

GLOBAL INNOVATIVE INDEX AND INDIA: CURRENT TRENDS AND OPPORTUNITIES

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ABSTRACT

Global Innovation Index Report published by INSEAD, Cornell University and World Intellectual Property Organization (WIPO) in partnership with other organizations provides an overview of innovative growth of around 128 economies and provides rank (index) of each country annually which is known as Global Innovative Index (GII). Global Innovative Indexing is carried out on the basis of two categories of Sub-Indices – Innovation Input Sub-Index category and Innovation Output Sub-Index category. Innovation Input Sub-index category consists of 5 pillars and Innovation Output Sub-index consists of 2 pillars. Each of these pillars is further broken down to miscellaneous sub pillars for the purpose of evaluation of innovative growth of different economies. By combining Global Innovative Index Reports of previous years, the paper aims to analyze the trends prevailing in the last few years and the areas of innovation in which India needs improvement for enhancing innovative growth.

Keywords- Innovation, Global Innovative Index, Trend

I. INTRODUCTION

Innovation is aboriginal concept in the form of inventions and discoveries. Inventions lead to new device or process, discovery leads to increment to knowledge and innovation leads to better way of doing things. Irrespective of economy of different countries, all countries are pushing innovation growth agenda for poverty alleviation, economic growth and faster-sustainable—inclusive-growth-driven-future. In order to evaluate each country in terms of its innovative growth, INSEAD, leading international business school based in Fontainebleau, near Paris and World Intellectual Property Organization (WIPO), a specialized agency of United Nations took an initiative in generating annual comprehensive report known as Global Innovation Index Report since 2007 according to their innovation accomplishments using approximately 80 indicators. Global Innovation Index report depicts not only the innovative accomplishments, but also, the measure of global impact of innovative policies of individual country. Depending upon performance of each country in terms of innovative accomplishments, each country is awarded rank known as Global innovative Index.

The entire evaluation of global innovativeness of individual countries is based on seven pillars broadly out of which first five pillars fall under the category of Innovation Input Sub-Index and the remaining two pillars belong to Innovation Output Sub-Index. Global innovation Index is calculated on the basis of four measures--- overall GII, Global Innovation Input Sub-Indices, Global Innovation Output Sub-Indices and the Innovation

Efficiency Ratio. Innovation Input Sub-Indices includes those components of national economy which embody innovative activities .Innovation Input Sub-Indices consist of five pillars of innovation namely Institutions, Human capital and Research, Infra structure, market Sophistication and Business Sophistication. Innovation output Sub-Indices measures actual evidence of innovation results .Innovation Output Sub-Indices consist of Knowledge & Technology Outputs and Creative Outputs. Overall GII score is simple average of Innovation input and innovation output Sub-Index scores. Innovation Efficiency ratio reflects the innovative performance or achievement of individual country with respect to their prevailing circumstances and is denoted by ratio of Output Sub-Index score over the Input Sub-Index score. Innovation efficiency highlights those countries that show appreciable results despite adverse circumstances as well as countries that have significant potential but not performing to the full extent.

II. RESEARCH METHOD

Research method used in research paper is time-series analysis. Source of input data is annual reports generated by INSEAD –the leading business School .Although annual reports contain global innovative reports or ranking of around 140 countries .The research paper focuses on current trends prevalent in India as far as global innovativeness is concerned. As the reports are generated on annual basis, so analysis of data is done on annual basis. As we move to the subsequent years, data shows gradual shifting either increasing or decreasing pattern. This increasing or decreasing pattern is referred to as trend of data with respect to time .Data available for that particular year is shown by discrete bars and pattern of discrete bars is observed for last few years for analysis purpose.

