

Relevance of foresightedness in Startups: Understanding problems & finding solutions in the era of Industry 4.0: A perspective & view point specially relevant in Indian Context

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ABSTRACT Opening up of a large number of Startup in India in last couple of years, have setup a new dimension of development which is fueling the creativity and imagination of our young generation. Technology innovations seem key driver of this emerging platform. The eventual success and failure of this new mode of development shall be largely depends upon our ability to understand & exploit emerging supply-demand domains affecting different phase of life. An insight into how the industry and business sector has undergone changes under the influence of technology at consumer level over last few decades need to be analyzed in great details to understand and predict the likely behavior in future so that all these possibilities may be exploited by our startups.

KEYWORDS Technology | Startup | Industry 4.0 | India Problem

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Foresightedness is the key word in this context and background, which has been attempted to explain in this article with an example of emerging Industry 4.0 platform. In domain of communication, understanding the journey from making a trunk call then to STD call and then to operator driven Pager to mobile phone to satellite phone to Network driven communication opens up new possibility of development in near future driven by innovation and creativity. Knowledge, skill and manpower engagement enters and transits through new possible emerging domains.

This issue has multiple dimensions as one may find extremely difficult to understand all elements of foresightedness to the extent that we predict the future solutions aligning with the technology changes over a period of time. It is quite complex but intuitive in a sense that by seeing, analyzing and understanding a past evolution process (technology influenced behavior) one can somewhat predict the future behavior. I tried to contextualize your question by linking the issue with emerging **Industry 4.0** concepts driven by technology as being widely discussed and deliberated these days. New technology tools like Artificial Intelligence, big data analytics, deep learning, Robotics, Genetics, Bio-technology and Nano-technology etc. are expected to work together with different impacts in different domains of life to solve more complex challenges, anticipated to be facing us during this next generation era of **Industry 4.0**.

Industry 4.0 stands for the fourth industrial revolution. Over each of the past three industrial revolutions we had seen different drivers from steam powered machinery to electricity to information technology spearhead-growth. However, the fourth industrial revolution is expected to drive changes differently. Technology changes bring a variety of impact on social behavior and on handling daily life

situations which will have its own unique problems and solutions. This shall create a new pattern of supply-demand system in market which in turn will influence the labour engagement patterns including skill, knowledge and competency level of producers and consumers.

Technology, when changing from one stage to its next stage, some kind of oscillations set in the system (between the old practices and systems and the new possible emerging practices and systems) with reference to supply-demand behavior of the producer and the consumer. The transition phases pass through many stages before it finally gets settled at the new equilibrium point. All these happenings and scenario unavoidably give rise to new kind of problems and solutions.

In the present context, Industry 4.0 as a technology change driver is the best example to apply principles of foresightedness in finding solutions of different problems that may emerge during this transition phase.

I am writing on some of my thoughts that may suggest you gain some insight and hint into the complexity of the subject which might facilitate you in finding some more answers to the problem. Under the influence of these technology changes there shall be a variety of graded impacts in different spheres of life as some domains will get directly affected while some others may not. As a consequence of those impact, there shall emerge a new trend with revised priority and preferences of products and demands for services. The domains of skill requirements and knowledge composition of manpower shall also undergo a change with change in the pattern of labor engagement and growth of new types of occupations.

History of technology transitions in recent past: A few examples

One needs to minutely look into the transitions pattern that had happened in recent past, over the last 2-3 decades. Typically, the Branch Manager of a bank who used to get concern with large queue in front of different cabins now gets concern with queuing problems as happening in their information-processing/data-networks system. Employees too used to have only two distinct domains of life, one as official, and the other as personal, with little and occasional overlapping and intersections. But, now this has changed, some employee may work in real office and then transit to virtual office (after office hours) and others may transit from real home to virtual home (during office hours). This new behavioral pattern shall generate the need of introducing new HR Policy(s) in different organizations in the time to come. Some of the transitional phenomena one can see in following examples:

