

Innovation Readiness Survey Report



Innovation Readiness Survey – Pune Technology Sector

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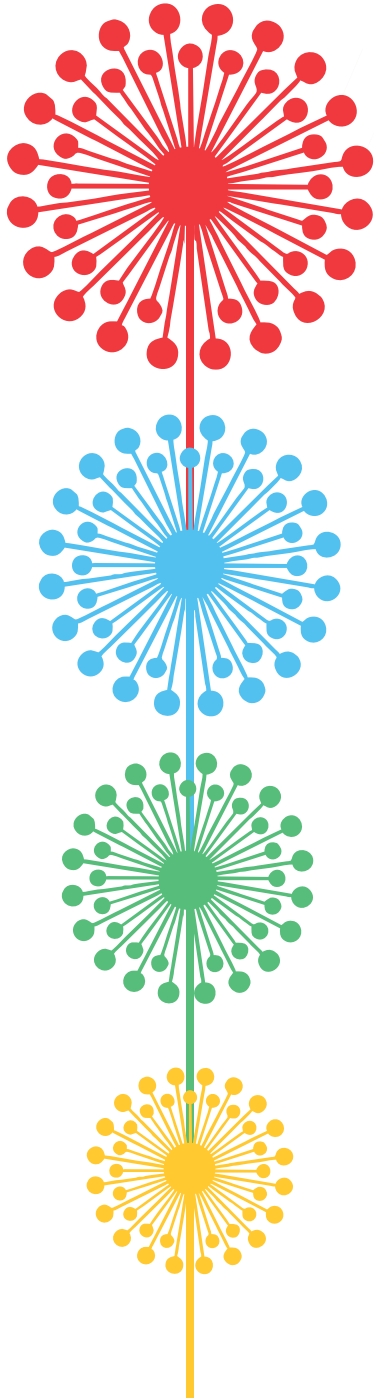


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Executive Summary

Most global technology companies have a presence in Pune, as do numerous Indian MNCs, SMEs along with an ever-growing startup sector. Lately the IT sector ecosystem has grown to the extent that Pune is now amongst the top three software exporters of India. Despite this fact, Pune is yet to be recognized for its innovation readiness.

Objective

SEAP, along with its knowledge partners, decided to conduct a survey about Pune technology sector's Innovation Readiness. The aim was to capture facts and opinions, evaluate the same and present some insights. The intended outcome was to establish what has been achieved so far, as well as to recommend the way forward.

The study surveyed top management, middle management & technology professionals from 55 IT and technology companies from Pune. The survey was conducted during March-April 2017. Invitations to participate were sent to 390 professionals. The total number of participants was 109, resulting in a response rate of 28%.

The survey design itself included questions related to input drivers and output measures for innovation. A few questions sought opinions, demographics and perceptions. The input drivers and output measures were categorised in the framework of four key drivers- Strategy, Talent, Environment and Process (STEP).

Key Findings

- Responses indicate that most companies in Pune are involved in innovation activity. However, the intensity levels of innovation and its management varied. Using a statistical approach, we categorised these responses as STRONG, MODERATE and WEAK. Only 11% responses scored STRONG across multiple inputs drivers and output measures.
- A successful Innovation Management framework needs various elements of STEP to be put in place. An ad-hoc or partial approach does not work. While addressing all these four drivers an emphasis on creating the right Environment is important in the first phase, followed by strengthening Strategy, Process and Talent in that order.
- While citing opinions, a third of the respondents expressed the need to attract and develop talent specifically for innovation – within the industry and the academia. Another one thirds expressed the need for stronger collaboration and networking between stakeholders- within the industry and with academia in particular. The remaining one third want a better infrastructure which includes transportation and convention center. They also expect a stronger communication within the ecosystem which can foster innovation.
- The churn caused by Digital Economy, an element of the 5th wave of innovation, is yet to settle down. At the same time the 6th wave of innovation¹ is knocking at our doors. Apart from technical skills, this is likely to continue to put pressure on demands for higher level thinking skills, deeper understanding of the business, social and sustainability needs. Tech companies may recruit non-engineering candidates to bring in the needed diversity. Leaders need to become adept at making the right strategic decisions to prepare their organisations. Existing employees need to take care of their personal development.
- Nurturing the innovation potential collectively and holistically should thus be the direction, based on the study of survey responses and our assessment of multiple trends



Introduction

Pune's Technology ecosystem is a very vibrant one. Most of the global technology companies have a presence in Pune, as do numerous Indian MNCs, SMEs along with an ever-growing startup sector. Pune has already established a thriving manufacturing ecosystem for many years, which has expanded beyond Pune. It has its own share of research and academia ecosystem. Lately the IT sector ecosystem has grown to the extent that Pune is now amongst the top three software exporter cities of India².

