

India, Innovative?

India's 15-place jump in the new Global Innovation Index has to be taken with a pinch of salt, writes Hari Pulakkat

Soumitra Dutta first thought about creating an index for innovation ten years ago. He was then at the Paris-based business school INSEAD, observing the rise of innovation as a key idea for business. But the concept, as it was understood then, was mostly technology driven. Dutta had seen that a lot of innovation did not require patents or PhDs. Was there a way to capture the idea in broader terms, and to measure it for countries around the world?

This holistic approach to innovation was particularly relevant to India, although Dutta had a global perspective in mind when he conceived the idea. India was poor in intellectual property development. It generated few science PhDs and fewer engineering PhDs. Its R&D investments were low. But the country was still innovating in business models and select areas of technology. Innovation of a unique variety was thriving in its villages. Dutta and his colleagues started developing an index that could capture innovative capability in broad terms.

Ten years later, the Global Innovation Index (GII) has become an annual feature, and examined carefully by policy-makers around the world. "I am surprised at how quickly the holistic view of innovation has been accepted," says Dutta, who is now dean of the graduate school of management at Cornell University. Although still a work in progress, GI offers insights about innovation in India and where it stands compared with other countries. Last week's results show that India is improving fitfully, with pockets of excellence. It also shows that China is in the big league, and that India is wasting a lot of its capabilities. "There is a big gap between India's achievement and potential," says Dutta.

A few numbers first, along with a few caveats. In 2008-09, India was ranked 41 and China 37. India gradually slipped every year, reaching a low of 81 last year. China improved gradually, and broke into the top 25 this year. India's position improved to 66 this year, which was where it was four years ago. Such jumps are rare. The GI index authors always warn against reading too much into individual rankings, and to focus on the trends. The trends show one thing unambiguously — India is on a roller-coaster ride while China is constantly improving.

GI parameters and methodologies are being tweaked continuously, and the changes in ranking are as much due to new parameters and data as they are due to changes within a country. And yet the truly innovative nations remain steady in their rankings. Switzerland has been ranked one for six successive years. India is among the few big countries with fluctuating positions, which indicates the rapid changes the country is going through. In spite of the low ranking, this year's GI report marks India as an innovation overachiever, a small number of countries that perform at least 10% better than their peers based on GDP.

Winds of Change

Researchers, venture capitalists and policy-makers in India think that the country is changing rapidly, and expect these changes to reflect in its ranking over the next few years. "There has been a significant broadening of the innovation ecosystem in recent years," says former Infosys co-founder Nandan Nilekani. The ecosystem consists of educational institutions, research output, patents, entrepreneurship, venture capital, government policies and so on. Improvement is evident in some of these areas, and some of the GI's sub-indices.

India has improved its ranking primarily because of better achievements in human capital, research, market sophistication and business sophistication. In human capital, India improved its ranking to 63 from 103. This was mostly achieved because of improvements in education, and specifically tertiary education. Indian universities have improved their rankings internationally, and this improvement has had an impact on scores for education and in turn on overall rankings. The Indian Institute of Science (IISc), for instance, broke into the top 150 universities in the QS University ranking system, a first for any Indian university.

The research output from Indian universities has been increasing steadily in

In A Perfect World Of Innovation, Who Would Do What?

Top ranking countries/economies for selected indicators from the Global Innovation Index 2016

HUMAN CAPITAL AND RESEARCH

- EDUCATION EXPENDITURE PER PUPIL: MOZAMBIQUE
- PERFORMANCE OF PUPILS IN READING, MATH AND SCIENCE: CHINA
- PUPIL-TEACHER RATIO: GEORGIA
- GRADUATES IN SCIENCE AND ENGINEERING: IRAN
- R&D EXPENDITURE AS SHARE OF GDP: REPUBLIC OF KOREA
- QUALITY OF UNIVERSITIES: UNITED KINGDOM

