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COMPARISON OF INDIA AND CHINA BASED ON GCI INDEX: CHALLENGES AHEAD

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ABSTRACT

India and China are emerging as leading economies of the world. The robust economic growth of these two countries is largely attributed to the significant progress in the domains of science and technology. China and India share similarities in population size, market size, natural resources, investment risk and market entry barriers. In spite of these similarities, China has recently forged ahead of India both in terms of overall developmental achievements and economic growth. India has developed commendable strength in a few key areas such as space, atomic science and technology, information technology and pharmaceuticals. However, India has progressed at a slow pace *vis a vis* China. A comparative study of these two countries based on the Global Competitiveness Index (GCI) 2015-16 throws light on the crucial indicators where India and China needs to improve in order to move forward.

INTRODUCTION

It is perceived by think tanks of the world that in near future, India and China will be the leading economies of the world. Both countries have made significant progress in the domains of science and economy. China and India share some important similarities such as, both countries became independent nations in 1940s, possess large reservoirs of natural and biological resources, huge population size, market size, investment risks and market entry barriers (Sandhya *et al.* 2014). Up to 1970s, India and China were almost similar in their overall development. However, China has recently forged ahead of India both in terms of overall science and technology achievements and economic growth. In recent decades, India has also earned repute as an emerging economy and enjoys a unique position among the developing countries. However, unsatisfactory rankings in competitiveness indicators, slow growth in the industrial sector, stunted value addition, frail Industry-Academia (I-A) collaborations are some of the chronic problems which India has to overcome. In this paper, a comparative study has been undertaken, between India and China, based on the Global Competitiveness Index (GCI) indicators associated, directly or indirectly, with the economy, health, education and research of a nation have been analyzed. GCI Reports are prepared and published by the World Economic Forum. The paper also highlights the areas in which improvement is needed by these countries for becoming a more economically stable nation.

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Rankings of India and China based on GCI

GCI is indicative of the competitive performance of nations by examining the microeconomic and macroeconomic foundations of the nation. The elements of sustainability are also taken into consideration by including social and environmental dimensions.

This paper is based on the comparative data mentioned in the latest GCI Report (2015-16). GCI takes into consideration 114 parameters, termed as indicators. These indicators have been placed in 12 sub groups, termed as pillars, which have been further grouped into 3 main categories i.e. Basic Requirements, Efficiency Enhancers and Innovation & Sophistication Factors (Fig. 1). As per GCI Report (2015-16), China and India have been ranked 28 and 55 respectively, thereby suggesting China is far ahead of India.

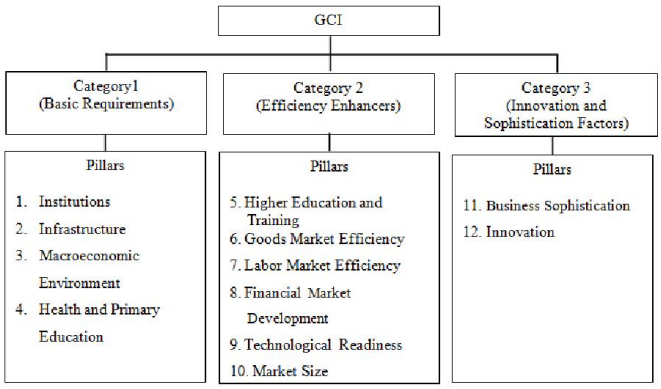

Fig. 1. Framework of Global Competitiveness Index

Based on the rankings of each category, the biggest gap is observed in Basic Requirements (India-80 and China-28) followed by Efficiency Enhancers (India-58 and China- 32) and Innovation & Sophistication Factors (India-46 and China-34) (Fig. 2).

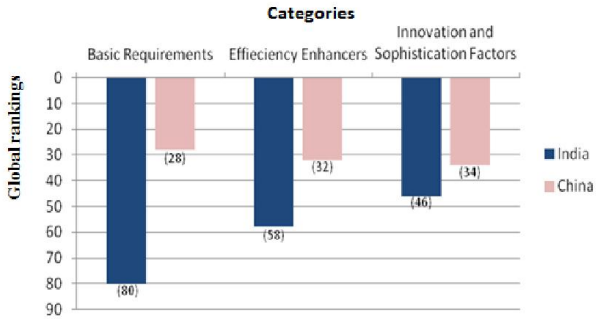

Fig. 2. Global rankings of India and China based on three Categories of GCI

Category 1: Basic Requirements

Basic Requirements category provides information about the basic foundation of a nation and comprises of four pillars i.e., Institutions, Infrastructure, Macroeconomic Environment, Health and Primary Education (Fig. 3).

