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Focus: Innovation and Technical Capability

ur world is changing at an unprecedented pace, driven by a new digital economy. Companies across sectors are keen to become more efficient, disruptive, and differentiated, by using new technologies and supported by an ecosystem of customers, partners, and technology leaders. New-age technologies such as Artificial Intelligence (AI), Augmented Reality (AR), Blockchain, Machine Learning, 3D printing, and IoT are gaining more and more importance and acceptance.

India has all the ingredients in place to leverage this innovation and technological advantage in the long run, including university graduates, public institutes and corporates. However, India's gross expenditure on R&D as a proportion of GDP (GERD) is less than 0.7% as of 2014-15 and within this, the share of industry is just 30%. Further, the vast SME sector needs to scale up technology infusion for higher productivity.

CII has always prioritized innovation and technology adaptation. Through the Industrial Innovation Awards and various innovation platforms across sectors, it has promoted technology use in industry and led the movement for continuous innovation as an integral business process. Today, this effort has gained through focus on new technologies in start-ups, as also through organizing awareness programmes, workshops and webinars.

The Global Innovation and Technology Alliance (GITA), a CII partnership with Department of Science and Technology, was initiated in 2007-08 to catalyse industrial R&D projects with other countries. The India-Israel Industrial R&D and Technological Innovation Fund worth USD 40 million works on agriculture, ICT, energy and other sectors. The India-Canada Collaborative Industrial R&D programme covers advanced materials and manufacturing, Smart Cities, and so on. Climate technologies are the focus for the India-Republic of Korea Joint Applied R&D programme. Another collaboration is with Spain.

Further, CII has commenced a scheme bringing together industry and institutes of higher education for research programmes which has attracted strong interest from both sides in developing research centers. CII is also partnering with the Prime Minister's Doctoral Fellowships Programme where industry contributes to funding research scholars.

In partnership with some State Governments, CII manages technology development centers and IPR facilitation centers. These help entrepreneurs to apply for patents, Geographical Indications, and trademarks. Knowledge areas like IPR, Higher Education, Design and others which augment the advancement of such technologies are also on our agenda.

The new-age technologies demand a high degree of engagement from the Indian Industry, both to adopt the new technologies as also to drive their development. I am happy to note that many top global companies are leveraging India's engineering talent resources to set up their design and product development centers in the country.

To further Indian industry's engagement in these evolving new technologies, CII's annual Technology Summit has focused on vibrant and energetic partnerships between India and other countries. CII's initiatives for start-ups are gathering pace and aim to bring together the entire ecosystem of mentors, investors at all stages, and incubators along with technology entrepreneurs on a single platform to facilitate collaborations. An institute for start-ups is under development to capture the advances in technologies for commercialisation.

As we go forward, Industry must become the lead player in fostering these technologies. Tie-ups with universities for sponsoring research will increase industry engagement in areas of their interest. There is also need to step up research in higher education institutes, and enable them to move to the cutting edge for R&D through partnerships. The defence and aerospace sectors, among others, offer new potential for developing new products and designs at affordable costs. Above all, it is important to deploy the R&D instrument effectively for sectors such as education, healthcare, infrastructure, water and so on.

This edition of the Policy Watch focuses on the impact of new age technologies and its adoption by Industry as well as start-ups to boost innovation and business growth in the medium term.

Chandrajit Banerjee Director General

Confederation of Indian Industry

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POLICY WATCH

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Unfolding the Start-up Paradigm in India

In recent times we are observing tremendous growth in the start-up space in India. Tech as well as non-tech start-ups are expanding their footprint across all sectors from fintech to cybersecurity to e-commerce to greenmobility to healthcare, and rural utility. These budding enterprises have great potential to impact economic growth and to bring technological enhancement to the country. However, it is still premature to convincingly say that India's start-up ecosystem has taken a mature and stable form, with all its ingredients in place at the right volume and mixture.

The start-up growth story in India so far has been influenced primarily by strong entrepreneurial zeal of the founders, which enabled start-ups to constantly fight and overcome all systemic obstacles on its path be it inadequate infrastructure, regulatory issues, low availability of mentoring support, or access to funding. Despite this, we have witnessed over the last decade many new companies like Flipkart, Snapdeal, Zomato, Paytm, Ola, among others. They have spread their footprint rapidly in terms of scale of operation and market share. This proves the hidden potential of India's entrepreneurs, that too the young minds who have been the driving force behind most such successful start-ups.

