

Editorial: Entrepreneurial Ecosystems for Tech Start-Ups in India and Japan

M H Bala Subrahmanya^{*}, Takao Fujiwara^{}, Sang-Hyuk Suh^{***}**

Technology-based start-ups have been occupying increasing attention of empirical researchers and policy makers globally, due to their high-potential to contribute to employment generation, new products and services, and national income (Bala Subrahmanya, 2015). Technology-based start-ups have long been an important driver of America's economic growth and competitiveness (Hathway and Litan, 2014). Of late, India has been recognized, as one of the potential sources of high-tech start-ups in the global economy (Gai and Joffe, 2013); and it currently ranks third globally, in terms of number of existing start-ups and number of start-up exits (due to acquisitions) (NASSCOM, 2015; TOI, 2016). Today, India is considered one of the fastest growing emerging economies globally (Global Finance, 2018). However, its major challenges continue to be in generating employment to the vast and growing labour force and achieving a higher level of social equity.

Japan, being one of the most industrialized nations in the global economy, its historical postwar "economic catch-up" model revolved around a focus on large firms, particularly its globally reputed MNCs, which successfully delivered rapid economic growth and relatively high levels of social equity from the late 1950s till the late 1980s (Okimoto and Rohlen, 1988). However, since the 1990s, Japan has been experiencing continued recession, particularly with the advent of new digital technologies and the rise of other Asian economies (Kushida, 2016). At this juncture, the need to create a vibrant entrepreneurial ecosystem to nurture and promote tech start-ups in Japan became one of the key foci of Japan's policy and social goals since the mid-1990s (Kushida, 2016). However, start-ups and their ecosystems gained visibility in Japan only around 2010, with the emergence of IT-based start-ups, implying the sparsely populated start-up community in the economy (Asakura,

* Professor, Department of Management Studies, Indian Institute of Science, Bangalore - 560012, India; bala@iisc.ac.in

** Toyohashi University of Technology, 1-1 Hibarigaoka, Tempaku-cho, Toyohashi, Aichi, 441-8580, Japan; fujiwara@las.tut.ac.jp

*** Hoseo Graduate School of Global Entrepreneurship, Nambu Soonhwan-ro 2497, Seoul, 06724, Korea; suh8777@hoseo.edu

2017). However, since then, Japan's start-up ecosystem has developed considerably, as many of the characteristics of Japanese economy have transformed to create a new environment (Kushida, 2016).

In Asia, Japan and India represent two prominent economies which have significant influence on the economic growth of the rest of the world. While Japan represents a technologically advanced economy, India is considered a fast growing emerging economy. Recently, both the economies have been promoting mutual collaborations on diverse fronts including education, industry, trade & commerce, and culture, among others. It is as part of this initiative that Indian Council of Social Science Research (ICSSR), Government of India, New Delhi and Japan Society for the Promotion of Science (JSPS), Government of Japan, Tokyo encouraged collaborations between the educational and research institutions of the two countries under a Joint Research Programme in Social Sciences.

It is in response to the above that, M H Bala Subrahmanya, Professor, Department of Management Studies, Indian Institute of Science, Bangalore and Takao Fujiwara, Professor, Institute of Liberal Arts and Sciences, Toyohashi University of Technology, Aichi, Japan as the Lead Collaborators conducted a Joint Seminar on 'Ecosystems for Technology Start-ups in India and Japan: A Comparative Perspective' at the Department of Management Studies, Indian Institute of Science, Bangalore from 1st May 2017 to 5th May 2017, sponsored by ICSSR, New Delhi and JSPS, Tokyo. The objectives of the Joint Seminar were to probe and assess the factors influencing the entrepreneurial ecosystems and its components for technology start-ups across India and Japan.

