

KARNATAKA COMPETITIVENESS DIALOGUE

*Deliberations and learnings from the
Round Table on Competitiveness of Karnataka*

Purpose

The purpose of the Karnataka Competitiveness Dialogue is to look at the positives of the state and the kind of challenges that it faces in its path towards becoming the innovation hub of the world. The main aim is to look at important sectors and innovations that can happen within Karnataka to make the state as a location more innovative and thus competitive.

Introduction

Overall India is at an inflection point and is moving in the right direction with the government successfully completing 1 year and 6 months in the center. Over the next few years what is required is implementation on the ground. The federal system of the country ensures that some of work is done by the center while the rest is transferred to the states.

This is where state competitiveness in general and state competitiveness of Karnataka becomes imperative for growth and development. Innovation is central to Competitiveness. Karnataka has had huge factor advantages especially in the human capacity and capability thanks to which it has been able to build a robust innovation ecosystem. The plethora of educational institutions and a robust policy decisions initially have led Karnataka to emerge as a software hub of India. It even lead Chancellor Merkel to comment on Bengaluru being the 'Silicon Valley of Asia'. Karnataka has also positioned itself well in the ease of doing business and other subnational rankings.

On the negative side a sense of neglect is witnessed in Industrialists who come to India's southern states. Another major area of concern is too much dependence on exports for innovation and competitiveness. Karnataka's export intensity is 47% that is more than around 30% for China. Also, at present the state has shortage of water and electricity. Also, continuity in the government policy is a major negative for the state. It is because there is a perception that policies when they are about to be implemented see a change in government. Also, the problem has been that at a political level the center and state have had contrary governments that have cost the people dearly.

On the positive side Karnataka boasts of more than 80 Fortune 500 companies, more than 700 MNC's

and the fact that 40 percent of software exports come from Karnataka. Also, on a positive side the government has initiated several new policy initiatives, and the FDI seems to be doing well in India. Implementation remains the key.

Going ahead, human resource development seems to be the way ahead. Also, diversification of economic footprint should be a major area for the government policy to look into. Agricultural value added products could be a major area for the state with more than 80 percent of people still being employed in the agriculture sector. What is required is also to look into the different natural resources and endowments that can be improved over time.

The conventional solution was to increase the supply of healthcare like infrastructure, medical professionals, etc. However the country wet in for reducing the demand and therefore the problem of supply in the market. The country in collaboration with Nippon Life supplied 'do it yourself' kits to houses and kept a 'pay per use' model.

Right now Karnataka is too dependent on IT and ITeS. What is also required is sustainable urbanization in the state and problems of the city of Bangalore to be resolved. These include problems like waste management, smooth flows of traffic, etc. in the city. At the level of state, innovation has a key role to play in reducing disparities and bringing in prosperity to the masses.

What is Innovation?

Innovation is not a end but a means to drive radical change in a society. Innovation is a means through which a country can undertake transformational change. Often it is dependent on doing things differently. Innovation often is a result of doing things in a way that is radically different the

accepted or more formal ways of doing things. In India, innovation, R&D and technology are often used to mean the same things. While R&D and technology can be enablers in innovation. These alone are not the only enablers of innovation. Several examples exist where Innovation has had a monumental impact in newer way of doing things. Two of these are related to medicine and literacy. One is from the Mongolian context while the other is from the Indian context.

In Mongolia, the major problem is with respect to access to healthcare facilities. The conventional solution was to increase the supply of healthcare like infrastructure, medical professionals, etc. However the country went in for reducing the demand and therefore the problem of supply in the market. The country in collaboration with Nippon Life supplied 'do it yourself' kits to houses and kept a 'pay per use' model. Also, basic training was provided in using the kits. The policy intervention reduced the number of people going to hospitals by 50% the following year. It is a classic case of redefining the framing of problem.

From supply side interventions involving increase in the supply of healthcare to demand reduction by reducing the demand of doctors/medical staff as the way of effectively promoting a healthy and productive population.