III. STUDY

3.1 Trends in GII (Global Innovation Index)

India's GII ranking is continuously showing downward trend from 56th rank (2009-10) to 81st rank (2014-15) and then finally India has climbed 15 spots this year to 66th rank in 2015-16 as depicted in Fig.1



Figure 1: Annual trends in Global Innovation Index 2009-16

3.2 Trends in Innovation Input Sub-Indices

Fig. 2 depicts annual trend for India's ranking in Innovation Inputs Sub-Index. In Innovation Inputs Sub-Index, India is showing downward trend from 54th rank(2009-10) to 96th rank(2011-12), slight improvement to 87th rank(2012-13), then again downward trend from 87th rank (2012-13) to 100th rank(2014-15). In 2015-16 India has climbed in its ranking in Innovation Inputs Sub-Index to 72nd ranking thereby jumping 28 ranks up. Innovation Input Sub-Index consists of five pillars—Institutions pillar, Human capital & research pillar, Infrastructure pillar, Market Sophistication pillar and Business Sophistication pillar. Each pillar is divided into three

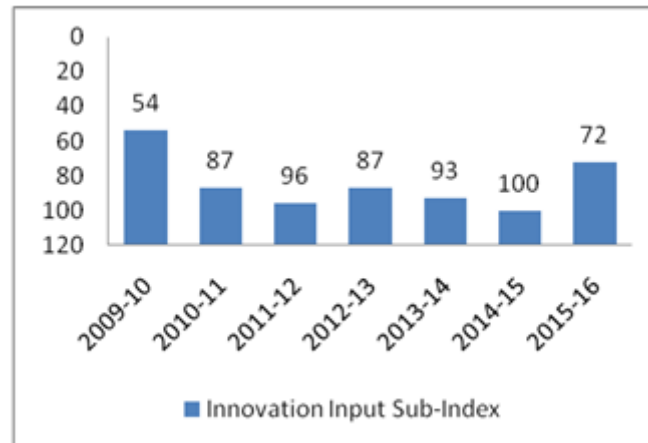


Figure 2: Annual Trends in Innovation Inputs Sub-Index, 2009-2016

sub-pillars and each sub-pillar is composed of individual indicators.

In 2015-16, Institutions pillar is showing falling trend from 73rd rank(2009-10) to 125th rank(2011-12), slight improvement to 102nd rank in 2012-13, fall to 106th rank in 2013-14 and then rising trend from 106th rank(2013-14) to 96th rank(2015-16) as depicted in Fig. 3. Institution pillar consists of Political Environment, Regulatory Environment and Business Environment. On further analysis of Institutions pillar, India is showing dismal ranking in political environment (98th rank, up 11), regulatory environment (77th rank, up 4) and Business Environment (117th rank, up 13).

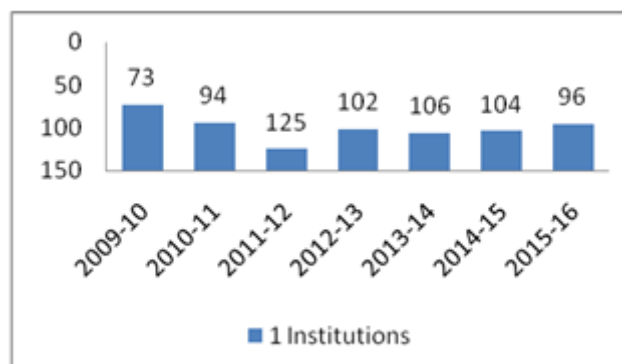


Figure 3 : Annual Trends in Institutions pillar, 2009-16

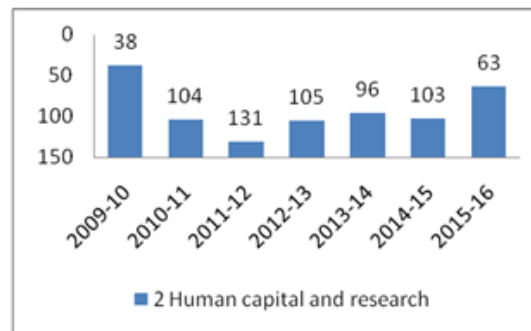


Figure 4 : Annual trends in Human Capital & Research, 2009-16

Human Capital and Research is showing jump by 40 ranks to 63rd rank (2015-16) from 103rd rank (2014-15) as shown in Fig. 4. Human Capital and Research pillar consists of Education, Tertiary Education and Research & development. In Human capital and Research pillar, India has shown improved ranking in parameters viz. Education (63rd rank, up 40), tertiary education (67th rank, up 56) and better performance in Research & Development (31st rank, up 13).

