

2019 rankings of the Global Innovation Index (100=most innovative)



* Scores determined through various factors such as business sophistication, level of human & capital research and creative outputs.
Source: World Intellectual Property Organization

and income levels. Based on the latest available report, in the North American region, United States occupies number one position, in Western Asia, Israel is ranked in the highest place, in Europe, it is Switzerland, which occupies the first place, while the United Kingdom ranks third. As is expected, in Southeast Asia, Singapore is number one in innovation, driven by efficient government and two leading institutions such as the National University of Singapore and Nanyang Technological University. Universities can serve as incubators and guide entrepreneurs to cross the valley of death. In speaking about translational research and the purpose and power of incubators, Kimberly Gramm, Associate Vice President for Innovation & Entrepreneurship at Texas Tech University stated, "Research serves as the seeds for innovation while university incubators and accelerators help innovators and entrepreneurs develop the intellectual property from the research into products that are tested and validated to add value to an economy. Essentially in the lifecycle of innovation a university anchors a regions capacity to develop ideas to create opportunity for those citizens it serves."

India and Start-up Culture

According to GII, India ranks top in the Central and Southern Asia region. Based on income levels, India is grouped in the lower middle-income economies and occupies third rank in this group. Surprisingly, Vietnam and Ukraine are ahead of India in innovation ranks in this group. Where is China? China is grouped in the upper middle-income economies and occupies rank number one followed by Malaysia. There seems to be correlation between investments in research and higher education and innovation output. Examples are usual suspects such as Switzerland, Sweden, Israel, Finland and USA. China has caught up and is now a leader in innovation as is evident in the number of scientific publications in international journals. Indian institutions are also publishing in high impact journals and such papers are not only from premier institutions—positive signal indeed!

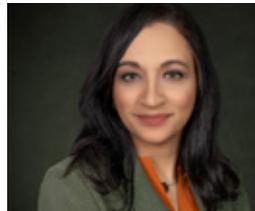
Government of India has realized the importance of translational research towards economic growth and national security. Schemes such as "Start-up India," Atmanirbhar Bharat and Atal Tinkering Labs are to be



Dr. Ronald Kendall



Kimberly Gramm



Murvat Musa

appreciated. It is important to spread resources throughout India and not to concentrate at certain regions or some institutions. Such risks can be taken only by government and efforts must be undertaken to identify strategic strengths of regions and develop clusters. This has been the case with the establishment of research park, “Research Triangle Park,” in North Carolina near three Universities, i.e., North Carolina State University, University of North Carolina-Chapel Hill and Duke University. This region has a high concentration of high-tech companies like San Jose belt and Boston. “In academia, there is a considerable amount of intellectual capital that can be more than a professor in the classroom, but also can contribute to entrepreneurial opportunities and economic development. There is no doubt that the role of major universities is evolving with not just academic focus, but also with research and development focus that can be leveraged out into new businesses and spin-off business into new economic development. In my opinion, this gives a better return on investment for financial support of the academic enterprise,” stated Dr. Ronald Kendall, founding director and professor at The Institute of Environmental and Human Health at Texas Tech University. Major defense technologies such as FiberTect wipe to decontaminate nerve gas have come out of this Institute.

Tax Credits

It is important to boost private sector investments in research and encourage more collaborations

with academia and central research laboratories. Best way to entice such investments is tax credit and skill development programs. India has a strong base in manufacturing, which should be leveraged to attract foreign collaborations in conducting collaborative research and high margin product developments. Government should work on favorable intellectual property (IP) protection regulations, which is win-win for Indian and foreign entities.

The recent trade war between China and the United States sparked because of weaker IP protection in China, among other reasons. Such collaborations help with attracting resources and marketing opportunities. One of the barriers for small and medium enterprises has been the lack of marketing support. Business schools spread throughout India have work cut to connect manufacturing, financiers and marketing groups to push research into commercial space. This scribe has had a limited success in building such a collaboration in India to develop a product and take it to the market. Recently, a partnership between this scribe, Aruppukkottai based-Jayalakshmi Textiles and Chennai-based WellGro United enabled the commercialization of a sustainable absorbent mat, which finds application as toxic chemical absorbent. The product is used by India’s crown jewel, ONGC at its Rajahmundry asset. It took a concerted effort to bring the marketing help and link it with the manufacturing entity to translate my idea. Such efforts work and there

are so many ideas in India and all it takes is developing a workable team. There needs to be resource allocation from the government to support early efforts to market ideas to the market and hire consultants.

Economic Zones

Major cities and municipalities in developed economies realize the importance of research and start-ups as economic boosters and work with university researchers and students to create companies. Research parks and special economic zones attract new investments. “In order to attract and grow entrepreneurs, research parks should nurture an inclusive environment and remove barriers to entry. Acting in collaboration with a university, research parks can be the ones to bring together startups in order to share their stories, both successes and failures which can be more important. My experience has been that entrepreneurs want a community they can reach out to for advice, guidance, and mainly to have a conversation to talk through any issues they may be facing. They may even want to share resources. Establishing a local entrepreneur network should be the goal and the research park can act as the network manager,” stated Murvat Musa, Executive Director of Lubbock, USA-based Reese Technology Center.

Way Forward

Looking at how once start-ups such as Moderna and BioNTech have taken revolutionary technologies to market to save human lives, certainly investments and taking measured risks enable return on investments. There needs to be a trifacta partnership between government, academia and industry to translate ideas to products. Government has a crucial role to play in providing seed money for research and business incubation. Again, Covid-19 has proven this theory! 🇮🇳