CREATIVE OUTPUTS

- TRADEMARK APPLICATIONS: PARAGUAY
- INDUSTRIAL DESIGN APPLICATIONS: TURKEY
- ICTS AND ORGANISATIONAL INNOVATION: ESTONIA
- CREATIVE INDUSTRY EXPORTS: COSTA RICA
- PUBLISHING INDUSTRY: LEBANON

INSTITUTIONS

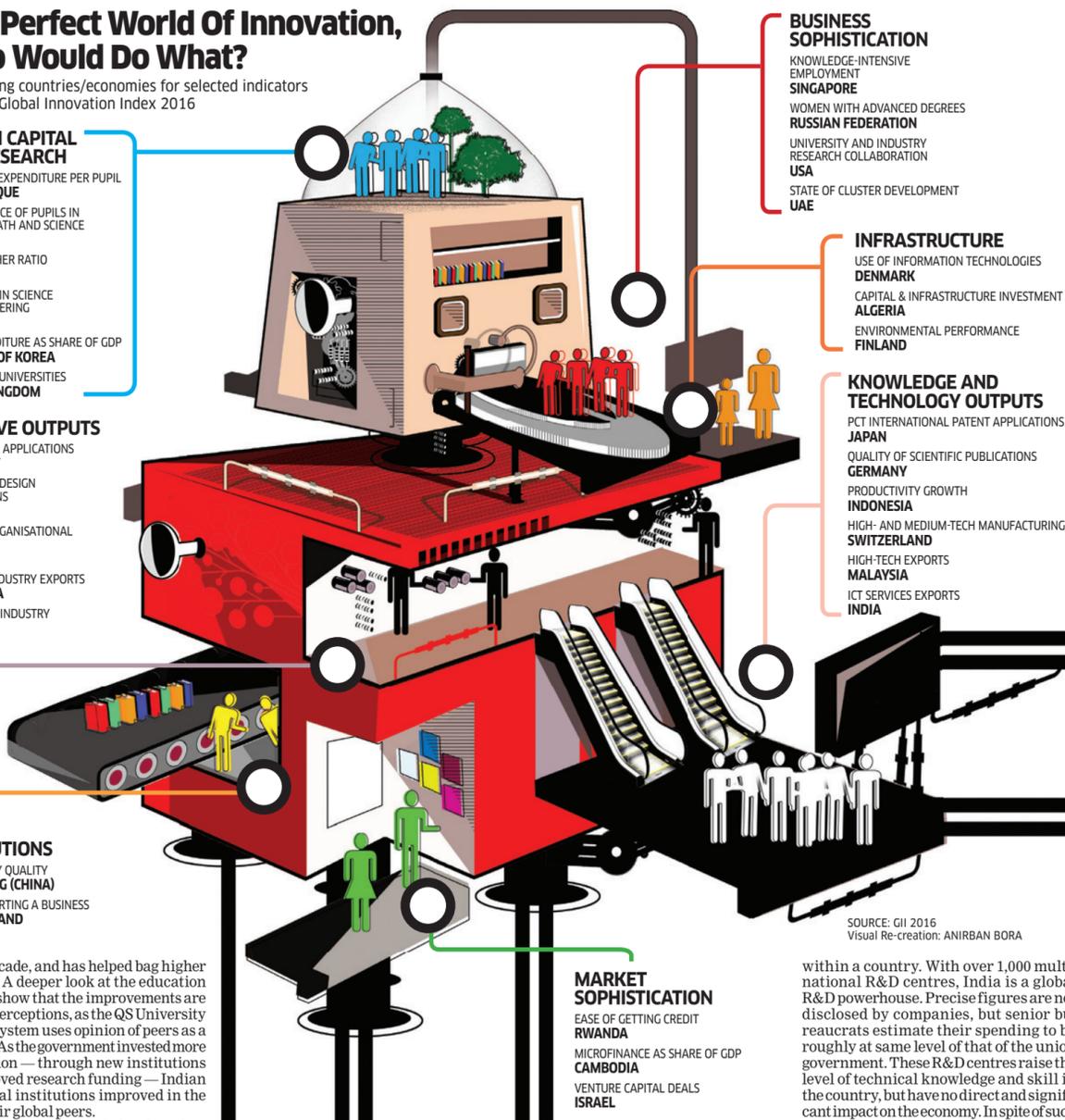
- REGULATORY QUALITY: HONG KONG (CHINA)
- EASE OF STARTING A BUSINESS: NEW ZEALAND