1. Transitions happened in very recent past. There used to be a common scene during late 1980s, when you always notice few shops with a yellow hanging glowing board written with STD calls etc. in any highway or narrow lanes. There used to be a big queue of customers to get their chance to make a call to near and dear ones. Now, during 2018, one can always see similar set of arrangement with shops named as "E-Mitras" which are deliver all kind of computer aided services, right from online forms/applications, net facility with a bit of xerox and other services. Technology changed the labour-engagement-pattern, which caused changes in business-model. One kind of communication-demand generated several kinds of communication-demands, fulfilling the ever creative mind of mankind.
2. Take another instance, during early 1990s when there used to be huge queue in post-offices/banks with facility for token distribution to permit time stamped services to customers. Everyone used to wait for their turn and one usually witnessed huge rush on the last working day of months in banks, and on the last day of submitting job-application to be sent by registered-post in post-offices. These days, this pattern does not exist, but the system has switched over to another domain where one needs to wait again for a coupon in a typical mobile repair centre or for any new service. What is observable is the entire shift of manpower from one kind of engagement to another kind of engagement, but showing many similar conditions and situations among different work-places ; and the entities providing services required different sets of skills and knowledge though under similar relationship between the customers and the service- providers.
3. Around two decades back when computer was introduced into the market, it not only replaced typist job, but in the process reformed the entire process of information handling and communication and also created new avenues and dimension of development. In essence, it created a new set of demand in a variety of segments driven by needs for further development, new quality parameters, and more perfection. Technology may suppress demand of manpower in one domain but creates ample demand in other domains and in process take the development into wider and deeper areas.
4. In essence, one can see that the queuing problem shifted from post-offices and banks to mobile repair centers to customer care-desks. Data and information flow, transmission speed and queuing-up started happening in high-speed networks. Instead of 'mankind', it is 'data' that is



queuing-up and if we can solve data queuing-up problem, we can make mankind a little happier in their daily life. Post-offices that used to function for '8-Hours' are now handling posts on '24-Hours' basis as they shifted business to achieve economy of scale. Banks that used to be extremely busy only on month ends, but now remaining busy all the times in handling the variety of growth of new financial instruments with loads of queries associated with each of them. Pattern and methodology of fund investment and saving have undergone massive changes, facilitated by major technology changes in IT domain in the background. Technology changes reduced human crowds in banks and post-offices, but it created and added-up many newer domains, more complexification of instrumentation, and unending list of instruments, all being associated with still new conditions and functionalities, which together, in a sense, made human life much more complicated encountering ever present possibilities of data-crowding, server-failure, and mechanism-jamming, routinely, even in unexpected occasions, places, and times.

An insight into transitions

Industry 4.0, in its essence, has taken birth duly driven and guided by the emergence of a unified information and knowledge-base with integration of resources and capabilities to manipulate, to assimilate data and information, to predict trends and behaviors that, in a sense, have opened up new avenues of multifaceted development. Advancement in Information-flow with speed and spread has developed a new pattern, capacity and flexibility to deliver goods and services. A person working in one industry at one rank and position and another person working in another similar industry at same rank and position may differ greatly in their functional capabilities in delivering goods and services depending upon their ability to connect with

the massively networked grids of information and knowledge that ceaselessly exist behind the screen in the virtual world.

It is true that a new system in course of its emergence also prepares and generates new set of manpower, knowledge and skill that shall eventually help to promote the new idea and concept as propagated by the new system. Mankind is gifted with a beautiful instrument of 'Mind' that always looks forward and ceaselessly work to produce something better and advanced than the previous version. New version and new system with advancement is the key of mind functioning driven by power of desire in technical sense. This drive of endless desire in the process creates new systems and processes that may not exist in physical world at that moment of time. When there is Industry 4.0 in the eco system, Mind shall naturally tend to imagine, engage and work towards Industry 5.0. This process goes on eternally. As an example the process of switching on a TV graduated from Manual system of pressing a button on TV to Remote system and now to sensor based system driven with inputs that triggers the sensors. This ability and characteristics of Mind to achieve unfulfilled desire gives birth to new advancements through innovations. This creates ample opportunities for new businesses and startups.