During 1-5 May, 2017, in the joint seminar a total of 22 presentations were made on various topics related to the ecosystem of technology startups in India and Japan. Seven presentations were made from the team of professors led by the Japanese collaborator, detailing the state of the ecosystem components for technology start-ups in Japan. Similarly, six presentations were made by the team of researchers led by the Indian collaborator that described the ecosystem components prevailing in India. Further, three eminent speakers, one from the academia, one from the industry and one from a venture capital (VC) background provided the keynote address during the inauguration ceremony of the seminar. Six speakers representing the incubators, accelerators, investor community, entrepreneurial community and mentors presented their perspectives as part of the deliberations of the seminar. About 45 delegates from across academia, industry and technology startup ecosystem participated and actively contributed to the discussions during the seminar. These presentations and interactions successfully enabled the collaborators to achieve

the intended objectives of the seminar of developing a good understanding of the ecosystems prevailing in the two countries for tech start-ups.

This special issue of Asian Journal of Innovation and Policy is an outcome of the Joint Seminar, comprising the short-listed 10 papers: one of them focused on Japan, seven of them focused on India, and another one focused on Indonesia, while the remaining one comprised a comparative study of Japan and China.

Japan is primarily a manufacturing industry dependent economy (with a nascent presence of tech start-ups) and its manufacturing is mostly dependent on the automotive industry. In the automotive industry, Toyota has earned a global reputation with its global presence as much as inside the country. Within Japan, however, Toyota automotive industry is predominantly confined to Toyota-Kariya cities, whereas Japan's nascent start-up presence is largely seen in and around its start-up capital, namely, Hamamatsu, located near to Toyota-Kariya region. In this context, Fujiwara has explored the regional resilience of industrial ecosystem of Toyota-Kariya automotive subcontracting system with the start-up ecosystem of Hamamatsu.

In his study, at the outset, he revealed the contrast between the two ecosystems by exemplifying that the automotive subcontracting system represents a vertical compact subsystem whereas the start-up ecosystem is a horizontal flexible subsystem. Regional resilience is reflected in entrepreneurial innovation which is defined as a real-option portfolio consisting of an investment decision to commercialize R&D findings. To explore the regional resilience in the two contrasting ecosystems, he used Bayesian MCMC analysis, to analyze the financial indices of 18 Public Companies in both the regions (during 2009-2017). The major findings of his analysis revealed that both the condition and the productivity of R&D investments of companies in the Toyota-Kariya region were greatly influenced by the (financial crisis) economic environment as there were large fluctuations in R&D expenditure and total stockholders' equity. In contrast, in the Hamamatsu region, R&D investments were much more stable and total stockholders' equity increased during the financial crisis, due to start-up ecosystem's flexibility. Overall, his analysis threw light on the prospects that a nascent start-up ecosystem holds for contributing to the growth of a vibrant industrial economy.

India has been experiencing the emergence of tech start-ups in most of its metro cities for more than a decade now, but at the same time, its hinterlands continue to thrive due to the contributions of modern start-ups from Small & Medium Enterprises (SMEs), and traditional start-ups from household industries. Against this backdrop, Bala Subrahmanya analyzed the key

characteristics of tech start-ups relative to traditional start-ups and modern start-ups in India. He brought out that tech start-ups are distinctly different from other kinds of (modern and traditional) start-ups (which continue to emerge in Indian economy even today), in terms of sources of entrepreneurship, nature of firm emergence, sources of finance, nature of market, kind of human resources, support system, mentorship, probable revenue, cash flow and jobs, among others.

Though India has experienced the emergence of an appropriate ecosystem for tech start-ups, to support not only the emergence of tech start-ups but also their survival and sustenance, an accelerated growth of tech start-ups through either attracting large scale investments of private equity and investment funds or “going public” has not yet emerged in a big way, implying that India still has to go a long way to witness a significant contribution from tech start-ups to economic growth. Given this, it is only recently that a formal policy for start-ups emerged at the national level followed by that of regional levels. The policy support extended to tech start-ups is primarily confined to finance, support system, regulations and incentives, and industry-institute interactions, and the policy as a whole is at its infancy. However, he concluded that the evolving ecosystems which are growing from strength to strength in terms of all the components, ably supported by the triple helix of Government, Industry and Academia, have the potential to promote large scale employment generation and growth of tech start-ups in India in the future.