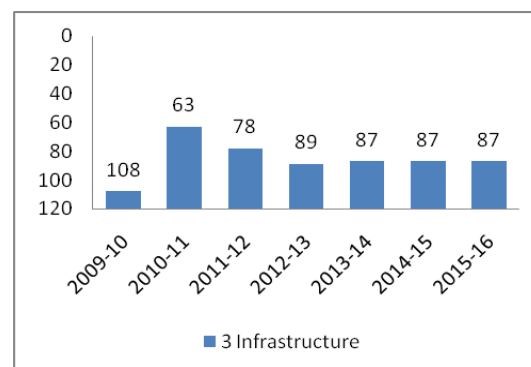


Figure 5 : Annual Trends in Infrastructure Pillar, 2009-2016

Infra structure pillar is consistently struck at 87th rank for the last 3 years. Infra structure pillar consists of Information & Communication Technologies (ICTs), General Infra structure and Ecological sustainability. On analysis of infrastructure pillar, it is found that India is showing shoddy performance in ICTs (86th rank), General Infra structure (52nd rank, down 9) and Ecological Sustainability (109th rank, up 8).

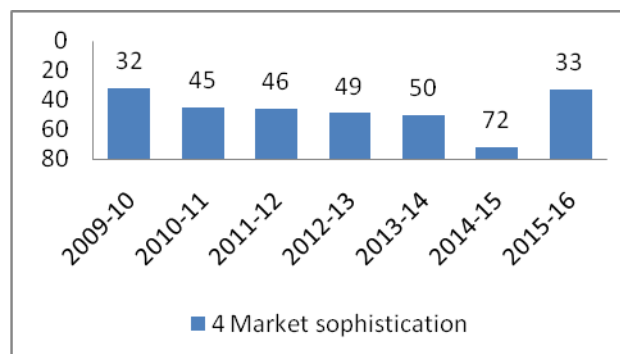


Figure 6 : Annual Trends in Market Sophistication Pillar, 2009-16

Market sophistication pillar has shown fast growth from 72nd rank (2014-15) to 33rd rank (2015-16) thus getting a jump of 39 ranks. Market Sophistication Pillar consists of Credit, Investment, Trade, and Competition & Market scale. On further analysis of Market Sophistication pillar, India has shown mediocre rank in Credit (78th rank, up 2) and marvelous performance in areas viz. Investment (30th rank, up 12), Trade & Competition (20th rank, up 84).

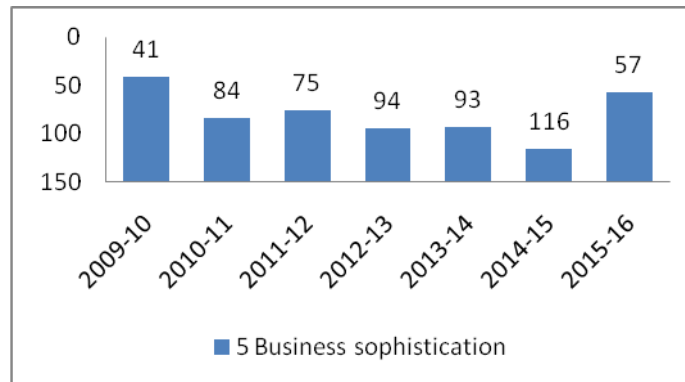


Figure 7 : Annual Trends in Business Sophistication Pillar, 2009-16

Business Sophistication pillar has shown positive trend by jump of 59 ranks from 116th rank (2014-15) to 57th rank (2015-16). Business Sophistication Pillar consists of Knowledge workers, Innovation Linkages and Knowledge absorption. On further analysis of Business Sophistication pillar, India has shown poor ranking in knowledge workers (86th rank, up 46), knowledge absorption (66th rank, up 33) and relatively better ranking in innovation linkages (43rd rank, up 9)

3.3 Trends in Innovation Output Sub-Indexes

Fig. 9 depicts Annual trends in Innovation Output Sub-Index. It shows a positive trend from 69th rank (2009-10) to 40th rank (2011-12), then negative trend from 40th rank (2011-12) to 69th rank (2014-15) and finally jump by 10 ranks to 59th rank in 2015-16. Innovation Output Sub-Index sub pillar consists of two pillars viz. Knowledge & Technology Output pillar and Creative Outputs pillar.