However, when it comes to INNOVATION, Pune has been carrying the EMERGING tag³ for quite a while. At the same time, innovation activity seems to be picking up. Local companies exude a lot of confidence in Pune's ability to play a more significant role and be recognized as an Innovation Hub in the coming years.

Objective

To assess the Innovation Readiness of Pune Technology Sector, SEAP along with its knowledge partners decided to conduct a survey to capture facts and opinions, evaluate the same and present some insights. The intended outcome was to establish what has been achieved so far, as well as recommend the way forward.

Research and Analysis Methodology

The scope and the approach of this survey were initially defined.

The scope

We sent the survey questions to executives, managers and technology professionals of Pune based technology companies. The questions were based on four key drivers.

The framework

Various industry research reports that capture the best practises of leading innovation companies as well as the ever-shifting trends along with thought articles from management gurus, list a multitude of elements which are needed to build the Innovation Capability. After studying many such reports and articles^{4,5} we identified four key drivers which represent these multiple elements and form the foundation for the framework – STRATEGY, TALENT, ENVIRONMENT & PROCESS

Strategy

Innovation success of a firm depends on having innovation, not as a second-cousin, but as a part of the mainstream business strategy. Identifying Innovation focus areas as a part of the overall business strategy, having a road map & demonstration of commitment are a few examples

Talent

The need for skilling new talent and up-skilling existing talent is extremely important. Apart from learning new technologies, programming languages & tools there is a need to develop new competencies to achieve superior performance with changing times. This is true for executives, managers and individual professionals.

Environment

Having the right infrastructure, resources, policies and culture within the firm plays a significant role in motivating employees, removing barriers to creativity and encouraging collaboration- both within and outside the firm.

Process

Innovation activity by nature is chaotic when compared to operations. At the same time, it needs a process so that its progress can be monitored and risks are minimised. However, operations processes are not suitable for innovation. A careful selection of process to manage innovation is needed. Thus, the right innovation process and metrics become essential ingredients.

The study surveyed top management, middle management & technology professionals from 55 IT and technology companies from Pune. The survey was conducted during March-April 2017. Invitations to participate were sent to 390 professionals. The total number of participants was 109, resulting in a response rate of 28%. There were 52 responses from Top management, 29 responses from managers and 28 responses from technology professionals.

Some of the survey items were classified as innovation output measures and several others as innovation input drivers.

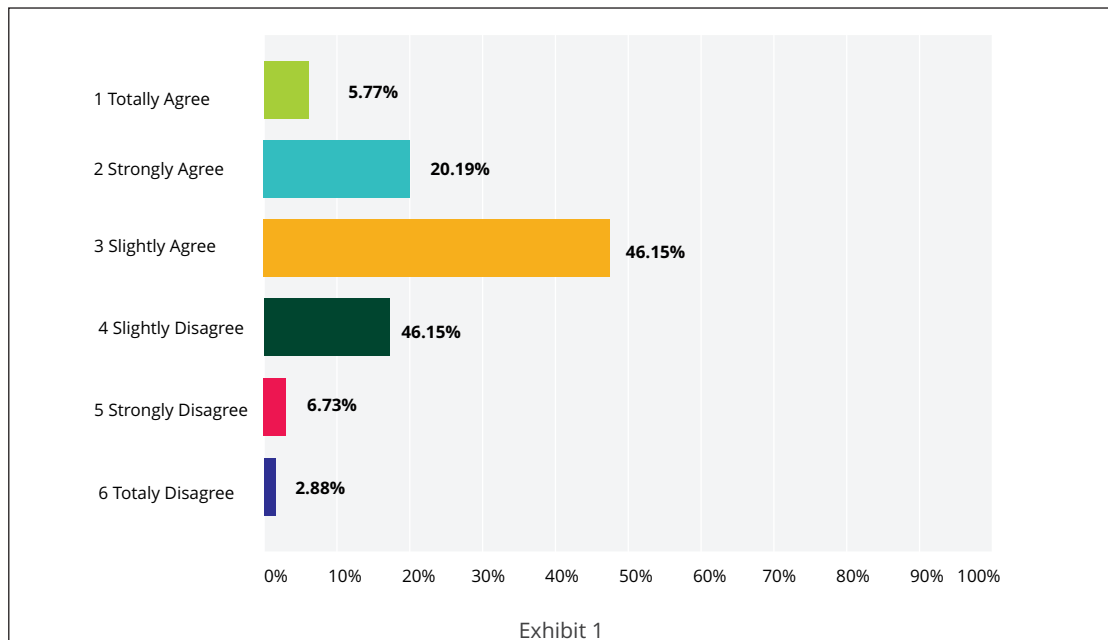
The links between various input drivers and innovation measures were calculated as Pearson's r correlation coefficients, which use a range of +1 for completely positive correlations to -1 for completely negative correlations. (A correlation of zero means that there is no relationship at all between two variables.). In this analysis, correlations with p values of <0.01, <0.05, and <0.1 have "very high," "high," and "low" degrees of statistical significance; although most of the inferences have been made with a p of 0.05.