the last decade, and has helped bag higher rankings. A deeper look at the education rankings show that the improvements are partly in perceptions, as the QS University Ranking system uses opinion of peers as a key input. As the government invested more on education — through new institutions and improved research funding — Indian educational institutions improved in the eyes of their global peers.

Even so, India fares poorly in education. Its overall rank in education, including primary and tertiary, is 118. China is ranked 4 here. This ranking is somewhat deceptive, as some data are not available for China. But India compares poorly with China where data are available. China has superior student-teacher ratio. In fact, the GI report marks poor student-teacher ratio as a weakness of the Indian innovation ecosystem, and the scores have worsened since last year. But there is a surprise here. In spite of having five universities in the top 100 in the world, China ranks lower than India in tertiary education, ostensibly due to paucity of data. India is ranked eighth in the world in the number of graduates in science and engineering, while China is not ranked.

Things look much brighter for India in R&D compared with previous years, as the country has been investing consistently, with a few dips, in R&D over the last decade. India bounced back quickly from the 2008 recession. R&D powerhouses like the UK and the US are still struggling in R&D. Even China, which has been investing increasingly R&D for three decades regardless of GDP growth, is now showing signs of slower R&D growth. India's investment has vacillated in recent years, but R&D impacts the innovation ecosystem with a time lag.

Within the GI, India improved its ranking in R&D this year because of a new parameter: top multinational R&D centres



SOURCE: GI 2016
Visual Re-creation: ANIRBAN BORA

India VS China

	2016	2015	2014	2013
India	66	81	76	66
China	25	29	29	35

Countries Leading Innovation

Every year, The Global Innovation Index ranks the innovation performance of nearly 130 countries and economies around the world. Each country is ranked according to 82 indicators

NORTH AMERICA	LATIN AMERICA & THE CARIBBEAN	EUROPE	SUB SAHARAN AFRICA	N AFRICA & WESTERN ASIA
1 USA 2 Canada	1 Chile 2 Costa Rica 3 Mexico	1 Switzerland 2 Sweden 3 United Kingdom	1 Mauritius 2 South Africa 3 Kenya	1 Israel 2 Cyrus 3 UAE
CENTRAL & SOUTHERN ASIA	SOUTH EAST ASIA, EAST ASIA & OCEANIA			
1 India 2 Kazakhstan 3 Iran	1 Singapore 2 Rep. of Korea 3 Hong Kong (China)			

Top 5 Performers Worldwide

- 1 SWITZERLAND
- 2 SWEDEN
- 3 UNITED KINGDOM
- 4 USA
- 5 FINLAND

Top 3 Leaders in Innovation Quality

- High-Income: 1 JAPAN, 2 USA, 3 UK
- Middle-Income: 1 CHINA, 2 INDIA, 3 BRAZIL

Weaknesses are also significant. Low political stability is one, especially when combined with terrorism impact. Difficulty in starting and closing a business is a big weakness. Poor education system is a weakness in spite of recent improvements. Indian innovation is also hampered by poor environment performance, low density of startups, and low publishing output.

The Missing Link

One big drawback is the absence of elite universities that can expand a country's innovation capability rapidly. "Poor investments in education is the most important reason for India's under-leverage," says Dutta. India has its IITs and a few good technical institutions, but broad-based elite universities have an influence beyond creating technology capabilities. "Science-led innovation is almost absent in India," says RA Mashelkar, former director-general of CSIR and National Research Professor. Science-led innovation can create entire industries that last long.