Although late, but the Government is also now gradually becoming more proactive to support the start-ups and showing positive intent to build a robust start-up ecosystem. The new schemes like Start-up India, Make in India or Digital India are indeed examples of such a mindset shift. Also, the proactive Central Government has been instrumental in making States gravitate towards this space and take action. It is heartening to see that many States across India like Kerala, AP, Gujarat, Maharashtra, UP, Orissa, Assam and others have already announced State-specific start-up policies. However, at this moment we cannot afford to be very happy or content with such moves, and we need to constantly monitor and leverage the outcomes that such a shift will bring on the ground.



Kris Gopalakrishnan Chairman, CII Start-up Council Past President, CII and Co-founder, Infosys & Chairman, Axilor Ventures

The other important area that needs to be adequately addressed is the advent of new age technologies like IoT, AI, machine learning, blockchain, 3D printing, and how such technologies can be quickly adopted and used in practice by Indian startups. Also, new start-ups can take up a pioneering role in the development of new advancements in such technologies that can contribute globally. From the human capital point of view, India has no dearth of talent, and is well poised to take up this challenge and provide unique solutions. Our educational and institutional set-up needs to be made more independent and

resourceful to take lead in such new age technologies, which will be the ideal breeding ground for skilled manpower that will drive the future businesses.

CII is constantly working to track and positively influence this paradigm shift in India's start-up ecosystem. The areas where CII Members from all regions are adding value to this startup growth story are numerous, including funding, incubating, engaging with Government, policy advocacy, and mentoring key start-ups. Realizing the key aspect of start-up growth that draws its strength from corporate connect, CII is building its own brick-and-mortar incubation center in partnership with State Governments, offering start-ups access to a corporate milieu and industry services like global tendering, b2b platforms and others through established platforms like myCII, creating content for budding entrepreneurs and students to guide them on how to establish successful start-ups, and recognizing successful sart-ups for their innovation excellence.

I am sure that most of these initiatives by the Industry and the Government will turn out to be extremely valuable in the long run for gradually transforming India into a start-up friendly nation. To achieve the desired goal of creating a balanced start-up society, it will be extremely important to keep on investing in the start-ups belonging to the non-IT Tech space, and in the startups with rural focus. The challenges, as well as the opportunities, are plenty and India should leverage this time to achieve global leadership.



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CEOSpeak

Renewed Focus on Artificial Intelligence is Crucial For Making a New India

Global economy is fast transforming into a digital economy and in this changing paradigm it is paramount for India to adopt these digital upgrades at the earliest. New edge technologies like internet of things, artificial intelligence (AI), robotics, 3-D printing, augmented reality, virtual reality, drones, blockchain, and others are making significant contribution to this transition. Barring few low-income economies, there probably exists no other economy today that is left untouched with the advent of these technologies, impacting national production, R&D, policies and discourse across sectors and demographics.

In the global industrial landscape, the adoption of new age technologies has been faster in start-ups and SMEs compared to larger firms, and this has given rise to many innovative start-ups and SMEs in various developed nations. Unlike this global trend, Indian SMEs and start-ups have been slow in spearheading innovation and technology, despite SMEs being one of the key contributors to the Indian economy and start-ups being widely touted as the change agent. New technology adoption by them remained slow to meet India's ambitious growth targets and economic goals.

But fortunately, things have started to move in a positive direction in India, and it can be wisely anticipated that the future Indian businesses shall comprise a much bigger share of emerging technologies, disruptive business models and new age leaderships. In the last decade, new businesses have started emerging at a faster pace in India and simultaneously the traditional businesses are getting transformed through the addition of innovative technologies and business models. If this trend continues then India has the potential to be a global leader, considering it makes the right investments in the technologies of the future, including AI, machine learning and blockchain. Contrary to the popular narrative of a job loss in the high-tech sector, machines and Al could well be the newest recruits to the discerning youths, bringing new skills to



Rajan Navani Chairman, CII National Council on Future Businesses and Vice Chairman & Managing Director, Jetline Group of Companies

help people do new jobs, and reinventing what's possible.

As it is now well debated and accepted that technologies such as machine learning, Al and others are the technologies of the future, the recently announced Union Budget 2018 has clearly articulated this need. NITI Aayog has been entrusted to establish national programmes and initiatives to conduct R&D and build awareness in these areas. It is encouraging to see in the current directive that to make India a hub of AI, the Government will also invest in robotics, big data, guantum communication and other areas. This renewed focus on AI, although coming to the fore a bit late, is a crucial step towards making of a new India, which also has the potential to make India a global leader in the AI space, and solve problems



faced across the world.