Besides the Pearson's correlation, scatter analysis was also done by visual study of tabular classifications to identify any inherent patterns within the data.

Perception about Innovation Capability of Pune's Tech Industry

During our pre-survey discussions with multiple industry people within the ecosystem, we got mixed responses, which could be summarised as Pune being on the right track, but there is ground to be covered. Some responses were directed towards ecosystem development, some towards companies and rest towards infrastructure, research capability, ecosystem interaction, skills upgradation, need for innovation strategy and mentoring. The survey aimed to capture some of these opinions.

Employees perception that their company has embraced the culture of continuous innovation: At an aggregate level, 26% respondents strongly or totally agreed that their company practices continuous innovation(Exhibit1). 25% of top management felt the same. For managers, the corresponding number was 17%, whereas for Technology professionals it was 32%.



Respondents were also asked to rank 6 Indian cities (Bangalore, Chennai, Delhi/Gurgaon, Hyderabad, Mumbai and Pune) according to their overall innovation capability. Bangalore earned the 1st rank from 74% respondents, whereas only 5% respondents gave the 1st rank to Pune. However, Pune earned the 2nd rank from 32% respondents while 26% ranked it 3rd.

When asked, which the most innovative global destination was, 59% respondents voted for USA, specifically Silicon Valley. The other votes were distributed amongst Israel, Japan, Nordics, Singapore, Korea and China.

Choosing the Output Measures: Innovation metrics is an evolving phenomenon. In fact, in response to an independent question regarding metrics used to measure innovation success within their company, 64% respondents said that they were either not aware or metrics were not in place. Only a handful of respondents mentioned the use of financially oriented innovation metrics, but were not able to give any further specifics. Against this backdrop, we selected four simple measures which could be derived from survey responses and denote the innovation intensity within a company.

- Number of Idea-to-execution innovation projects completed by the Pune center
- Number of patents awarded to Pune employees within a company, singularly or jointly
- Intensity of Experimentation within a company
- External recognitions received by the company, specifically for Innovation

Choosing Input drivers: Similarly, the survey included questions about input drivers which impact the above mentioned outcomes. There were totally 24 questions distributed across the four key drivers of Strategy, Talent, Environment and Process.

The Internal Ecosystem

% RESPONDENTS	STRONG	MODERATE	WEAK
STRATEGY	24%	54%	23%
TALENT	24%	49%	27%
ENVIRONMENT	21%	58%	22%
PROCESS	32%	42%	25%

Exhibit 2

The findings at a high level:

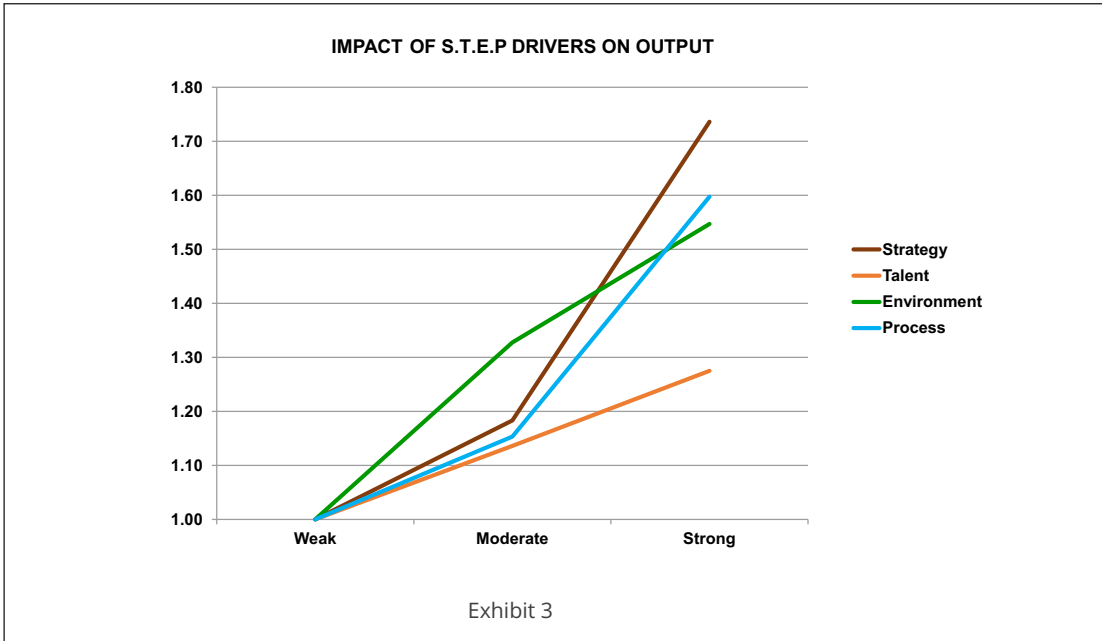
Exhibit 2 shows the percentage responses across the four key drivers. The statistical model takes into consideration the distribution of responses across each individual driver. The table shows that the percentage of respondents who believe their organisations are STRONG across each of the four drivers of S, T, E, P individually are 24%, 24%, 21% and 32% respectively.