The emergence of campus startups is a significant change. Top Indian institutions like IIT Bombay and IIT Madras are generating student startups of quality. "One in four undergraduate students are now interested in either starting a company or joining a startup," says IIT Bombay director Dewang Khakhar. Faculty at the National Chemical Laboratory in Pune and IISc in Bengaluru are starting companies that try to solve serious scientific challenges. The Centre for Cellular and Molecular Platforms (C-Camp) now incubates similar startups using biology. For a large country like India, science startups are still at sub-critical levels. However, there is hope among policy-makers and business leaders that this trend will expand into a country-wide movement in the near future. "The government is taking a number of steps that are making science-based innovation and entrepreneurship hassle-free," says Mashelkar.

New programmes by the current government would accelerate this trend. The government has funded research parks and incubation centres around the country, but will start investing in companies in these parks. "Supporting entrepreneurship is now getting integrated into policy," says Rishikesha Krishnan, director of IIM Indore. As incubation centres generate startups in large numbers, they are forcing venture capitalists to look at companies of a different kind: from companies that copy western models — like e-commerce — to those that solve genuine Indian problems.

IIT Bombay and IIT Madras are leading this change at the moment. At IIT Madras (IITM), for example, incubation centres and the research park have supported 104 companies. In the recent ET Startup awards, four out of the five finalists for campus startups came from IIT Madras. The winner, Ather Energy, was a student startup incubated four years ago at the IITM. "Most of these companies are trying to solve Indian problems," says Ashok Jhunjhunwala, professor of electrical engineering and mentor-in-chief of many companies. "They have plans to compete in the global market as well later."

The market is also forcing a change in the nature of startups. "The copy-paste model is dead," says angel investor Sharad Sharma.

Top Performers By Income Group

Low Income	Upper-Middle Income	Lower-Middle Income
1 RWANDA 2 MOZAMBIQUE 3 CAMBODIA	1 CHINA 2 MALAYSIA 3 BULGARIA	1 MOLDOVA 2 UKRAINE 3 VIETNAM

"Companies have to focus on uniquely Indian problems." These companies can have a big impact on the economy over the next few decades, provided they are supported by improved infrastructure, good universities, sustained R&D investments and a good public procurement system.

Hari.Pulakkat@timesgroup.com

Infy's Auto Pilot

Lijee Philip meets automobile veteran R Seshasayee as he oversees the biggest changes in the IT services company's history



Corporate Veteran
R SESHASAYEE
68 CHAIRMAN-INFOSYS

Chartered accountant, started his career with Hindustan Lever Ltd in 1971

Joined Ashok Leyland in 1976, rose to become Executive Director - Finance in 1983 and was elevated to Deputy Managing Director in 1993, and Managing Director in 1998. He became the Executive Vice Chairman of Ashok Leyland in 2011, and was the Non-Executive Vice Chairman, until July 2016

Served on the Board of ICICI Ltd/ICICI Bank from 1997 to 2003

Was the President of Confederation of Indian Industry (CII) during 2006-07 and has been an active leader of CII for over 20 years. From 2001-03, he was the President of Society of Indian Automobile Manufacturers (SIAM), the body representing the Indian automobile industry

On July 28, R Seshasayee stepped down as vice-chairman from the board of Ashok Leyland, the Hinduja Group's flagship automobile company. It would have passed off as a routine corporate exit. After all, Seshasayee had spent nearly four decades in the automobile industry.

But Seshasayee revealed that he was ending his association with Ashok Leyland to devote more time to the tech industry. Seshasayee was appointed as chairman of Infosys in June last year but if the idea of an automobile veteran at the top of a technology company still baffles some people, it would be because they are overlooking his long association with the tech industry.

Seshasayee is also on the advisory board of network equipment maker Cisco India, and closely involved with a couple of tech startups. At Infosys, his tenure as chairman is not more than just over 14 months but he has been a part of its board since June 2011. Seshasayee says he is very excited about the changes sweeping the information technology area. "Technology has always appealed to me," he says.