The economic impact of AI will be driven by the productivity gains from automating processes (including use of robots and autonomous vehicles) in businesses, productivity gains from businesses augmenting their existing labour force with AI technologies (assisted and augmented intelligence) and increased consumer demand resulting from the availability of personalized and/or higher-quality AIenhanced products and services. Another area that AI will benefit businesses is in the area of big data. Companies have gathered vast amounts of data but at times making sense of it could prove to be a herculean task. AI can help in noting data patterns that human beings cannot perceive. Benefits of Al also comes with a high degree of threat of security involving cybercrime.

Government needs to take strict measures to eliminate the use of these crypto-assets in financing illegitimate activities or as part of the payment system and will explore use of blockchain technology proactively for ushering in digital economy. Fortunately, both the points have been adequately addressed in the 2018 budget.

Overall it is now clear that in order to achieve the target of leapfrogging India's economy from its current level of 2.5 trillion to 5 trillion by 2022-24 and to usher an inclusive growth path, there could be no other better option than to empower its future businesses with new age technologies, and present an enabling ecosystem for businesses to incorporate, operate and exit in an innovative milieu, supported by minimum bureaucratic hurdles and a conducive policy environment. CII is advocating all of these reforms with the Government at the Centre and at the State level, over numerous platforms and through various initiatives, and has created for the first time a focused Council on Future Business to be the catalyst of change. Let us build a better future for our next generation.



Key CII Recommendations for Innovation and Technical Capability

Research & Development

- R&D investments by Industry in India are sub-critical. Also, there are no strong guidelines to report such expenditure by MNCs and other industries. Government need to create a procedure by which such investments are captured and recorded, to influence effective policy formulation.
- Government should establish Centres of Excellence in key emerging technologies like artificial intelligence (AI), robotics, cloud computing, VAR, cyber security, convergence technologies, among others. These CoEs should be established in partnership with leading academic institutes and Industry. To ensure selfsustainability and focus on innovation instead of basic research, these CoEs should be encouraged that a certain portion of their expenses should be met through IP sales generated through IP assets.

Technology Transfer

- A robust Industry-Academia linkage will enable Industry to access institutional knowledge and use it for industrial purpose. Government should encourage and channelize more public funding in Higher Education institutes so that the Industry gets incentives to collaborate with academia.
- Institutions doing industrial R&D should be mandated to establish effective tech transfer offices, and they need to be constantly monitored to leverage these offices to find new Industry connect.
- Government should explore a PPP model where the Industry contribution should be beyond capital and include access to experts and innovation laboratories within R&D institutions, on a formal and sustainable basis. Such PPP mechanism/ models should provide the benefit to

both Industry and institutions to access each other's best practices and resources so that research is conducted in areas with strong business focus and enables a seamless transition from basic research into applied research and technology commercialization.

Intellectual Property Rights

- With advent of AI, we need to think about attribution of IP creation and how this can be owned and manage in the future. Given AI is a new age technology, India would need to develop a strong policy framework to leverage its benefits and negate its disadvantages. Indian industries and academies should enhance their IPR portfolio in the field of AI and related areas to become a part of the centre stage in the global scenario. Simultaneously, the Indian Patent Office should evolve rules and procedures to encourage protection of AI related inventions.
- For strengthening IPR management among industries, the Industry and Government should on a continuous and regular basis study the emerging IPR issues which may negatively impact ease of doing business in India. For example, streamlining of CRI guidelines has generated confidence in the Industry.
- Establish cells for providing IP related guidance and mentoring in all Software Technology Parks of India (STPIs) and locations where entrepreneurship is thriving.
- Launch more IPR awareness campaigns across the country with a special focus in technical education institutes and engineering colleges. Collaborate with other nodal agencies to provide special training in IPR laws to judiciary, especially in Tier II and Tier III cities.
- The Central and the State Governments

should establish a dedicated IP portal which should act as a knowledge portal for patenting. The portal should be constantly updated with new data and with information from national and international sources.

 In order to facilitate technology transfer from academic and research institutions, both Industry and Government need to work together. From Industry's point of view, IPR ownership is one major consideration. Government may be requested to evolve policies for sharing and ownership of IPR when the two entities work together or when technology developed independently by academic or research institutions, gets transferred to Industry.