However only 11% respondents rated their companies STRONG across all the four drivers collectively, 28% rated their companies MODERATE across all the four drivers and 6% rated their companies across all the four drivers as WEAK. The low percentages of the WEAK indicators show that Pune companies are making a quiet progress to build innovation capability, but the low numbers in the STRONG indicators demonstrate that only a handful have managed to achieve a level of maturity.



Impact of STEP drivers on Innovation Output

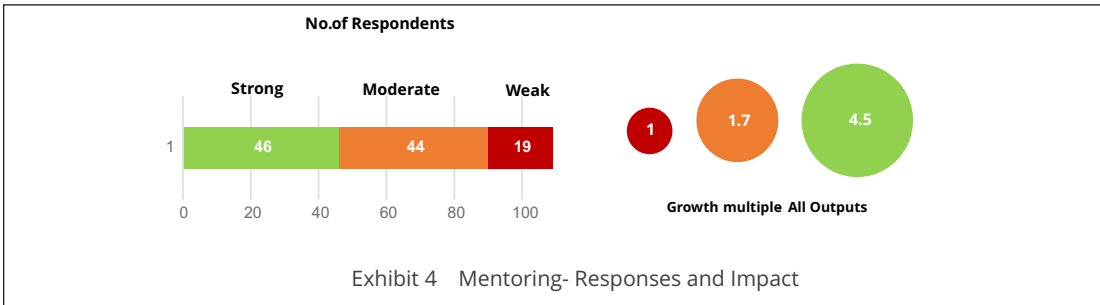
An analysis of the output metrics between the weak, moderate and strong categories reveal that while companies with weak S, T, E, P indicators were in an “ad-hoc” mode of innovation, companies with moderate indicators had put in elements of S, T, E&P in place. The biggest influencer during this phase was Environment. On the other hand, those companies with strong indicators showed positive impact on the output metrics through Strategy, Process and Talent, in that order.



Impact of Individual drivers on innovation output

Responses received to 29 Individual questions designed within each of the key drivers were analysed for their impact on the 4 output indicators. Some examples of individual input drivers are mentioned here.

Impact of Mentoring by senior management showed a significant correlation to all four outputs indicators of this study. Leading companies like Whirlpool have implemented Innovation mentoring program for many years. 42% respondents state that such mentoring is strongly practised in their companies. As companies move from absence or scarce mentoring to strong mentoring, the cumulative potential increase in innovation outputs is 4.5X.



Development Programs

76% respondents strongly felt the need for formal development programs that teach principles, skills, techniques of Creativity and Innovation Management. 20% respondents stated that their company has them. This driver showed a strong correlation with experimentation and the number of innovation projects executed. Titan, an Indian company, has an Innovation School of Management for its employees in its pursuit to build a culture of innovation