The optimism expressed by Bala Subrahmanya is substantiated by Krishna in his micro-level study where he dealt with the transformation of entrepreneurial learning leading to outcomes which enhanced the survival of tech start-ups in India. He threw light on two modes of entrepreneurial learning, namely, explorative and exploitative and two preferences of entrepreneurial decision making (learning outcome), namely, effectual and causal, and examined (by means of Accelerated Failure Time models) its influence on start-up survival with primary data for 45 tech start-ups located across the country. His results indicated that entrepreneur’s prior start-up experience, explorative mode of learning transformation, causal decision making and availability of funding for the start-up are the key factors which reduced the time to survival of tech start-ups in India. His research insights provided a better understanding of the mode of learning transformation and dominant decision making preferences of start-up entrepreneurs in an emerging economy like India.

However, start-ups have a low survival rate, alternatively, a high failure rate the world over, and India is no exception. Given this, exploring what causes a start-up to fail assumes significance. India being an emerging economy, and the primary challenges confronted by its Policy Makers being employment

generation and income creation, success to any extent to curtail start-up failure will be a big boon towards overcoming these challenges. Accordingly, based on case studies, Ganesaraman has explored how start-up failure is differentiated from start-up success. He carried out two case studies each, to examine success as well as failure, in the context of Bangalore, the leading start-up hub in India. His case analysis brought out that time to Minimum Viable Product (MVP), time for revenue realization, founders' complementary skillsets, age of founders with their domain expertise, personality type of founders, attitude towards financial independence, and willingness to avail mentorship at critical stages are the decisive factors which differentiated failed start-ups from the successful ones. Thus, he threw light on the critical factors which a prospective start-up founder should attend to, to minimize the probability of failure and enhance the prospects of success.

In India, metro cities are often heterogeneous clusters of manufacturing industries, most of which are at the same time, start-up hubs (Joshi and Krishna, 2014). Bangalore, which is considered the "Silicon Valley of India", the leading start-up hub of the country, also is the home for multiple high-tech manufacturing industries. Obviously, such a cluster offers a thriving environment for inter-firm linkages and innovation, apart from a vibrant start-up ecosystem. However, if a firm has to take advantage of its presence in a cluster for developing networks and carrying out innovation, its own absorptive capacity is crucial. It is to examine these issues in the context of high-tech manufacturing cluster of Bangalore that Deepak carried out his study focusing on 101 high-tech manufacturing firms spreading across electronics, machine tools, electrical and pharmaceutical industries. By means of cluster analysis and graphical analysis, he ascertained that size and origin of a firm significantly influenced its degree of interactions with other firms and associated institutions within the cluster as much as outside, and the degree of interactions decisively influenced its level of innovation performance.

In a start-up ecosystem, large firms, particularly MNCs have an indispensable role to play (Bala Subrahmanya, 2017). They are often the sources of support for nurturing tech start-ups in the form of entrepreneurship, business and technology mentorship, support system in the form of accelerators, human resources, markets (both as early product adopters and late stage product consumers), and finance. Thus, MNCs engage in entrepreneurial ecosystems, the primary objective being to derive strategic benefits subsequently, and in the process impact the ecosystem as well. This assumes significance in the context of an emerging economy like India, which has been increasingly attracting leading MNCs of the global economy through FDI inflows. It is to explore the crucial role played by MNCs in the start-up ecosystems of India that

Muraleedharan has carried out case studies focusing on the symbiotic relationship between MNCs and start-ups.