In India, the policymakers had been grappling with the problem of literacy for years. Traditionally people were classified as literate or illiterate. The classification did not factor into account some 300 million people who can read alphabets but cannot pronounce words. These people are called neoliterates. These people can be made to understand words by same language text titling that helped them to put alphabets and combine them into words. It is a relatively very inexpensive yet effective way of reducing illiteracy in the country.

These two examples demonstrate that a conventional infrastructure and resource heavy solution is necessarily not always the best approach to tackle the problem. Instead what is necessary is looking at fundamentally newer ways of framing of problems and finding solutions to the problems.

Innovation and links to Competitiveness

APCO had recently conducted a research on the innovation ecosystem in Karnataka. It is more focused towards the framework of innovation in India, sectoral concerns within India and the need to look at innovation from a state-level perspective rather than at the central level. The report looks at Karnataka in this context. The research used a secondary and primary research to look at innovation in Karnataka. The three hypotheses used in the report were 1. Karnataka is a top talent hub 2. It has a conducive policy environment. 3. It has an investment friendly climate. All the three points seem to be valid as Karnataka has some of the best institutions in the country like IISC, etc. Also, it has policies in several sectors that look ahead. And globally, too companies see Bangalore as a place to invest.

Some of the findings include the fact that innovation is perceived by stakeholders to define something, which adds value, and is process driven. It focuses on incremental versus radical innovation. Also, most respondents perceive that consumer internet services (e-commerce platforms) followed by information technology and mobile technology as sectors seeing the greatest innovation. Governance, infrastructure and healthcare are sectors that are in need of innovation. Another major finding was that fostering an innovation ecosystem requires shapers (basic elements) and enablers (advanced elements) to work together. The critical shapers for innovation in Karnataka are infrastructure and the education system while enablers include government industry synergy, cultural factors, the right talent, academic rigor to harness the talent and capital.

Another major finding is that most respondents think that Bengaluru is a city where the most innovation is taking place, followed by Pune/ Mumbai and NCR at the city level. This is not very surprising since Bangalore is looked upon as a very open place for collaborations by western MNC's.

The three top factors for making Karnataka an innovative state, according to the research were 1. Availability of skilled talent 2. A supportive state government and 3. The presence of a supporting venture ecosystem. Going ahead for fostering innovations in Karnataka what is required is

Panel Discussion 1: Inspiring Innovation and Creativity

Key discussion points:

How Innovation Works?

- Innovation works by phases of incremental and radical change.
- In the IT/Telecom Industry, initial 50 years of linear incremental change till 1990's was followed by 20 years of radical change.
- Similarly cars have seen incremental change till some time back, but are headed towards a radical phase with Industrial Automation and complete autonomy of cars.
- Education, Healthcare and Banking in the future will witness these phases.
- Looked closely there was a tipping point from a glacial linear change to disruptive, non-linear change.
- It happened in industries because the building blocks for disruptive change became small enough for combinatorial innovation to take over.
- The solution to problems is to unbundle them by making them accessible to innovators to work on the problem and offer solutions.
- Role of public policy is to get out of the way and foster this combinatorial innovation

Industry and Innovation

- Plans have been discussed but implementation and target achievement on the industrial policy is minimum.
- Focus so far has been on product driven approach rather than a demand centric approach.
- The demand centric approach has at its heart solutions as the main points.
- Basic areas where these can be done include-Water, Energy, Waste, Pollution, Healthcare.
- Example of Ingersoll Rand that went about designing a solution for food industry that

remotely monitors the movement of Food from farm to fork.

- It is not necessary to look for newer technologies but creating solutions by convergence of technologies.
- Solutions can be developed by collaboration among sectors like Pharmaceuticals and Process Analytic industries.