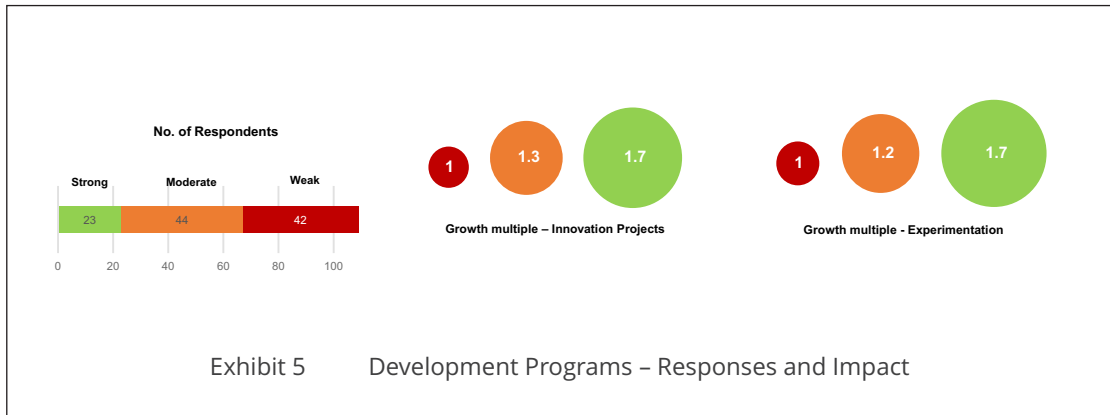
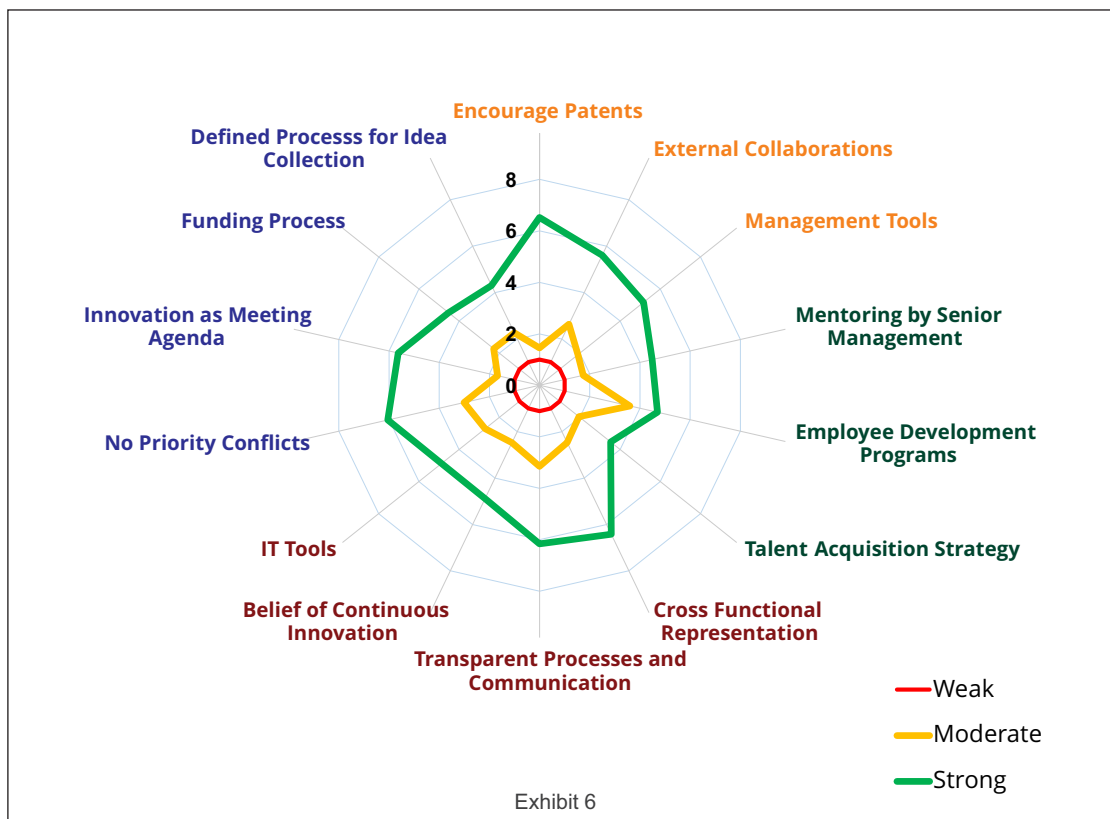


Exhibit 6 depicts the aggregated impact of multiple input drivers on innovation output, based on the survey responses. The two graphs also show the progress companies can make, when they move from elementary (weak) to intermediate (moderate) to mature (strong) levels of innovation practices



Some interesting observations :

- To the question if Innovation was a KPI for all employees, from leadership to individual contributors, 50% respondents asserted positively. Further analysis showed that half of such respondents were from senior management, the remaining half were middle management and individual contributors. However, to a related question of what innovation metrics were used, 82% of the middle managers and individual contributors responded that either metrics were not in place or they were not aware. Strengthening the performance management process can yield better results. This also highlights how HR can contribute towards enhancing innovation capabilities.
- Only 22% of the respondents asserted that there are no conflicts in managing operational deliverables versus innovation projects. However, the survey also shows that the ability to manage operations and innovation priorities significantly improves innovation success. Companies should thus strive to improve management of such conflicts.
- It is well known that transparent and well communicated processes boost productivity. From the responses, we note that one third of the respondents have asserted that innovation process within their company is transparent and well communicated. The survey reveals that this parameter has a strong impact on innovation output. Having put a process in place, companies should ensure that there is enough emphasis on educating its workforce to reap the benefit.