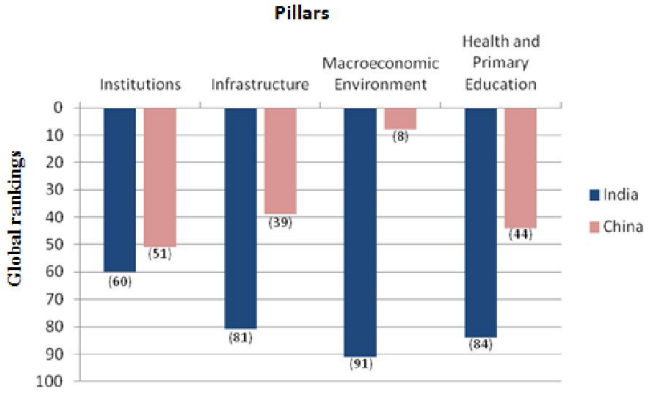

Fig. 3: Global rankings of India and China based on the Pillars of Category 1: Basic Requirements

Pillar 1- Institutions: This pillar is comprised of the administrative and legal structures within which individuals, firms, and governments function and interact to generate wealth.

The role of institutions extends beyond the legal framework and the attitudes of the government regarding markets and freedoms and the overall functional efficiency are also very important. The institutional quality is a strong determinant of competitiveness and growth (Acemoglu *et al*. 2001; Sala-i-Martín & Subramanian 2003). Firms are unwilling to invest in a country or region if their rights are not protected (de Soto, 2000). In this pillar, though the overall rankings of China (51) and India (60) suggest not much difference between the two countries (Fig. 2), but a deeper look into 21 indicators constituting this pillar reveals interesting information (Table 1).

China is well ahead of India by at least 15 ranks in eight indicators namely, *I-1.01* (*Property rights*), *I-1.08* (*Wastefulness of government spending*), *I-1.12* (*Transparency of government policymaking*), *I-1.13* (*Business cost of terrorism*), *I- 1.14* (*Business cost of crime and violence*), *I-1.15* (*Organized crime*), *I-1.16* (*Reliability of police service*) and *I-1.18* (*Strength of auditing and reporting standards*). In the indicator *Property rights* (*I-1.01*), China's global ranking (51) is far superior to India's (103). However, India leads China by at least 15 points in three indicators i.e. *I-1.11* (*Efficacy of legal framework in challenging regulations*), *I-1.17* (*Ethical behavior of firms*) and *I-1.21* (*Strength of investor protection*). In the last indicator, India is doing exceedingly well as it has a global ranking of 6, vis a vis China's 110 (Table 1). In the remaining ten indicators i.e., *I-1.02*, *I-1.03*, *I-1.04*, *I-1.05*, *I-1.06*, *I-1.07*, *I-1.09*, *I-1.10*, *I-1.19* and *I-1.20* there is not much difference in the global rankings of the two countries.

Pillar 2- Infrastructure: This pillar assesses the quality and extensiveness of infrastructure existing in a country. Among the important infrastructure, a wide network of effective modes of transportation, uninterrupted electricity supply and a robust and extensive telecommunication network are considered essential for the economic growth. Infrastructures which can be either physical as well as digital has indirect impact on the productivity by enabling and improving access to basic services such as sanitation, education and healthcare and thus contributing towards a workforce which is healthier and better skilled (Calderon and Serven 2014). In this pillar, the overall global ranking of China and India are 39 and 81 respectively (Fig. 1).

The rankings indicate that India has to do a lot of work in the development as well as improvement in the domain of infrastructure. China is doing very well in two indicators i.e. *I-2.07* (*Quality of electric supply*) and *I-2.09* (*Telephone lines/100 population*) and is ahead of India by at least 45 ranks (Table 2). In other four indicators dealing with *Quality of overall infrastructure* (*I-2.01*), *Quality of infrastructures of roads* (*I-2.02*), *Railroads* (*I-2.03*) and *Air transport* (*I-2.05*) , China is fairing quite well compared to India, as it leads by nearly 20 ranks. China is also ahead of India in the indicators *I-2.04*, *I-2.06* and *I-2.08* by 8-14 ranks (Table 2).

