

New Open Innovation Platform for Emerging Economies

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Abstract: - Innovation has been the most important enabler for the emergence of powerful regions and countries over the past many centuries. The invisible shift in the center of gravity of the power-centers happens relentlessly on the basis of innovations at various hotbeds across the globe. Institutions of higher learning brought in a huge supply of youth and their inventive skills, the corporate organizations created demands for these innovations along with their expertise of innovation management, the strength of implementation and the much-needed supply of fund. This paper presents a new open innovation platform known as Worldwide Academia Industry Network (WAIN) for emerging economies empowered by youth. We have found that though corporate organizations are the leading indicators of the innovativeness of the economy, an important lagging indicator is the quantum and efficacy of research happening at the universities. Therefore, Academia and Industry collaboration is an important factor for an economy to truly leverage innovation for growth.

Keywords: Open Innovation, Academia Industry Network, Innovation Commercialization, Skilled Youth

I. INTRODUCTION

Innovation has been the most important enabler for the emergence of powerful regions and countries over the past many centuries. The invisible shift in the center of gravity of the power-centers happens relentlessly on the basis of innovations at various hotbeds across the globe. Institutions of higher learning brought in a huge supply of youth and their inventive skills, the corporate organizations created demands for these innovations along with their expertise of innovation management, the strength of implementation and the much-needed supply of fund.

In the 2016 released Bloomberg's Innovation Index, an annual ranking of countries and their technology prowess, India ranks a low 45 out of the 50 countries ranked [1]. Top 5 most innovative countries include South Korea, Germany, Sweden, Japan and Switzerland. The world's two largest economies USA and China are ranked at No. 8 and China No. 21 respectively. In the bottom five, countries like Serbia, Tunisia, Thailand and Morocco surround India. Bloomberg ranks countries annually on their overall ability across following six equally weighted metrics:

- A. Research and Development (R&D) expenditure as percentage of Gross Domestic Product (GDP).

- B. Value added manufacturing as percentage of GDP and per capita.
- C. Number of domestically domiciled publicly traded high tech companies.
- D. Total enrolment of post-secondary education.
- E. Research personnel - professionals working in R&D per one million population.
- F. Patents filings per million population and per \$100 Billion GDP.

India fared especially poorly in the parameters B, D, E and F. While poor performance in B can be argued as India being a knowledge driven economy, there may not be an important thrust on value added manufacturing. Low scores in D, E and F are a clear indication that research and innovation has not been leveraged as a driver for growth in a country of 1.25 billion people.

In order to capitalize on innovation to drive economic growth the three important pillars of the ecosystem i.e., corporate organizations, academic institutes and government bodies have to continuously invest and strive to build a culture of ideation, research, invention, innovation, generation of intellectual assets and commercialization of these assets for revenue generation. Collaboration and seamless communication between these pillars is the foundation of a dynamic innovation ecosystem.

The Massachusetts Technology Collaborative defines an Innovation Ecosystem (IE) as a large and diverse array of participants and resources that contribute to and are necessary for ongoing innovation in a modern economy [7]. This includes entrepreneurs, investors, researchers, university faculty, venture capitalists as well as business development and other technical service providers such as accountants, designers, contract manufacturers and providers of skills training and professional development.

In his attempt to analyze the secret to replicating the world's most popular and possibly most productive innovation ecosystem, The Silicon Valley, noted blogger, Vasily Ryzhonkov, in 2013 put together a structural view, to indicate that it is more the culture and mindset rather than the physical place [10].

At a micro level, the above ideology is best elucidated by the 3000-year-old Israeli city Jerusalem's showcase of its innovation ecosystem under the brand name

“MadeinJLM” forum [8]. The key drivers for success of this IE is attributed to diversity in intellectual capital, high intensity of students and world renowned universities and collaboration portrayed as “no one is left alone at Jerusalem”. Such consolidated efforts have led to Israel being ranked as the 10th most Innovative nation in the world by Bloomberg in 2017, a spot below USA and far above China [2].

A key parameter that has contributed to the creation of the IE has been the close collaboration between academia and industry. One form of industry academia collaboration that has been championed by Professor Henry Chesbrough, Adjunct Professor and Director Garwood Center For Corporate Innovation, Haas School of Business, University of California, Berkeley through the coinage of the term “Open Innovation” [3]. As Professor Chesbrough aptly defines the term in a 2011 Forbes article “Open innovation is “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively” [11].

The adoption of Open Innovation methodologies and frameworks by global corporate organizations in developed economies have led to increase of transfer of novel ideas and applications from universities to the industry and expedited run-rate of commercialization. Roshani *et.al.* provide a review of successful forms of industry academia collaboration across Europe and Northern America; ranging from high strategic relationships i.e., research partnerships and research services to medium level relationships viz. human resource transfer and academic entrepreneurship to low engaging relationships like commercialization of intellectual property [14].