Building Innovation Capability – A STEP at a time

Building Innovation Capability is a journey, one that cannot be achieved in a short time. There are multiple elements in the STEP framework which need to be put in place. The effort can be overwhelming for some. For companies with a clear charter to build such a capability, this may be a relatively easier task as compared to those centers where there may be a desire to build the capability but the empowerment to do so does not exist. The decision centers could be elsewhere. Based on the results obtained about the impact on innovation related activities, a roadmap for building innovation capability is recommended (Exhibit 7). A framework may be easy to understand but same may not be the case when it comes to implementation.



Exhibit 7

Out of the four key drivers, an emphasis on creating the ENVIRONMENT to ideate, experiment and innovate is likely to galvanise the organisation into action, in its first phase. This should be followed by strengthening the STRATEGY intent which was earlier loosely formulated. This will require leadership which can identify impactful directions for the company to invest. Following this the companies should concentrate on strengthening the existing PROCESS for careful alignment with the strategic intent. There are different types of processes which exist. Which one to adopt and to what extent it should be customised is a crucial aspect. Finally, one must align its talent needs based on these requirements. This can help define recruitment strategy as well as up skilling existing employees across all levels.

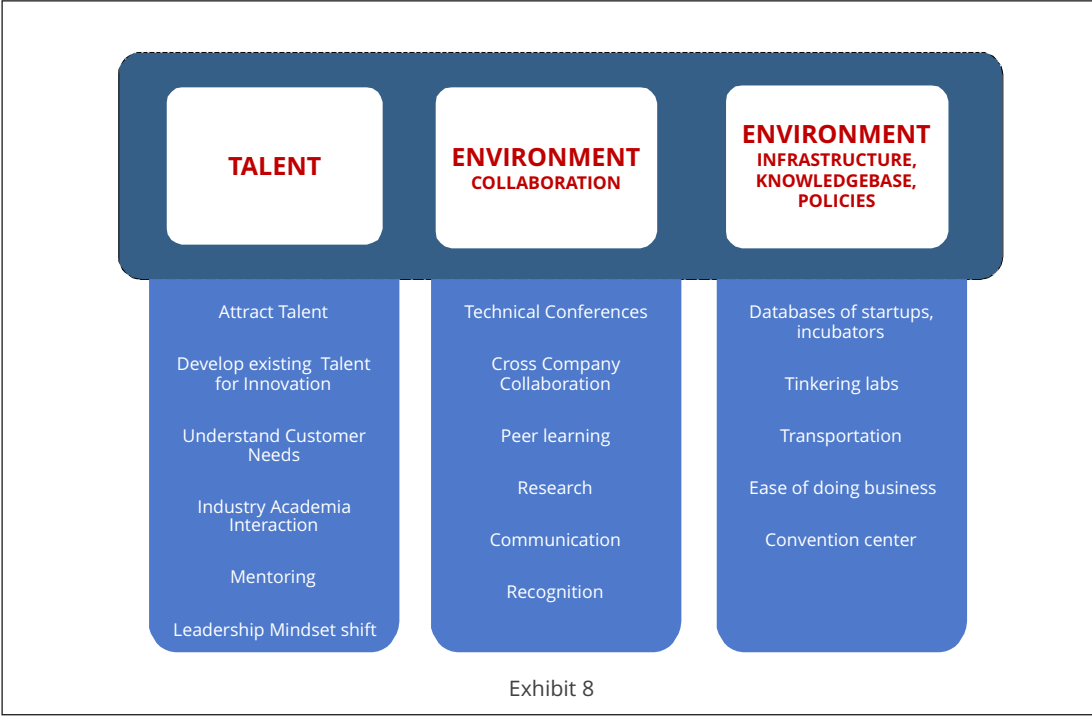
It should be noted that attention needs to be paid to all key drivers, it's just that the emphasis on each driver should shift in a planned manner. Unless an organisation has adequate resources such as time, money and talent to handle all the elements simultaneously without sacrificing priorities on hand, a phased approach is preferable. Such an approach will provide better visibility to the progress being made. Some companies may feel that the order should be changed, based on their priorities. As can be seen, the STEP approach provides that flexibility.

The External Ecosystem

While the survey responses and its analysis in the earlier sections have focussed on nurturing innovation within a company, it is only when the city is recognised for its collective strength, does the economy in the region start blossoming. We do not have to look far. The growth of the IT sector in Pune during the last decade has not only created direct jobs, but indirect ones too. However, the current activities are still based on paradigms of the yesteryears viz, cost arbitrage, talent augmentation, outsourcing etc. While some companies have been moving up the value chain, by setting up an innovation center, others pre-dominantly continue to operate as a “software services” house. Not surprisingly, we rarely reference a Pune company for an innovation which may have impacted the nation or the world. It may not be incorrect to say, that in most cases, the innovation that happens is more likely incremental or marginal.