Pillar 3- Macroeconomic Environment: A stable Macroeconomic Environment is a necessary circumstance that promotes productivity and is determined by the aggregate of five indicators namely, *Government budget balance, % GDP*;

Table 1. Global rankings of India and China based on the indicators of Pillar-Institutions

Indicators		Global Rankings	
Number	Names	India	China
* *I-1.01*	*Property Rights*	103	51
I-1.02	*Intellectual Property Protection*	50	63
I-1.03	*Diversion of Public funds*	40	50
I-1.04	*Public Trust in Politicians*	31	28
I-1.05	*Irregular Payments & Bribes*	63	67
I-1.06	*Judicial Independence*	64	67
I-1.07	*Favoritism in Decision of Govt. Officials*	32	29
I-1.08	*Wastefulness of Govt. Spending*	51	24
I-1.09	*Burden of Govt. Regulation*	27	26
I-1.10	*Efficiency in Settling Disputes*	42	50
I-1.11	*Efficiency of Legal Framework in Challenging Regulations*	39	66
I-1.12	*Transparency of Govt. Policy Making*	58	36
I-1.13	*Business Costs of Terrorism*	126	86
I-1.14	*Business Costs of Crime & Violence*	98	60
I-1.15	*Organized Crime*	119	76
I-1.16	*Reliability of Police Services*	86	60
I-1.17	*Ethical Behavior of Firms*	44	61
I-1.18	*Strength of Auditing & Reporting Standards*	95	80
I-1.19	*Efficacy of Corporate Boards*	96	105
I-1.20	*Protection of Minority Shareholders Interests*	69	71
I-1.21	*Strength of Investor Protection*	6	110

**I-Indicator*

Table 2. Global rankings of India and China based on the indicators of Pillar- Infrastructure

	Indicators	Ranking	
Number	Name	India	China
**I-2.01*	*Quality of Overall infrastructure*	74	51
I-2.02	*Quality of Roads*	61	42
I-2.03	*Quality of Railroad Infrastructure*	29	16
I-2.04	*Quality of Port Infrastructure*	60	50
I-2.05	*Quality of Air Transport Infrastructure*	71	51
I-2.06	*Available Airline Seat km/week, millions*	11	2
I-2.07	*Quality of Electricity Supply*	98	53
I-2.08	*Mobile Telephone Subscriptions/100 pop*	121	107
I-2.09	*Fixed – Telephone Lines/100 pop*	116	63

**I-Indicator*

Table 3. Global rankings of India and China based on the indicators of Pillar-Health and Primary Education

Indicators		Ranking	
Number	Name	India	China
**I-4.01*	*Malaria Cases/1000,000 population*	44	15
I-4.02	*Business Impact of Malaria*	60	32
I-4.03	*Tuberculosis Cases/1000,000 population*	113	81
I-4.04	*Business Impact of Tuberculosis*	132	93
I-4.05	*HIV Prevalence, % Adult population*	63	1
I-4.06	*Business Impact of HIV/AIDS*	130	86
I-4.07	*Infant Mortality*	114	59
I-4.08	*Life Expectancy*	107	53
I-4.09	*Quality of Primary Education*	52	55
I-4.10	*Primary Education Enrolment, net %*	77	20

**I-Indicator*

Gross national savings, % GDP; *Inflation, Annual percentage change*; *General government debt, % GDP* and *Country credit rating*. A stable Macroeconomic environment is characterized by low and predictable inflation and sustainable fiscal policy (Fisher 1993). China is doing very well on global scale as it is ranked amongst the top ten nations of the world in two indicators. It is ranked number one in the indicator, *I-3.03* (*Annual percentage change in inflation*) and 3rd in the indicator, *I-3.02* (*Gross national savings, % GDP*).

India is languishing at 91st position in the former indicator, though its performance in the latter indicator is satisfactory (23rd ranking). In other three indicators i.e. *Government budget balance* (*I-3.01*), *Inflation* (*I-3.03*) and *General government debt* (*I-3.04*), India is faring very badly as indicated by global rankings of more than one hundred. Even in the *Country credit rating* indicator (*I-3.05*), India's performance is disappointing (50th) compared to China's (26th).