Implementation of Open Innovation in developed nations have been further expedited through creation of technology portals like Innocentive and IdeaConnection, which crowd source solutions to problem statements provided by corporate organizations and governments [9,12,13]. Government aided platforms such as Knowledge Transfer Partnerships (KTP) under the aegis of Innovate UK, have enabled diversification of Research and Development pipelines, by empowering multiple innovators from across the world to provide solutions to problems of high societal or commercial interest [6].

By 2020, India will have the world’s largest student population, 119 million students between the ages 18 to 22 year [10]. This paper explores the creation of an open innovation platform for an emerging economy like India, with focus on youth (student) driven innovation. The Worldwide Academia Industry Network (WAIN) is a platform to empower the youth to innovate and to catalyze key stakeholders of the innovation ecosystem such as academia (university and K-12 schools), corporate organizations, policy makers and influencers to expedite the run rate of ideation to commercialization.

II. NEED FOR OPEN INNOVATION PLATFORM IN INDIA

Innovations are directly linked to the innovativeness of people, which is the prerequisite for growth, prosperity, and economy of a nation and its citizens. The future of an economy, strength of democracy, and even the health of planet’s ecosystem depend on educating future generations to innovate [10,15]. However, in India, where 46.6% of population is below 24 years and literacy rate is 74.04%, Innovative Culture, Innovations and the link between them are missing [4].

Apart from that, the idea of research in India is mainly concentrated at higher level of academic grade. Mostly students pursuing post-graduation and doctor of philosophy do research at university level or scientists working in the Central Institute of Industrial Research (CSIR) laboratories. There has been a shortage of innovations from the youth studying at higher secondary schools and at graduation level. Also young entrepreneurs, working on an innovation lack a proper platform to reach out to a global audience for mentoring and funding.

Several governments, multinationals, industry experts, academics and educationalist had worked together in various groups to identify and formalize 21st century skillset which students must possess in order to be successful in today’s competitive world. The Partnership for 21st Century Learning (P21), a leading public-private partnership in this effort, classifies (see Figure 1) the important skills of 21st century [5]. This include learning and innovation skills; creativity and innovation; critical thinking and problem solving; communication and collaboration. It also includes information, media and technology skills for information, media and information and communication technology literacy. It also comprise of life and career skills for flexibility and adaptability, initiative and self-direction, social and cross-cultural and productivity and accountability.

The framework encompassing these skills is built upon the old “3R’s – Reading, Writing and Arithmetic” and the “Seven Skills to Survive in the 21st Century [5]”. They recognize that in an interconnected, multicultural, technology driven world, awareness of multitude skills and working collaboratively in cross-geographical, cross-cultural, multi-talented teams in an inevitable reality of today. Therefore, it focuses on themes such as global awareness, financial, economic, business and entrepreneurial, civic, health and environmental literacy. The development of an open innovation model with focus on tapping this immense asset of student powered innovation in India, and connecting it to industrial research and development pipelines can enable creation of innovation mindsets in the youth and innovation ecosystems in our academia.

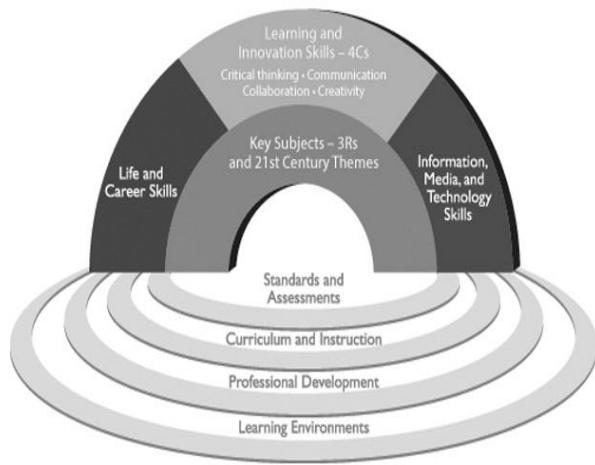


Fig. 1: P21's Framework for 21st Century Learning

Corporates have recognized that the knowledge is the key driver of sustainable, competitive and collaborative environment. Companies have adopted new technologies to increase the efficiency and effectiveness of their research processes as evolvement and availability of highly educated people is outside the reach of company's own research laboratories. Companies apart from searching for new ideas and technologies outside their company also need to create customer value through cooperation with suppliers and challengers. Thus collaborative knowledge sharing would help company in establishing successful innovation programs.