So how exactly can the quality of innovation be elevated? Amongst many factors which improve innovation quality, one aspect which stands out is that better ideas emerge and combine to form a more powerful idea through effective networks. Increasingly, innovation is springing not from particular industries or disciplines, but rather across them, says Frans Johansson, author of *The Medici Effect: What Elephants and Epidemics Can Teach Us About Innovation*⁶. Large companies create platforms for themselves in pursuit of finding such intersection. As an example, Proctor and Gamble have their Connect & Develop, Shell has Game changer for co-innovation. Similarly, Pune based companies such as KPIT and Persistent Systems have created their own platforms for engaging with students, universities, research labs and partners, thus tapping the innovation potential from multiple sources. A few incubators such as those established by CIIE, Nasscom, STPI, Venture Center, Maharashtra Institute of Technology's Eduguild, BHAU Institute & TiE offer platforms to start-ups where they can shape their business ideas and models. An Electronics manufacturing cluster is being jointly developed by MCCIA and IESA. Similarly STPI, College of Engineering Pune and CDAC would be establishing an electronics incubation center, backed by the state and central government⁷.

Another important element for innovation is Research. It appears that very few companies are engaged in Research activities. One of the indicators of Research activity within the industry is hiring of PhD candidates from colleges. Interviews with industry professionals elicited responses that either they have not considered hiring PhD candidates or in very few cases, they were not able to find the right talent. On the other hand, interview with academia indicated campus hiring from companies was restricted to Bachelor and Masters degree candidates.



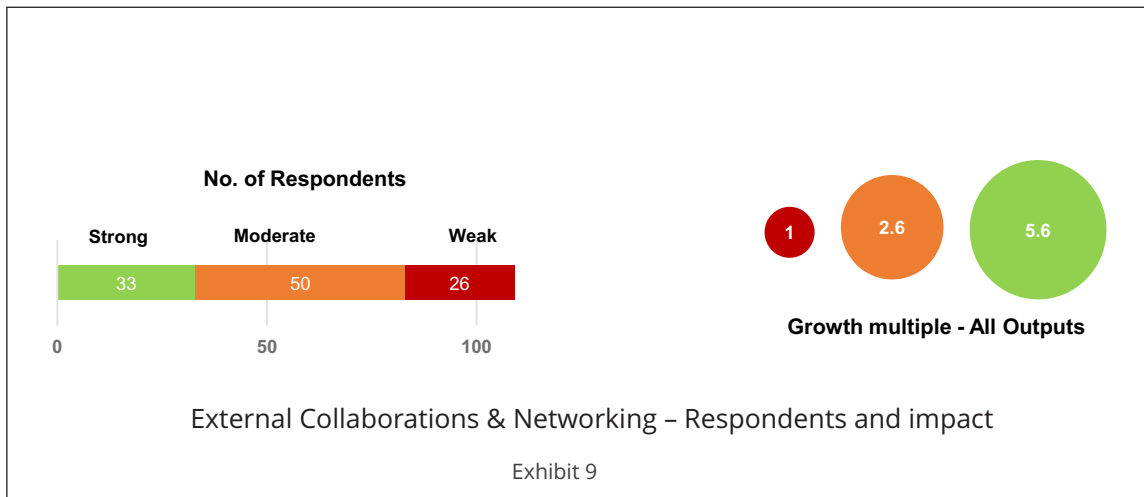
Against this backdrop, apart from seeking responses to stated questions, we also asked respondents what in their opinion is needed to make Pune an innovation hub of the future. Given the open nature of the questions, we received many interesting responses. We have categorised them as shown in Exhibit 8. This shows that there is an expectation from the industry to build external networks to foster innovation capability.

Innovation Talent

Further responses also indicated that while 67% respondents felt that there is enough talent available, 96% of those same respondents felt that to strengthen company's Innovation Capability, it is necessary to train employees on Creativity and Innovation Management methods and tools. Thus, talent development programs are needed to upskill existing talent within the company. Similarly, industry and academia need to work closely to see how innovation learning can be woven effectively in academic curriculum.

External Collaborations and Networking

We asked respondents if their company is actively engaged in external collaborations and networks with individuals and institutes solely for purpose of research, fresh perspectives and ideas. 30% respondents asserted that their company did. A strong positive correlation was observed with innovation output measures for such respondents, as shown in Exhibit 9.



The need for a vibrant ecosystem

It is true that many Pune technology companies need to develop their innovation capability internally. A more positive view would be that there already exist many tech companies that span a wide range of products, services and domains. The talent within these companies is highly aspirational and has a lot of potential perform at the next level. These aspirations and talent potential need to be collectively nurtured. What Pune needs is an ecosystem which becomes a catalyst to magnify innovation activities.