Generational Shift

The chairman's affinity for technology and his long experience in the corporate world bode well for the company. The company is undergoing three epochal changes. The first is the business transformation under the watch of Vishal Sikka, CEO, who previously led German tech giant SAP SE's products

and technologies. Sikka is pushing Infosys to reinvent itself using automation and artificial intelligence, bring breakthrough innovation that transforms client business, open new business opportunities and drive new business models.

"Vishal is scripting this brilliantly," says Seshasayee who is soft spoken and affects a reserved demeanour. "For sure, there have been some bumps, like the first quarter this fiscal, but we will quickly learn from that."

The second is the transformation from a promoter managed company to a non-promoter led company. Until Sikka's appointment, the 35-year-old company was managed by its founders in succession. The vice-like grip of the founders over the company was often cited as a key reason for its troubles. This distinct trait came under severe scrutiny when growth in

Seshasayee has seen first-hand the turbulence at Infosys. After joining the board in 2011, the company missed growth projections multiple times and stopped giving quarterly forecasts

revenue and profits failed to keep pace with rivals after SD Shibulal took over from Kris Gopalakrishnan in the aftermath of the financial crisis. "The thoroughbred professionalism of the promoters has helped but we must expect that this transformation would throw up huge cultural challenges. Vishal and I are working on this, but it's still a work in progress," says Seshasayee.

How Infosys navigates this cultural change will be key to its future well-being. Seshasayee says cultural challenges are a necessary concomitant of generational and leadership change. "Whether it relates to relaxing the dress code or transitioning from an India-centric leadership to a more globally distrib-

ed leadership, all needs careful preparation." While these changes are strictly within the realms of the management, the board's role will be to reset the moral compass in the context of these cultural changes, according to him. "That requires more sensitivity, more understanding and hence more engagement on the part of the board."

Lessons So Far

The third is the transformation from a promoter-led board to a non-promoter-led board, which has led to much higher levels of engagement by the independent directors. "Each board member has spent enormous time working through this transition. We are fixing some processes to strengthen the instruments of governance," says Seshasayee. Seshasayee is aware of the challenge his job entails. When a company trips, the board is

in the first line of fire, not last, he says. Non-executive directors must put in extra effort to anticipate problems and mitigate risks. This calls for very rapid immersion into the challenges facing the industry, sizing up the deficits in the company and judging the inadequacies of the leadership team.

There is a great need to build consensus and reconcile differences, amongst stakeholders inside and outside the company, according to him. "One needs extraordinary patience and tact for this."

On the top of Seshasayee's to-do list as chairman is addressing the cultural changes and focussing on strengthening the leadership team. He says a board is essentially a

watchdog. "There are three responsibilities that any board has — governance, including compliance with law and regulations; shareholder value creation; and, leadership and succession planning."

The long association with Infosys will come handy. Seshasayee has seen first-hand the turbulence at Infosys. Soon after Seshasayee was named to the board in 2011, founder NR Narayana Murthy stepped down when he turned 65 and became chairman emeritus. Murthy was succeeded by ICICI chairman KV Kamath. It was then Shibulal's turn to become CEO. Infosys soon missed growth projections multiple times and even stopped giving quarterly forecasts. The much touted strategy of "Infosys 3.0" failed to take off as rivals such as Cognizant overtook Infosys in annual revenues and TCS turned up quarter after quarter of stellar performances.

Murthy made a comeback as executive chairman in mid-2013. After a long bout of firefighting, he handed over the reins to Sikka. Seshasayee's automobile experience too will help Infosys. Under his watch, Ashok Leyland transformed into a globally competitive automotive major, growing through acquisitions and joint ventures. Turnover increased five times, net profit 30 times and market cap 14 times during his tenure as MD.

Seshasayee says his key learning in Ashok Leyland was to be a leader who was visible to the employees and heard constant feedback during crises. He will bring some of those lessons to Infosys. A key aspect of his job is to forge succession planning in the leadership. "We need transformational leaders, not merely at the very top, but fairly deeply into the hierarchy."

If everything goes well, the board will have to provide only a light touch, he says. "The board's role changes depending on whether the ship is facing fair or foul weather."

Lijee.Philip@timesgroup.com