Some of us fear that that emergence of new technology may make the manpower redundant, which, on the contrary, might make manpower more engaged but differently, in a new pattern, on a new platform, over new strata, into a new direction, and with a new scope and possibly with new engagement. Desire of 'Mind' (a constantly incrementing push-factor) may not retrench manpower, but surely will re-distribute the emergence and growth pattern of manpower which finally trickles down to growth of corresponding skill and knowledge level of manpower.

As human life becomes more comfortable with technology interventions and, in a sense, induces certainty in its outcome, but at the same time, the factor of uncertainty may become more relevant and pressing in life. Breakdowns, failures will have undefined consequences and implications. We are customized and trained to an extent to tackle emergencies arising out of fire, electric shock and breakdown of elevators and lifts. But, the consequences on account of data and communication breakdown are not known clearly and totally at this stage. Need to develop the counter-tools and their use in future encompassing all domains of life may make 'life' further complex.

In a typical **Industry 4.0** scenario, car manufacturing facilities may have robots and automated facility to carryout routine and standardized, structured and well defined welding and assembling task with minimum human intervention, but at same time demand for a welder still remains to address task arising out on account of unpredictable work requirement. Thus, Industry 4.0 shall have more influence to affect the standardized works but unpredictable work of failures and breakdowns will still look for human interventions. This scenario demands enhanced skill and knowledge level of a welder to operate and deliver in a multi-platform environment. Involuntarily, many of us might have already started working in Industry 4.0 environment, but the challenge is that how do we align our massive work-force with new system with mapping and building-up of new skill and knowledge levels.

Technology Changes: In context of India: What all situations likely to emerge?

India is a massive country in terms of size, population and variety in living expressions. One cannot perceive India as one composite and unified structure in terms of consumer behavior and adaptability to emerging technologies. One can witness a variety of working life styles with least dependency to maximum dependency on

technology, system and tools. A variably large part(s) of population working with varying dependence on Industry 1.0 to Industry 4.0 era techniques and tools can be witnessed in India. This may be true in case of countries with massive population, countries with huge variations in supply and demand, countries where the driving-force of its population-segments is mostly guided by averaging of phenomenal variations. Use of average-phenomena criteria will continue to remain more pronounced in large countries like India, where the future work-force (represented by large population-segments) shall remain in pockets, their job-description, work-environment and skill-set shall remain restricted in different sub-pockets / work-capsules across the overall industrial set-up of the country.

It is envisaged that technological advancement shall induce many structural changes in labour-market with an expected rise in productivity and income level among different stake-holders. However, many of these changes (both at input-stage and at output-stage) may be different in the overall context of India, considering its massive size and diversity in every different living expression.

1. Unipolar or a fixed set or a fixed pattern of supply-demand (goods/services) shall be gradually replaced with variety of supply-demand patterns, based upon faster innovation and up-gradation in the existing systems. This may be true in case of both products and services. In the present note, we have not vividly brought out the aspect of different patterns of demand that may emerge in the market where demand may be driven due to increased need of quality parameters and due to variety in products and services.
2. The in-effect transition together with its outcome will be gradual as introducing new technology may be quick but adaptation to a new environment and transmitting the expected impact of technology among the common masses shall be a long journey and in a sense this will give rise



to hybrid market concept. There will be a mixed trend or hybrid model of businesses with graded layers and structure of technology dependence in different components of value chain. There may be variety of markets led by Industry 1.0 to Industry 5.0 system-concepts and all of them co-existing at the same time, may be within a limited business-component, may be within value-chain of a complete business-cycle. This will lead to a hybrid kind of market with more complexity in consumer behavior. Technology driven future work-force may be concentrated around metros and bigger cities and in their periphery but larger part of nation shall be under the influence of hybrid model (technology-mix population). There may be a mix of developed and under-developed areas within same business/industrial environment in the country and thus may need and be driven by different kinds of policy and developmental framework.

3. Technology exerts its influence on different individuals differently when one works in an office and when one works in off-working hours. Technology prevails everywhere, in office, en route, and at home. The experience of technology gained through cross-learning and self-learning proves to be an important tool. An employee may not remain engaged with one employer as he/she will be engaged in a variety of task matching to his/her skill in different timings of engagement. Fixed timings, fixed engagement, fixed employer shall get replaced with new patterns of varied and customized arrangement.
4. Issue of zero-error or zero-disruption, and highest quality (quality graded product/services) shall gain more importance as we move toward technology-driven perfection in everything, from products to services. Breakdowns, failures and disruptions will become extremely costly. Lots of manpower shall be engaged to address this demand. On frontal end, there may be

less manpower but at the backend, in order to maintain the system, there shall be multiplication of engagements.