Regulatory and Funding

- Faster Utilization of Government's Fundof-Funds:
 - The key operational guidelines for coverage under the Fund-of-Funds Scheme (FFS) for start-ups should be amended to permit Alternative Investment Funds (AIFs) to invest only 1.5X of the amount raised in certified start-ups and/or in startups that have certified status until 3 years back and/or is a follow-on investment in a previously invested certified start-up.
 - SIDBI to invite participation from existing SEBI-registered funds which are interested in tapping FFS capital; remove the requirement of additional approval for availing tax benefits once the start-up is certified by Department of Industrial Policy & Promotion (DIPP); identify a unified central body through which allocation of funds to investments in a sector can be made, e.g. SIDBI to invest in the technology sector, NABARD to invest in agricultural sector and the decision on the



applications of registered investors to be made within 1 month from the receipt of the application; disbursement of funds to AIF's to be within 2 months from the date of acceptance.

- Stock options for advisers and Employee Stock Ownership Plans (ESOPs): Startups are cash flow negative in their formative stages and hence cannot pay for services of advisors. Instead advisors can be offered stock options but this is not a permissible option currently. In addition, a key constraint is that ESOPs are taxed while vesting, when in fact they should be taxed when sold and capital gains are realized. It is recommended that:
 - Permit option grants to advisors, consultants and board members of start-ups.
 - Reduce tax on stock options and introduce a 'taxation upon sale' regime and treat entire gains made on share sales as 'capital gains' rather than treating a portion of the gains as salary, or prerequisite at the time of allotment of shares.
- Social impact investing: Social impact investments aim at promoting viable enterprises to help achieve social objectives. There is a critical need to promote start-ups which are focused on sectors like health, education, biotechnology and clean energy, which may have lower returns but a high social impact. It is recommended that 20% of the funds of the Government's Fund-of-Funds be disbursed to start-ups engaged in the priority and social impact sectors. Similarly, companies should be permitted to use Corporate Social Responsibility (CSR) funds spent as mandated under the Companies Act 2013 to be given as a grant to start-ups engaged in priority sectors, subject to monitoring controls.
- Blockage of funds under tax procedures: Start-ups have tight liquidity during their early formative years. They have a low capacity to reinvest funds as large capital investments block funds

before significant cash is mobilized from larger revenues. Given this tight liquidity situation, certain taxes seriously constrain the liquidity of start-ups. These relate to Tax Deducted at Source (TDS) and Minimum Alternate Tax (MAT), complex TDS rules, TDS filings, collection and refund process. These result in blocking of funds and imposition of penalties for non-compliance. Companies have to pay MAT at 18.5% of book profits during the tax break window (any 3 years within the first 7 years of formation). It is recommended that:

- Allow deduction of capital expenditure made by start-up in the years in which the expenditure is incurred:
 - Provide 100% deduction of any capital expenditure made by the start-up in the given year.
 - II. Any capital expenditure in relation to the business of the start-up made before the commencement of operations to be allowed as deduction in the year in which the start-up commences operations.
- Exemption from MAT to tax-exempt start-ups.
- Capital Gains Tax on unlisted shares: Investors assume greater risk when they invest in start-ups as compared to investing in listed companies which have a track record of profitability. To attract risk capital to start-ups, investors in unlisted firms should not have an inferior capital gains tax regime as compared to investing in listed shares. It is recommended that the tax regime should treat start-up shares and publicly listed shares at par for the computation of Long-Term Capital Gains (LTCG) and apply a common capital gains tax rate.
- Ease of Doing Business: It is recommended to establish a single window clearance for obtaining approval and licenses from all departments; reduce the frequency of filing under labour and tax laws; and conditionally exempt start-ups from some penalties for non-compliances. To

Policy Barometer

be successful, start-ups need to train and reward their employees which is a significant cost. A key success factor for start-ups is to provide innovative services and products at low cost to the customer. However, regulations like Provident Funds (PF), Employee State Insurance (ESI) raise the employee cost for start-ups to a large extent. It is recommended to exclude start-ups from the definition of industrial establishment, industry, factory, among others so as to exempt them from the requirements under regulations like PF, ESI, among others.