Karnataka's Innovation Ecosystem

- Karnataka from the point of view of startups is right on top.
- India has about 3,500 funded startups, which is going up to 12,000 in the next four to five years.
- Karnataka has a little over 30% share of Indian startups. 2.5 Billion in terms of investment ahead of Delhi at 1.43 Billion USD and ahead of Bombay at 0.63 Billion
- Is it the seventh most attractive startup destination in Asia.
- Question now is aping the west versus need based innovation in Karnataka
- In the years to come aligning societal needs with disruptive need based innovation
- Issues of urbanization and innovation happening in only hamlets in the state pose several challenges
- Policy of moving out of the startup space by the government. Government should move out of Incubators. Private sector can take care of this.
- Trust and collaborative culture are foundations on which Bangalore's success has been built.
- A focus on changing the education to look at and develop 'system 2', deliberative thinking.
- Trying for sustainable long-term need based solutions rather than Jugaad Innovation.
- Finding a solution to major problems with existing tools and techniques.
- Building a culture of 'challenge grants' that help lots of smart people to do a forcing function for 'combinatorial innovation'.

strengthening institutions, collaboration across sectors and giving voice to individual innovators.

Public Policy Perspective for Innovation

The Government of Karnataka has several policies to foster growth of industries and specifically in the field of IT and Biotechnology. These are:

IT/ITES Policy: Also known as the IT, ITes, Incentives and Innovation policy or the I4 policy that is short and aimed at ensuring and boosting the competitiveness of state.

Electronics System Design and Manufacturing Policy: Trying to ensure that Karnataka becomes

Panel Discussion 2: The Steps Required for Success

Key Discussion Points:

Government- Industry Interface

- Lot of social transformations like Education, Healthcare require the role of the state.
- Only government has the scale, legitimacy and authority, power to execute.
- Civil Society has three essential roles- complementing the government, helping the government, and substituting the government.
- Substituting the role of government is a dangerous idea and can lead to unintended consequences.
- Food Technology, Information Technology and Biotechnology (FT, IT and BT) are areas where the state has potential to leapfrog.
- The crux of discussion is understanding specific areas where Karnataka has competitive advantage with respect to other states.
- Role of the state is ensuring property rights and the rule of law.
- Innovation should be built around rural economy as well as have the element of inclusion.
- Education reform (especially doing away with outdated syllabus) can help to improve the quality of innovation.
- Innovators and the government should work together for problems of people like traffic pollution, etc.

Innovation in a complex market environment

- Government's role is to create markets and then step back and allow industry competition and consumer demand to drive change.

- Witnessing a time of counter intuitive thinking with companies taking money from investors and giving to consumers instead of taking money from consumers and giving to investors. Internet retail and companies like Ola and Uber are classic examples of this phenomenon.
- Competing in such a market environment requires innovation to stay ahead of the curve.
- Within an enterprise very few Chief Innovation Officers in the Indian as well as in context to Karnataka.
- Track and create datasets on how innovation is happening and how it results in spinoffs in some cases. The government should do it.
- The government should provide data and research for developing the innovation ecosystem.
- Interdisciplinary conversations that form the basis of idea generation and solution to problems.
- Culture on embracing failure to the extent of encouraging it will help in solving problems of our society
- The private sector can learn a thing or two from the complex outfit of the government in interdisciplinary thinking.
- The problem also is in the mindset. People in the Silicon Valley often want to conquer the world with their next big idea while the innovators are looking in India for local or national solutions.
- Policies should be systematic and process oriented rather than being person or government oriented.
- Focus in innovation should be on serving unmet needs. The scale has to be global like Alibaba.

the hub for electronics manufacturing as well as designing. The aim is to reduce import dependence and improve the manufacturing capability in the state.

AVGC Policy (Animation, Visual Effects, Gaming and Comics) Policy – A lot of parts of International movies are being made in Karnataka, thanks to a policy that aims to provide boost to the sector.

Biotech Policy, 2011- The focus is on continuously upgrading the policy as has been done in the past. The policy is expected to drive growth in Karnataka's already booming Biotechnology sector.