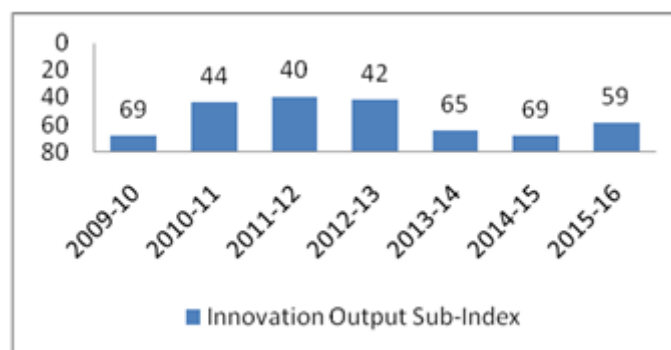


Figure 8 : Annual Trends in Innovation Output Sub-Index, 2009-16

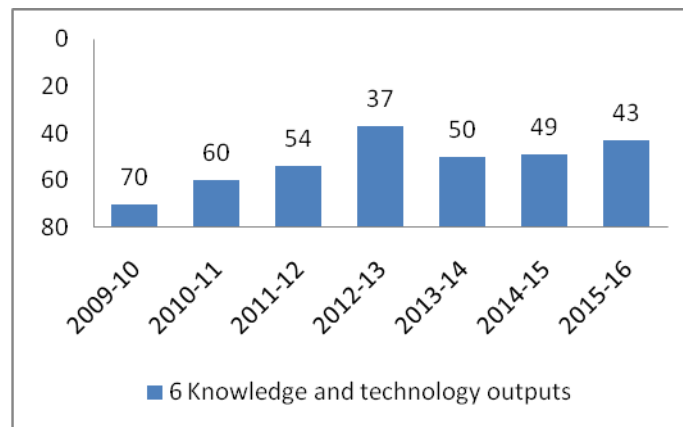


Figure 9 : Annual Trends in Knowledge and Technology Output pillar, 2009-16

As can be seen in Fig. 10, Knowledge and Technology outputs pillar is showing rising trend from 70th rank (2009-10) to 37th rank (2012-13), dip to 50th rank in 2013-14 and then again rising trend from 50th rank (2013-14) to 43rd rank (2015-16). Technology outputs pillar consists of knowledge creation, knowledge outputs and Creative outputs. On further analysis of Knowledge and Technology Output pillar, India is showing poor rank in Knowledge Creation (57th rank, up2), Knowledge Impact (48th rank, up 36) and better rank in Knowledge Diffusion (26th rank, up 8) in the current year .

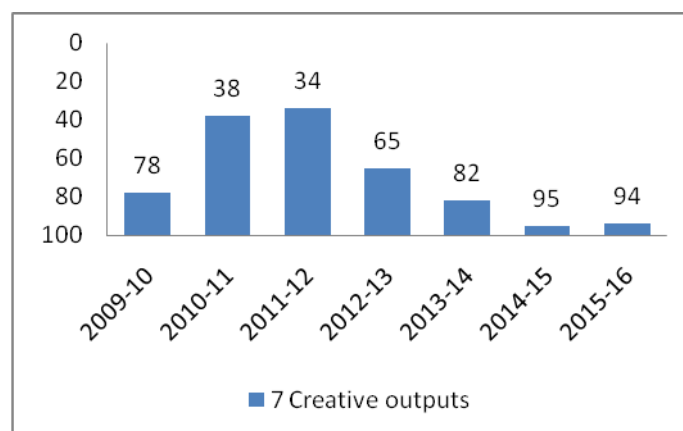


Figure 10 : Annual Trends in Creative Outputs Pillar, 2009-16

Fig. 11 depicts annual trends in Creative Outputs Pillar. It is showing positive trend from 78th rank (2009-10) to 34th rank (2011-12), then downward trend from 34th rank (2011-12) to 95th rank (2014-15) and finally slight jump to 94th rank in 2015-16. Creative Outputs pillar consists of Intangible assets, creative goods & services and online creativity. On further analysis of Creative Outputs pillar, India has shown inferior rank in Intangible assets (98th rank, up 3), Creative Goods & Services (77thrank, up 5) and Online Creativity (101strank, up 23).