Muraleedharan ascertained that MNCs in India have engaged themselves with the entrepreneurial ecosystems with multiple strategic objectives. First and foremost, it is the MNCs' necessity for growth which has driven them to enter an emerging market like India providing them room for such growth. Secondly, MNCs have an opportunity to appropriate technologies and internalize dynamic capabilities from vibrant entrepreneurial ecosystems through different models. Thirdly, ecosystem engagements of MNCs provide impetus to their own entrepreneurial processes and provide an opportunity to signal to labor markets positively. He also delineated the complementary benefits of MNC engagements to technology startups, and thereby signifying a symbiotic relationship. In addition, he identified the drivers for such a relationship and the benefits they provide to startups across their life stages.

One of the indispensable requirements for start-up emergence and growth is finance, and it is venture capital finance more than anything else, which would determine the emergence and success of tech start-ups. However, tech start-ups suffer from the liability of newness deriving from the fact that they (new ventures) are unfamiliar and without precedent (Certo, 2003). Given this, how do venture capitalists (VCs) overcome the liability of newness of tech start-ups and choose among the multiple options for investments, particularly in an emerging economy, which has all the more risks relative to a developed economy, is a matter of significance.

Joshi has looked at two specific risk management strategies in the context of India, namely, deal syndication and domain specialization with respect to their explicit role in judging and managing the overall magnitude of information asymmetry risks. She analyzed these issues for three distinct categories of VC firms classified in terms of (i) their funding stage focus (early vs. late), (ii) ownership (foreign vs. Indian), and (iii) human capital composition of the core VC team (entrepreneurial vs. investor). By making use of both pertinent secondary data and primary data from 72 VCs firms in India, she carried out her analysis. Her findings indicated that syndication is moderately important for entrepreneurial VC firms but not at all important for early-stage focused and foreign VC firms. Among the various arenas of domain specialization, high-technology focus is important for all segments of VC firms. In the context of investment-stage focus, foreign VC firms exhibited growth-stage specialization; while entrepreneurial VC firms concentrated on earlier investment stages. Overall, her study looked at the distinct categories of VCs and the role they play in tech start-up promotion in India.

If a prospective tech start-up is able to attract adequate investments into its portfolio, then the pertinent question is, how would open and shared innovation impact its investment in the initial (R&D) stage (beginning from ideation to proof of concept to prototype development to MVP), as compared to the stage of production and commercialization? This research question has been addressed by Wardani and Fujiwara with reference to a smart house appliances start-up in Indonesia. By using game theory and real options analysis, they found out that open and shared innovation in the initial stage would hurt the start-up vis-à-vis its competitors whereas sharing R&D investments (in the subsequent stage of production and commercialization) will not be a bad option when volatility and demand grow favorably, as it would enable the start-up to adjust its competitive position in the market, while maintaining positive returns.

Next, the legal systems and practices of Intellectual Property (IP) protection are of significance for innovation and start-ups, among others, in any economy. Cai, accordingly, deals with these issues in the context of Japan and China. Particularly, his descriptive analysis threw light on how to balance the development of international trade and IP protection in each country when both are involved in the trading of IP products due to a steady expansion of trade between them.

Finally, Flath looked at the role of supply contracts in maintaining the monopoly status of automotive manufacturers in India in the sale of not only final products but also components and parts. Such an arrangement enabled the automotive manufacturers to more fully appropriate consumer surplus, resulting in a lower price for new cars, as well as sell more cars and its repair parts, leading to the growth of overall auto industry. Given this, he attributed the constraint for the growth of auto industry in India to government policy of protection in the forms of tariffs on automobiles and auto parts.

Overall, this special issue of AJIP containing 10 empirical papers deal with diverse issues relating to entrepreneurial ecosystems for tech start-ups and high-tech SMEs, primarily in the context of Japan and India. These papers adequately reflect that tech start-ups and high-tech SMEs are unique and so are their ecosystems/clusters. With adequate strengthening of their ecosystems /clusters, an economy would be able to realize higher contributions from them in terms of innovations, employment, income and greater business stability and growth.

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