Also with respect to the Industrial Policy the focus is on manufacturing sector. So far Karnataka has done well in the Knowledge economy but over the next few years the focus will also be on improving the manufacturing sector. The focus is also to

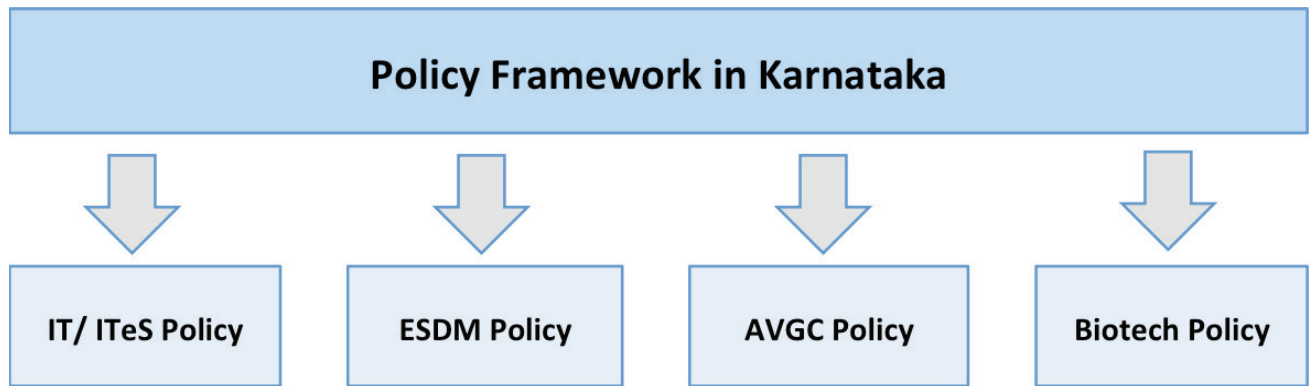


Figure 1: *Policy Framework in Karnataka*

move development to the Tier 1 and Tier 2 cities. Karnataka has a lot of locational advantage and is trying to leverage the locational advantage that it has.

The government is also trying working in a big way to improve skilling by tying up with corporates like CISCO, Intel who are keen to skill people in the their respective areas through centers of excellences that have been established in colleges. Also, Karnataka is one of the privileged states that have a substantial government funding to roll out Electronics skilling in the state. Also the state has R&D hubs and Education ecosystem that is conducive for innovation. The government has also partnered with several private enterprises for creating accelerators and is looking at a startup policy in the near future. It has also made vision groups with Industry leaders in various sectors like Kris Gopalkrishnan for IT and Kiran Mazumdar Shaw for BT. The government has also opened the first IOT (Internet of Things Lab) in the state in collaboration with NASSCOM. Also, the government sees public policy as a consultative process and the government looks forward to hearing and implementing suggestions for a better Karnataka.

Institutional Innovation

Institutional Innovation can happen only when there is a necessity. Food is a necessity. There is a need to leverage Information Technology and Biotechnology to use it for Food Technology. Almost 80 percent of Karnataka gets its income from agriculture. In Karnataka alone a lot of agriculture

produce is exported and imported back after value addition from other places.

The finance minister's budget is an exercise that helps one to look at policies that can change the trajectory of growth of the country. The need is to dream and achieve big for the country. India is human resource rich and this is its major advantage. Agriculture is a major sector requiring systematic innovation by startups who should be assisted by the government in realizing the vision of the country. Reducing the problems of the startups is a major challenge for the government.

Innovations need not all be transformational. Some of them just can be incremental in nature. Incremental Innovation Technologies (IIT's) or delta incremental technologies can yield significant gains for people. Companies that use R&D have seen remarkable growth in India over the past 15 years. Some remarkable innovations have happened at an unorganized level. The need is to document these and make them institutionalized and systematized for improvements.

Amul is a remarkable story of innovation in which traditional strength was leveraged for the white revolution in milk in which India is a world leader. Some times it is advisable to combine new technology with traditional ways and produce an innovation. An example that comes to mind is thalidomide and curcumin that has been combined to be used a medicine for cancer. Another example is the Rice Bran oil which India was producing in small quantities (less than 1000 tonnes) used as

non-edible oil. Today with value addition and 300 innovations built into it, it is used as edible oil with production of 1 million tons. It is the cheapest and best oil for the heart. Similar kind of case in wheat mill. There was a consumer demand for ‘Chakki Ka Atta’, the demand was met by producing a chakki within the mills in Karnataka. A case of silent innovation that resulted in drastic increase in sales of wheat.