Mentoring

- To promote start-up mentorship, mentors should be selected based on an incentive structure which benefit both the startups and the mentors. These incentives could be in the financial and recognition terms and vary from different mentors. Also, mentorship should be attached with specific outcomes when they are associated with start-ups.
- Mentoring for start-ups cannot be successful if it is treated as a pro-bono activity. If it has to be a combination of business interest and social interest for the mentors to get them involved. The Skill Development and Entrepreneurship Ministry can allocate a dedicated fund towards building such a national mentoring network that is backed by a solid business foundation.
- The Income Tax department can ask Start-ups to pay up the tax on the difference in the fair market value and the valuation at which they raised the money from an angel investor. This is primarily because the scrutiny is much after the funds are raised. If the valuation given by the angel investor, along with the reason for that valuation is captured and agreed upon with the authorities at the time of investment, then this would do save a lot of time and effort on all sides. This will also give a boost to angel investments in start-ups.



The promotion of innovative thinking, practices and innovation as a whole need not be restricted in association only with start-ups. India's large and established businesses, both public and private who have the financial strength to take risks, the expanse of existing business to leverage as sandboxes and the management depth to plan and execute should now make meaningful efforts and investments in this area. This is important, to not only ensure they retain their positions in businesses but also as a way to take a leap on a global scale and / or create new categories and in the process, take India centre stage as a hotbed for innovative business models and products.



Kumar Bagrodia

Chair-Learning Vertical, CII Young Indians and Chief Executive Officer and Founder, Leapvault & Neuroleap



Start-ups represent not just an exciting sector of Indian economy, but also the promise of solving its most pressing challenges. Start-ups are now widely accepted as the engines of job creation. They also are our best bets to addressing the grand challenges such as sustainability, healthcare and education. There are massive disruptions that are underway in India, both on account of changes in consumer behavior, as well as rapid adoption of technology - these represent a once-in-a-lifetime opportunity for entrepreneurs to leverage. **Alok Mittal**

Member, CII National Council on Start-ups and Founder, Indifi

We live in a rapidly changing world where ability to innovate will be a key differentiator for economic growth for nations and businesses. Businesses which inculcate innovation as part of their DNA and nations with mature innovation ecosystems will continue to grow and provide value to their stakeholders and improve quality of life of their citizens. Mainstreaming of niche technologies like robotics, artificial intelligence, cloud computing, virtual reality and machine learning is providing a great opportunity for disruptive innovation in all walks of life. Integration of these technologies and other evolving technologies will ensure that the whole is greater than the sum of its parts.



Tanmoy Chakrabarty

Member, CII National Council on Future Businesses and Group Government Affairs Officer, Tata Sons Limited



Innovation and start-ups need to necessarily co-exist for the entrepreneurial ecosystem to flourish. Start-ups the way we know them today, are an outcome of innovation and disruption of norms. In a vast country like ours that is changing at such a fast pace, this kind of a culture is key to progress. I'm glad we are seeing so many policy level interventions from the Government to support start-ups, and hope that this continues. We need to enable the culture of entrepreneurship at the entry level, and support young people who want to give it a shot.

Prerna Bhutani

Member, CII National Council on Start-ups and Partner, India Quotient

Healthcare, despite its size and growth rate, has been an opaque sector that has seen little innovation for a long time on the consumer front. However, this is rapidly changing and the consumer is taking centre stage. The sector is now ripe for disruption by the new crop of tech entrepreneurs by revolutionizing the way healthcare information, products and services are delivered today in an easy manner. Healthcare AI would be a full field of massive disruption, and India has the opportunity and a desperate need to be a strong player here. India's strength lies in our huge potential datasets, which are fundamental to application of AI in a meaningful manner. So far, we have been just seeing and sharing and lamenting in every healthcare report that we need some 5-10 times the number of doctors or number of hospital beds: the fact is that it takes 5+ years to produce a doctor and we will not achieve the so-called WHO standards in the foreseeable future. What AI gives the opportunity is to change this from an un-solvable to a solvable problem: focus has to be made to leverage AI very actively to change the discussion to enhancing Doctors per patient by 10 times, to leveraging AI to make 1 doctor 10 times more productive! This is the only way we will address healthcare needs in our country.



Prashant Tandon

Member, CII National Council on Future Businesses and Founder, 1mg

POLICY WATCH



Innovation Efficiency in the Last Two Years

Efficiency in innovation has grown significantly over the last two years, especially in small and large industries.

In medium sized industries, only a small increase in efficiency in innovation has been noticed, and this trend can be seen across all industry sectors.



Innovation Efficiency in Large Scale Industry

Innovation Efficiency in Medium Scale Industry



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factfile





For suggestions please contact Priya Shirali, Corporate Communications at priya.shirali@cii.in

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