4. RESULTS AND ANALYSIS

As the time wise data is discussed in detail for Innovation Input Sub-Indices ,Innovation Output Sub-Indices and their pillars, we need to analyze it further in order to find out reasoning of increasing or decreasing trends .

4.1 Results and Analysis on Innovative Inputs Sub-Index

Innovation inputs are the elements of national economy that enable innovative activities. Even if India has shown slight jump in current year out of falling prevailing trend, still score in Innovation Inputs Sub-Index is much lesser than average scores attained by all economies. The downward trend may be attributed to heavy bureaucratic interference, slow pace of policy decision making and changing political environment.

4.1.1 Institutions

In case of Institutions pillar, performance of India is much lesser than average performers. Unsatisfactory performance is observed in political, regulatory as well as business environment. As far as political environment is considered, India has shown miserable ranking in terms of political stability as well as government effectiveness. In case of business environment, dismal performance is observed in terms of ease of starting business, ease of resolving insolvency and ease of paying taxes.

4.1.2 Human Capital & Research

India's ranking is touching average scores performed in Human Capital & Research pillar. Although the performance of India in terms of education is quite miserable, improving but unsatisfactory in terms of tertiary education, but India is placed among top 50 in R&D sub pillar. In case of education, India needs to improve the areas viz. expenditure on education, government expenditure on education per pupil, school life expectancy and pupil-teacher ratio.

4.1.3 Infra structure

India's ranking in Infrastructure pillar is much lesser than average scores attained by all the economies. India has shown dismal performance in Information and Communication Technologies (ICTs) particularly in ICT access & ICT use & Government online services whereas improved performance in online e-participation. Poor performance in General Infrastructure may be attributed to poor performance in electricity output & logistics performance. India has shown dismal performance in Ecological sustainability as well as environmental performance.

4.1.4 Market Sophistication

India has scored little better than average scorers in terms of Market Sophistication especially in the current year. India has significantly improved its performance in investment, Trade, Competition & Market scale whereas unsatisfactory performance in Credit.

4.1.5 Business Sophistication

In Business sophistication pillar, India has got slightly inferior performance than average performers. India has shown remarkable improvement in firms offering formal training leading to improvement in knowledge workers sub pillar. India is holding top 50 ranks in Innovation linkages sub pillar and its supporting parameters like University/industry collaboration, state of cluster development, GERD (Gross Domestic Expenditure on R&D) financed by abroad as well as patent families in at least two offices.

4.2 Results and Analysis on Innovative Outputs Sub-Index

Innovation outputs are the outcome of innovative activities within the economy. India has scored slightly above score than the average one in Innovation Outputs Sub-Index.

4.2.1 Knowledge & Technology Outputs

India scored better than average score in the Knowledge & Technology outputs .Performance of India is found to be satisfactory in Knowledge diffusion whereas mediocre performance in Knowledge Creation & Knowledge Impact .

4.2.2 Creative Outputs

In case of creative outputs, India has performed much lesser average scorers .Improvement is required in all domains viz. intangible assets, creative goods & services and online creativity.

V. CONCLUSION

The performance of India is exemplary for devising effective innovation policy for other developing nations, so termed India as **Innovation Achievers** by INSEAD Business School for the last two years (2014-16) in its global report for evaluation of Global Innovation Indexing among 140 economies. India has, already, started several national level and state level schemes & state-wise monitoring or evaluation for innovative growth among individual states and the entire nation. India needs to put into lot of investment on infrastructure particularly quality of electricity supply and overall infrastructure.

In 2015-16 report, Soumitra Dutta, Anne and Elmer Lindseth Dean, Samuel Curtis Johnson Graduate School of Management, Cornell University and co-author of the report, points out that “Innovation quality matters. Creating world class universities and investing in research is essential for staying ahead in the global race for successful innovation.”

India needs to look into 3 areas --firstly higher education system by creating world class universities & providing platform for university industry collaboration. Secondly innovation promotion through launch of effective policies while addressing societal problems as pollution, health issues, poverty and unemployment. Thirdly government needs to steer innovation to context specific solutions which must provide solutions to local challenges in order to overcome challenges in the fields of energy conservation, transportation and getting enhanced return on local artisanship & creative industries.

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