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The need for institutional innovation is essentially to understand 20-25 sectors and allow sub-leaders to drive the agenda. It is best left to specialists who are experts in the sector. Also, need is to formulate policies around core strengths like food processing. The need is to work with love and affection and strive for excellence and perfection in all endeavors with the experience of the old and the strength of the youth in taking India ahead on manufacturing as well as food processing. The imperative is to include people across rural and semi urban locations for the fruits of innovation to be truly democratized.

Five Broad Areas Requiring Transformational Innovation

The Five broad areas requiring transformational

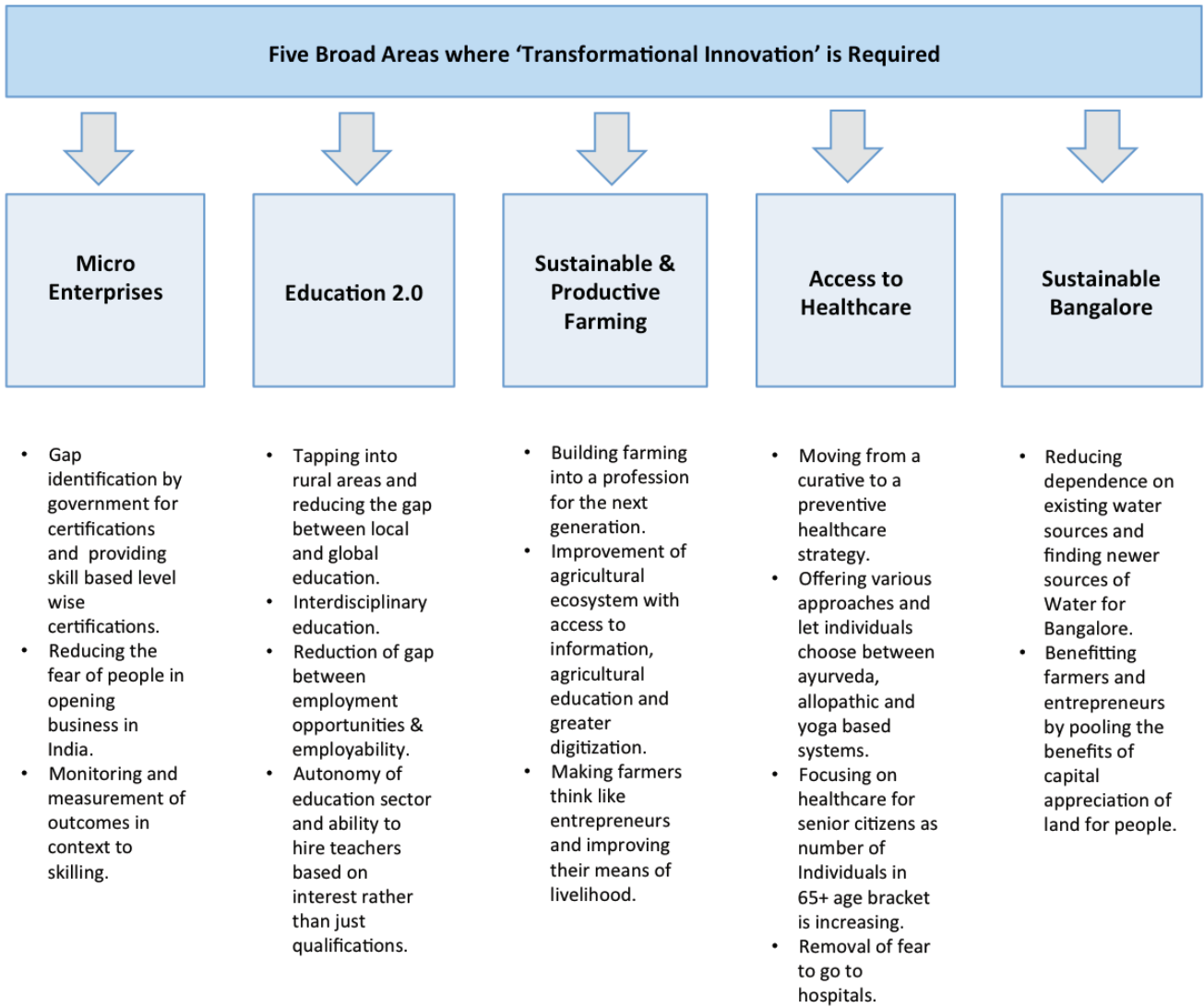


Fig. 2: Areas and policy suggestions for Transformational Innovation

innovation include:

1. Micro Enterprise
2. Education 2.0
3. Sustainable and Productive Farming
4. Access to Healthcare
5. Building a Sustainable Bangalore

Karnataka's Innovation and Competitiveness Landscape

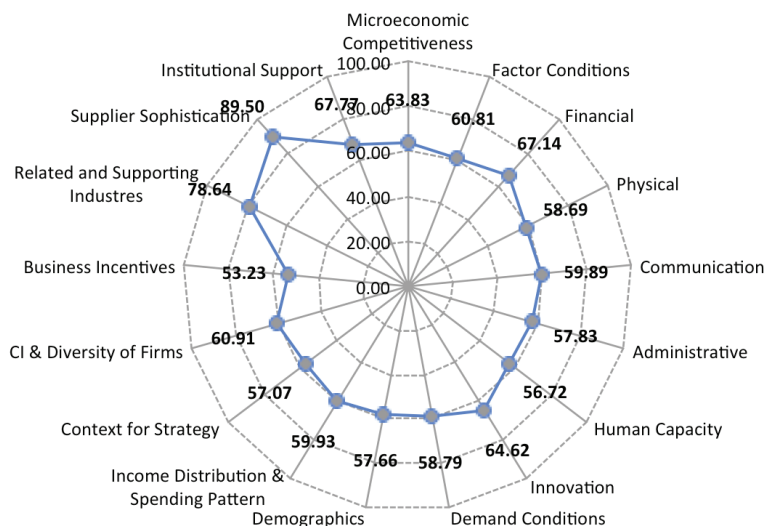
The state according to the State Competitiveness Index 2015 has strong demand conditions, factor conditions and has a considerable presence of related and supporting industries.

Karnataka is the IT hub of India and home to the fourth largest technology cluster in the world. The state also has seen solid infrastructure development with three domestic and two international airports. Similarly, the state is home to twelve minor and one major port. The highways (6,540km in May 2015 up from 4,688km in May 2014) and power sectors (approximately 15,000 MW of installed capacity in June 2015) have similarly seen rapid growth in the recent past.

With respect to people, the state has around 5% of the country's total population with a literacy rate of 75.6%, just above the Indian average of 73%. It has plenty of avenues for higher education with fourty four universities, the fifth highest number in the country, as well as almost three hundred polytechnics and over two hundred engineering colleges. Skilled labour is in plenty in Karnataka and adequate policies for skilling and education will help it further boost innovation and productivity. As of 2014-15, exports from the state were worth \$52.02 billion, around 13% of India's total exports. Karnataka has close to 50 IT/ITeS SEZs, three software technology parks and dedicated IT investment regions. Bengaluru, the capital, has a very strong cluster of IT and biopharmaceutical companies.