III. NEW WORLDWIDE ACADEMIA INDUSTRY NETWORK

India has world largest youth population, in emerging nations youth population it is growing at a very fast pace [16]. Keeping this in mind, WAIN has been designed to meet the needs and aspirations of the young people who will define the future of their nations and enable social and economic progress. Since future of any nation depends on its youth, the new WAIN discussed in this section provides youth opportunities to transfer their academic knowledge into to real situations, solve problems across sectors and deploy solutions for rapid, sustainable and resource efficient growth. The exploitation of exciting new opportunities through WAIN will effectively contribute in increasing India's GDP by 9% per year and transform it into US\$10 trillion economy by year 2034 [17].

Youth are central to the WAIN. Their innovations are critical to the success of nation which otherwise risks economic stagnation and high unemployment. Their skills and capabilities are necessary to solve regional and national problems. The scalable innovative solutions originating from the minds of young people can create new capabilities of growth in the form of new products and new businesses leading to new employment opportunities. But to deliver impactful success through youth led innovations

Corporate Organizations and Government Organizations will also need to play a critical role. Therefore, mission of WAIN is to create a systematic IE in emerging nations starting with India and later implementing in other emerging nations.

The Corporate Organizations play a critical role in identifying societal needs and market gaps, providing these as problem statements to youth and supporting them in their innovation journey through different means. Government on the other hand needs to implement new developmental approaches for making it easier for young people to do business – locally, nationally and globally - and create new employment opportunities. All three need to regularly participate in forums such as MeltingPot2020 Innovation Summit for knowledge sharing, collaboration and networking, a practice for making higher impact.

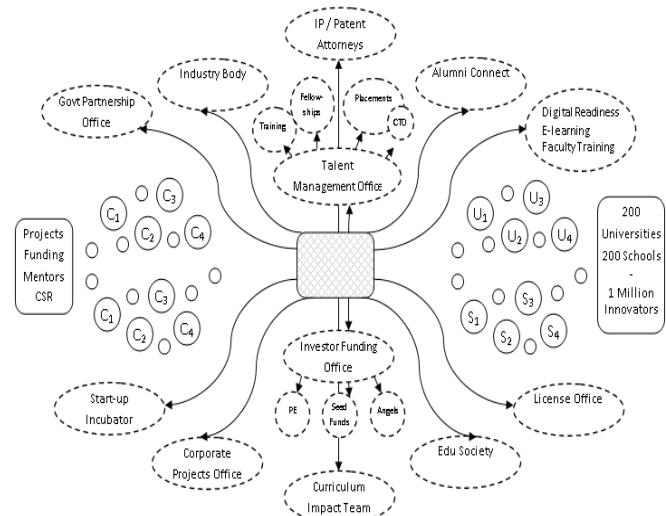


Fig. 2: Multiple Stakeholders in WAIN Open Innovation Ecosystem

WAIN is a well-connected network of supporting entities or multiple stakeholders who are necessary to create an impactful IE in emerging nations (see Figure 2). Any innovation led by student is supported by high quality academic and corporate mentors which help ensure innovation quality and establishment of market/society need. The Startup Incubators at the academic institution or setup by government bodies such as T-Hub helps innovation incubate in a controlled environment leading to a scalable and sustainable solution. The pool of investors shares the risk with the innovators and their institutions and provides seed/scale-up funding for the innovation. At the same time, the attorney's ensure that the student led innovation is legally protected from the fortifiers. The talent office uses different means such as alumni connect to create a successful team for the innovation, usually comprising of youth and veterans who have previously demonstrated successful innovation evidence. As a result, the student lead innovation is set for a long-term journey in the market, addressing a real issue and bringing prosperity to the citizens of the nation.

WAIN aims to bridge the gap between academic institutions and corporate organizations and enables both to collaborate in terms of industry-led curriculum, skills development, project-based and strategic partnerships. This is not only essential for calibrating the graduate outcomes of academic institutions to the talent requirement of industry. But also for corporate organizations to seek innovative solutions outside their organizations for lowering the R&D costs in their perusal for maintaining market competitiveness and growth. Skilled and innovative students acquired by the corporate organizations from academic institutions further generate in-house intellectual assets on regular basis for their organizations.

The Open Innovation Model of WAIN is designed keeping the interests of academic institutions and corporate organizations balanced. This is because the former is primary source that prepares future leaders for a nation and the later acquires them and provides them real-life exposure for applying their knowledge. But, in order to bridge the gap between the two, it is their equal responsibility to initiate action. Therefore, WAIN provides equal opportunities to both, academic institutions and corporate organizations, to act on their behalf for social and economic progress through youth.