The Future of Innovation

Given the intense and frequent advances in digital technology, companies are exploiting productivity benefits that come with it. Companies will need to redefine their business models. They will see many of their customers do so too. Sustainability of natural resources and environment are predicted to drive the next wave of innovation. All these will call for different level of skills. Leaders, managers and technology professionals need to upgrade their skills⁸. If routine tasks are taken over by automation, machine learning and artificial intelligence then humans have to perform at the next level. Managers and Leaders need wider domain and thinking skills. Companies are more likely to hire more diverse skills. This in turn would influence campus hiring. Thus, academia needs to prepare itself too. One can imagine the ripple effect across multiple stakeholders of the ecosystem.

Pune has many components of the ecosystem in place. The survey results nevertheless show that they are fragmented and not accessible to all. It is therefore desirable for a few key stakeholders to come together and identify the new needs and gaps. An ecosystem would work efficiently when it is effectively connected. The stakeholders include Companies, Universities & Colleges, Research Labs, Government agencies, Start-ups, Mentors, Consultants, incubators, markets, employees etc.

Pune stakeholders should consider developing an “EcoConnect” platform, which can enable one-to-one, one-to-many and many-to-many interactions. Such a platform needs physical as well as virtual infrastructure, that enables multiple interactions, business discussions, business connects, discovery of market opportunities learning and information sharing. In the Digital Economy, technology can thus be leveraged to build effective intersections. (Exhibit 10)



It appears that beyond the churn that is generated by the Digital Economy the Sixth Wave of Innovation is knocking at our doors, as described in the book “The Natural Advantage of Nations: Business Opportunities, Innovation and Governance in the 21st Century”. It will hardly be surprising if the sixth wave of innovation puts further demands on companies and individuals. Experts are already predicting that in the coming years, apart from technical skills, higher level thinking skills and wider domain knowledge will be required at executive, manager and individual contributor levels.

Conclusion:

Pune has proved itself in establishing a manufacturing and technology ecosystem that were primarily aimed at building production efficiency. In the technology world, we see lots of start-ups mushrooming in Pune. A few of them have made it to the global stage. However, with rapidly changing environment, armed with both the potential and aspiration to innovate, Pune stakeholders need to come together yet again. As the survey indicates, Pune has young as well as established companies, having achieved different maturity levels of innovation capability. Building Innovation Capability with the aim of being recognised as an Innovation Hub needs additional efforts.

- 1 Companies that are yet to begin their innovation journey need to start building their internal ecosystem. Those who have started their journey, need to continue to strengthen it. Leaving it half way or being satisfied with marginal progress will not prove beneficial overall. Survey results show that improvements are needed in many areas within a company. For companies that have achieved a level of maturity, a periodic review and refresh of the approach is needed. In short, it is a continuous journey.
Strategy, Talent, Environment & Process are four key drivers which need to be carefully considered. Given the complexity involved, a step approach is recommended earlier in the section Building Innovation Capability – A STEP at a time. This means that everyone in the organisation needs to understand what innovation is all about and enable it. This will call for upskilling existing employees at all levels and functions, in Innovation related activities.
- 2 The ecosystem will need to play an important role. The stakeholders include Companies, Universities & Colleges, Research Labs, Government agencies, Start-ups, Investors, Mentors, Consultants, Incubators, Markets, Employees etc. Pune stakeholders should consider developing an “EcoConnect” platform, which can enable one-to-one, one-to-many and many-to-many interactions. There have been suggestions for enhancing Industry-Academia collaboration as well as Enterprise-Start-up networking. This is where the EcoConnect can start.
- 3 Individuals too need to acknowledge the importance of equipping themselves with newer set of skills and competencies. With automation, Machine Learning and Artificial intelligence poised to perform some of the jobs, humans must seek and create new opportunities. Apart from skills related to new age technology, higher order thinking skills and a deeper exposure to business, social and/or environmental domains would prove useful in future. Clearly the world shall experience some job contraction^{9,10} due to disruption to business models, so a serious thought needs to be given to Future of Skills.

Finally, when one considers the world-view published through reports such as Global Innovation Index¹¹ or Global Talent Competitive Index¹², one can see that India has a long way to go, when it comes to innovation. At the same time, a recent Bloomberg article¹³ has identified Pune as one of the emerging city economies. The time is ripe for Pune companies to achieve the escape velocity needed to move to the next orbit. Both Indian and foreign technology companies should invest in future of innovation by contributing to nurturing the innovation ecosystem at Pune.

When such an ecosystem starts developing, Pune would be on its way to be an innovation Hub. And its economic benefits will reach much beyond Pune.

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