Building Trust for Innovation and Competitiveness

A major issue in any economy is trust. Trust must prevail between innovators, government as well as



corporations and civil sector in respecting laws and building institutions that drive innovation at the state level. Karnataka has had good success in the area but more can be achieved by systematically

Karnataka	Score
Microeconomic Competitiveness	63.83
Factor Conditions	60.81
Financial	67.14
Physical	58.69
Communication	59.89
Administrative	57.83
Human Capacity	56.72
Innovation	64.62
Demand Conditions	58.79
Demographics	57.66
Income Distribution & Spending Pattern	59.93
Context for Strategy	57.07
CI & Diversity of Firms	60.91
Business Incentives	53.23
Related and Supporting Industries	78.64
Supplier Sophistication	89.50
Institutional Support	67.77

Fig. 3: Microeconomic Competitiveness of Karnataka

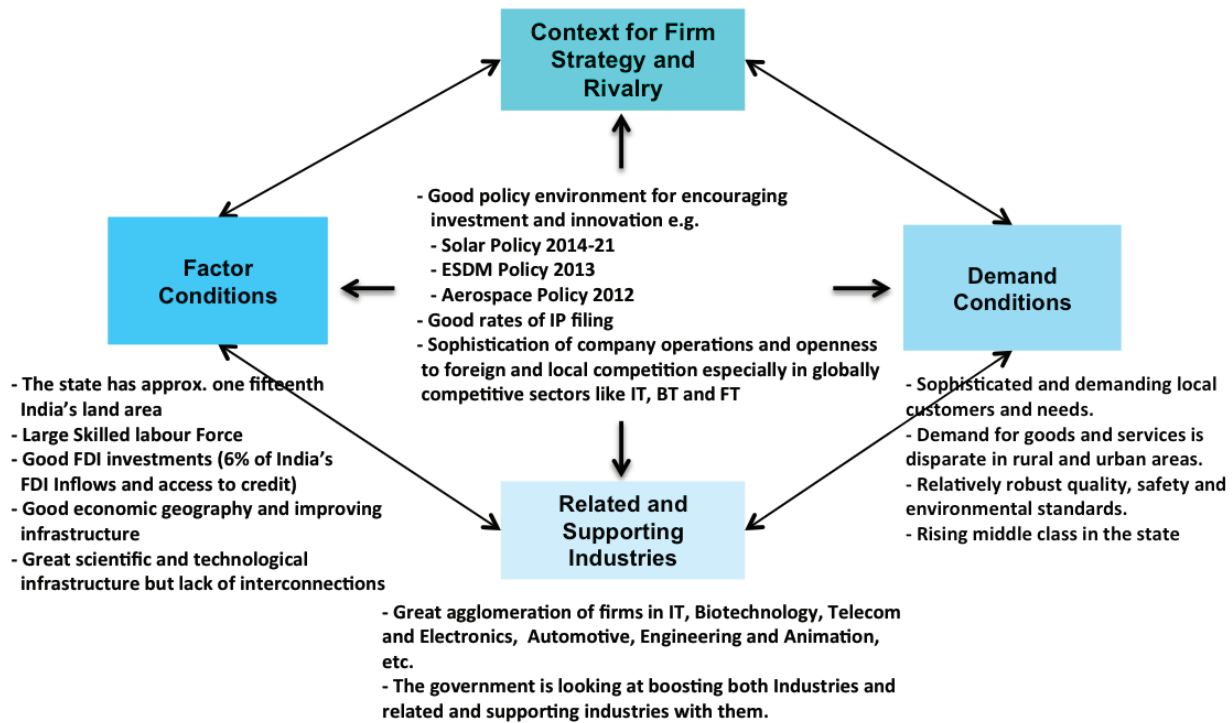
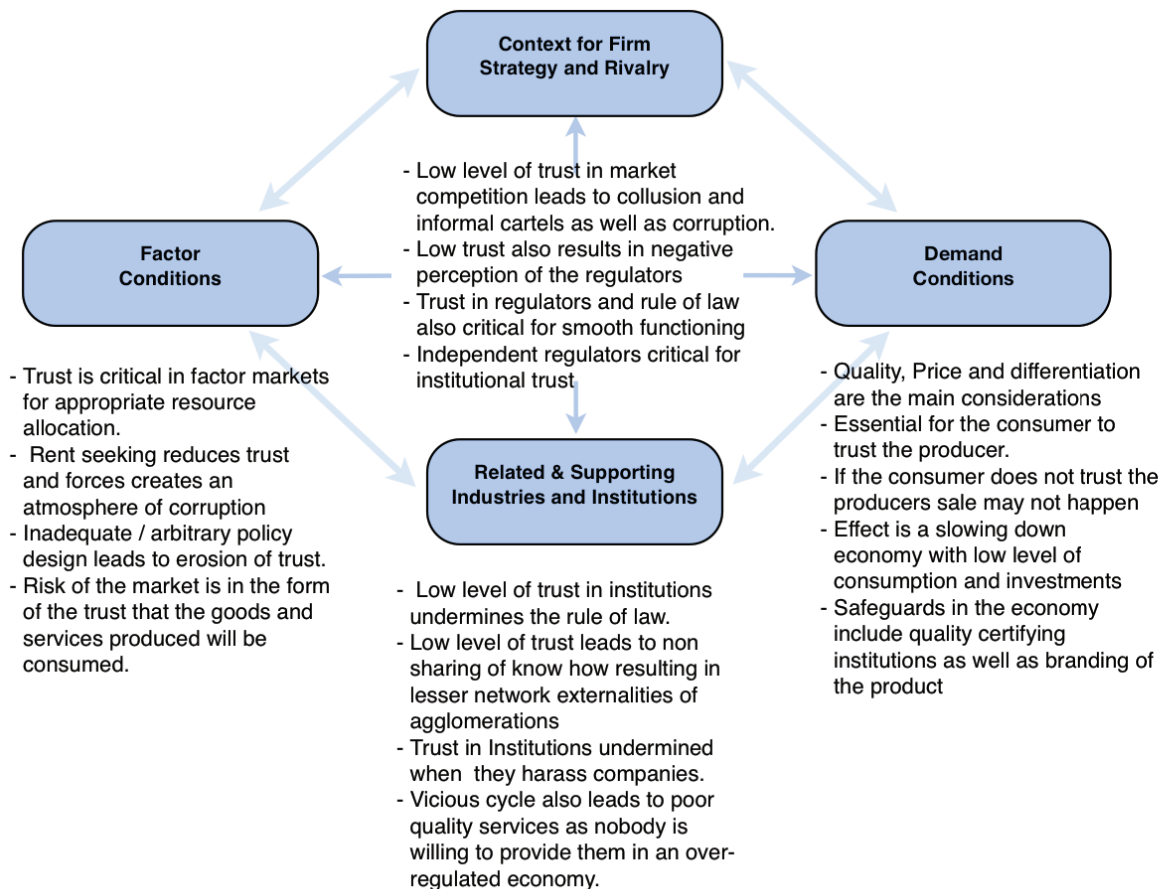


Fig. 4: *The Diamond as applied to Karnataka*

Trust and Competitiveness Effect on Karnataka's Diamond



increasing the level of interdependence and trust that accompanies transparency and accountability among government and people.

More focus on Intellectual property especially since a lot of businesses in Karnataka are knowledge

intensive can help it to become the largest IT cluster in the world. Along with this more interactions between firms, universities, civil society and government in a systematic manner can build trust among different stakeholders in the innovation process.

Suggested Recommendations

The suggested recommendations for improving the innovation landscape include:

Focusing on areas in the state that have potential for future innovations

Based on the areas define micro areas where innovations can bring radical change

At policy level develop a framework to map continuous progress in various areas

Map grassroots innovations and try to leverage them at a formal scale

Develop institutions in Innovation with experts drawn from government, business and civil society

Ensure there is interdisciplinary research and the government should step out of the business of managing innovation

Try to look at both combinatorial radical innovation as well as balance it with glacial incremental innovation

At the level of innovators, more challenges that force people to find solutions to public issues in different areas like sanitation, traffic, agriculture, etc.

Improvements in curricula to produce innovators rather than job seekers

Develop an innovation agenda for the state till 2025 and ways and means to achieve it.