In the open innovation model led by the corporate organizations, the aim of industry is to provide youth with the examples of real societal needs and market gaps within the nation. The goal of corporate organizations in this context is to identify quality graduates who can apply their academic knowledge and solve real problems (see Figure 3). The impact focused, delivery oriented, innovative youth could be acquired by the organization on project based contracts and even on long-term permanent positions of responsibility within the organization.



Figure 3: Led by Corporate Organizations - WAIN Open Innovation Model

Corporate Organizations that are part of the WAIN regularly offers real problems faced by the society and the industry to

the youth. A typical mini challenge could fall in any sector, for example “Innovations in Elderly Care”. In this the problem statement could “seeking conceptual innovations on elderly health outcomes in the areas of: Nutrition and Wellness, Assisted Devices, Smart Homes, Community Care and Training”. The reason for urgent innovation requirement in this area could be “The global population over sixty is increasing by eight million per year and is projected to increase by twenty four million per year by 2030. By 2050, India's elderly population (above 65 years) will grow to a staggering 325+ million. In the 2015 report Opportunity knocks. Designing Solutions for an Aging Society, Cambridge researchers asserted that technological innovation is vital to meet the needs of an aging population.”

Mini Challenges provided by the corporate organizations are publicized on the WAIN platform. Young people such as undergraduate students ideate a feasible conceptual solution for the problem by completing the solutions template set by the organization and submitting it on the platform before the deadline. A typical mini challenge usually lasts between 1 to 3 months. All the submissions undergo preliminary quality check by the WAIN team before being passed to the challenge provider for review.

The top entries selected by the problem provider receive cash prizes, internships and recognition at an international stage such as MeltingPot2020 Innovation Summit. The most promising feasible solution is also offered scale-up rewards which include mentoring and funding for producing a Minimum Viable Product (MVP) that could be tested in the real scenario. At this stage, the Intellectual Property owned by the student could be shared between different stakeholders of the innovative project otherwise it always rests with innovators.



Figure 4: Led by Academic Institutions - WAIN Open Innovation Model

In the open innovation model led by the academic institutions, the aim of the institution is to showcase innovative real world solutions developed by their students to the corporate organizations, highlight their innovative students and the innovation quotient of the institution to the world. The goal is to deploy solutions for rapid, sustainable and resource efficient growth with the support of the industry and create new capabilities of growth in the forms of new businesses or markets leading to new employment opportunities expediting social and economic progress of their nation (see Figure 4).

Academic Institutions that are part of the WAIN continuously showcases real-world solutions developed by their innovative students to the Industry and to the world. A typical innovation listing on WAIN, shown in Figure 5, focuses on demonstrating the innovation impact in terms of novel features and application areas only, in order to maintain project confidentiality at its pre-mature stage. It is assumed that at this stage legal protection for the work has not been acquired – it may be in progress and market feasibility report is still pending. However, still interest is sought from the industry and other supporting entities in WAIN to take it to the next stage of success.

Figure 5: Innovation Listing on WAIN for Public View

A Corporate WAIN partner demonstrating interest in the innovation contacts the WAIN team to request for further information on the innovation. At this stage, WAIN as an *enabler of relationships between academia and the industry* contacts the academic institution and the innovators. Before the first roundtable discussion could take place, confidentiality MoU is signed between the entities with WAIN being the liaising body. This is done in order to protect the rights of the innovators, their host institutions and the interests of the corporate organization. Depending upon the market-readiness of the innovation, the parties can enter into: (1) Project Based Partnership Agreement – for developing the MVP as per the Corporate Requirements, (2) Licensing – exclusive or non-exclusive rights by the corporate organization to take it to market or (3) Transfer of Ownership – to practice in any manner as desired by the corporate organization. In either of the cases, the innovators are usually absorbed by the corporate organization; both academic institution and the innovators receive monetary incentives.

IV. CONCLUSION

WAIN is actively working towards forging long-term strategic partnerships between the academic institutions and the corporate organizations to enable social and economic progress and create new market and employment opportunities. It uses the successful existing project based partnerships as the evidence in the given relationship and addresses conflicts of interests to setup new Centers of Excellence at the academic institutions, chaired by industry endowments for conducting ground breaking research at public or private institutes in the country.

WAIN focuses on the creating success stories by providing well-connected network of supporting entities and multiple stakeholders to share risks and provide sustainable innovative solutions. The innovation outcomes not only solve local and national issues, but are also be of global importance and market value. Open innovation model of WAIN relies upon visible demonstrable evidence of applied knowledge, by students and their academic institutions and for industry by its

ability to take innovations to market. This is irrespective of whether Corporate Organization takes the lead in offering challenges or the Academic institution takes the lead in showcasing its innovation offerings. WAIN is working towards creating an impactful Ecosystem of Innovation empowered by youth. It can be accessed on www.wainconnect.com.

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