As the technology and automation process start getting integrated with business-system life-cycle, there shall be increased fear of disruptions. Disruptions likely to be caused by basic support system like electricity, water supply, housing and health issues. This may in turn create new demand for investment in basic support system and massive investment may take place to secure these needs. Demand for manpower in basic services and issues shall increase by manifold.

5. Robot may replace manpower in a typical automated factory but the extra manpower may get engaged in housing, maintaining and servicing the robots. Automation may relieve manpower engaged in doing a task, but additional manpower shall be required to service and maintain the eco-system of automation. This may require re-deployment of manpower from one domain to another domain that is driven by technology.
6. Human aspirations shall become high and shall drive and prompt quicker innovation with new products and services. Demand for product and services with customization shall increase manifold with higher demand toward uniqueness and disruption free supply. Manpower intervention shall increase in backend to meet this demand.
7. Technology may create new kind of manpower requirement irrespective of position, gender and education background. World will move towards integration and may rise to new variety of co-operation between local governance and universal employers.
8. One can say that cost of capital goods will fall with increased automation. But it may also happen that demand for customized goods shall

increase manifold. Production may move from mass production to customized production, from mass transportation to customized transportation. More customized product and services and manpower shall get engaged in this new domain.

9. Generalization shall move toward specialization and shall develop policies centric toward individuals or a group of individuals.
10. Digitization and Automation shall facilitate large-scale implementation of welfare schemes for better outcome and quality. Planning and formulation of social welfare schemes shall be changed requiring set(s) of different kind of skills among planners and implementers. The present trend of data dependent analysis and outcomes shall be replaced by AI based techniques. AI concepts shall be increasingly used by planners at apex level. Social schemes shall be more driven by technology to listen, hear and see real outcomes and challenges. Design of any social welfare schemes considering India's massive population and demand for high scale operations, need to be embedded with technology to understand, predict and auto correct its design and implementation methodology. It is something like an intelligent control system embedded in the missile launching system, carries out auto correction operation to modulate the pathway and guide the missile into unhabituated areas of ocean in case of emergency. Possibility of introducing such inbuilt course correction design may be embedded in different social welfare schemes operating in domain of health, poverty alleviation, skill & education and other domains. India's massive size, population with diversity

in different fields requires a unique program methodology and structure with appropriate integration of technology to implement any scheme efficiently with optimum utilization of resources. Filing income tax return, ticket booking in trains, extending poverty alleviation benefits etc appears small processes at individual level but when the same action is aggregated at national level through unified and structured portals that induces various complexity in our system on account of massive scale of operation unique to our nation. India is thus blessed to always adopt technology commensurate with its size, population and diversity.

Conclusion: To conclude, one may summarize that factor of foresightedness is becoming highly relevant in this fast changing world amid multiple technology interventions. New emerging platforms like **Industry 4.0** shall have its own strength and limitations and pose new challenges and problems to society. Start-ups and new entrepreneurs need to understand the complexity of these transitions from societal and behavioral perspective and prepare themselves with greater insights for developing the problem solving tools further. One can predict about the emerging future businesses of products and services by understanding and analyzing the past trends and transitions that have happened over last few decades. In context of India, the impact may be influenced more by the theory of averages, applying and extending from one segment/area/region/sector to another, from one kind of life-style/social-behaviors to another kind in search of ways and means for validating, substantiating and paving way for new innovations and diversified opportunities in providing and marketing of services to population-segments in times to come in future.



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The Editorial Board had used the urkund plagiarism [http://www.orkund.com] tool to check the originality and further affixed the similarity index which is 6% in this case (See Annexure-I). Thus the reviewers and editors are of view to find it suitable to publish in this Volume-10, Issue-3, July-Sep, 2018

Annexure 1

Urkund Analysis Result

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