Pillar 4- Health and Primary Education: The last pillar in Basic Requirements category takes into consideration the scale and quality of the basic education received by the population and also the physical health of the countrymen. The basic education and health of the population is increasingly important in today's economy as these parameters not only enhance the efficiency of each individual worker but also has impact on the overall national productivity (Cole and Neumayer 2003). The lack of basic education and proper well-being of individuals constrains business development and further expansion. Out of 10 indicators China is far ahead in 9 indicators and India is marginally ahead in one pillar i.e. *I-4.09* (*Quality of primary education*). In fact, China has less than 0.1% adult population infected with HIV and has been ranked number one in the indicator *I-4.05* (*HIV prevalence, % adult population*) *vis a vis* India's 63rd ranking having 0.3% adult population infected with HIV. India is way behind China in three indicators, *I-4.10* (*Primary education enrolment*), *I-4.08* (*Life expectancy*) and *I-4.07* (*Infant mortality*) by more than 50 notches in global rankings. In the rest of four indicators, *I-4.01*(*Malaria cases/100,000 population*), *I-4.*02 (*Business impact of malaria*), *I-4.03* (*Tuberculosis cases/100,000 population*), and *I-4.04* (*Business impact of tuberculosis*), China fares better than India as it leads by global ranking margin of 29 -39 (Table 3).

Category 2: Efficiency Enhancers

The factors responsible for enhancing the efficiency of human resource and economic operations are grouped under this category. This category has six pillars i.e., Higher Education and Training, Goods Market Efficiency, Labour Market Efficiency, Financial Market Development, Technological Readiness and Market Size (Fig. 4). China is clearly ahead in five pillars except in the pillar, Financial Market Development, where both, India and China are globally ranked at 53rd and 54th positions respectively.

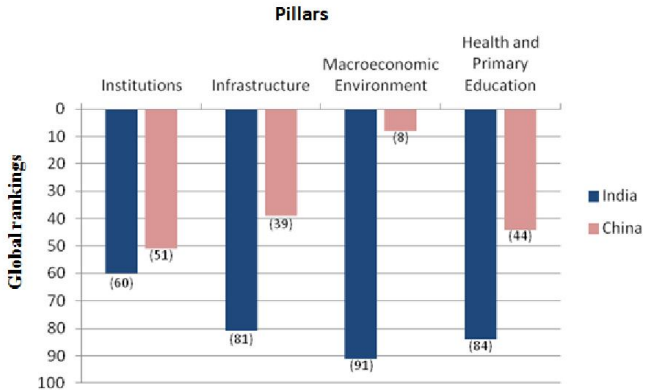

Fig. 4. Global rankings of India and China based on the Pillars of Category 2: Efficiency Enhancers

Pillar 5- Higher Education and Training: This pillar focuses on secondary and tertiary enrollment rates as well as the quality of education as evaluated by business leaders. The extent of staff training is also considered because of the importance of vocational and continuous training for constant upgrading of workers' skills.

Today's rapidly globalizing economy necessitates countries to nurture pools of highly educated workers who are able to perform complicated tasks and rapidly adapt to their changing environment and the evolving needs of the economy. The quality of higher education and training is a very important factor for economies that aspire to move up the value chain (Becker 1993; Kremer 1993). The global rankings of China (68) and India (90) clearly suggest that both countries have to improve in the areas of secondary and tertiary education system. However, comparison between two countries shows that India is way behind China. A deeper look into the eight indicators suggest that India has significant edge over China in the indicator, *Quality of management schools* (*I-5.05*), (India-55, China-85) and India (43) has slight edge over China (56) in the indicator *Quality of education system* (*I-5.03).* There is not much to choose between these two countries in the indicators, *Tertiary education enrollment* (*I-5.02*) and *Extent of staff training* (*I-5.08*) as their rankings hover around mid eighties and fifties respectively. However, China has clear cut superiority over India in *Internet Access in Schools* (*I-5.06*) as their global rankings are 47 and 100 respectively. Similarly, in another indicator, *Quality of math and science education* (*I-5.04*), China is ranked 49th and India 63rd.

Pillar 6- Goods Market Efficiency: Economies with efficient goods markets are well placed to provide the right mix of products and services according to their supply-and-demand environment. Industries having intense competition are more efficient and produce more innovation, thus improving productivity (Blundell *et al.,* 1999). Market competition (both domestic and foreign), customer orientation and buyer sophistication are taken into consideration in assessing the pillar, Goods Market Efficiency. The best environment for the exchange of goods requires minimal governmental intervention that impedes business activity. In this pillar, China is ranked 58th and India 91st.

Out of a total of 16 indicators in this pillar, China is ahead in 12 indicators (Table 4). China is distinctly ahead of India by 65 slots in *Intensity of local competition* (*I-6.01*), 37 slots in *Agricultural policy costs* (*I-6.08*), 31 slots in *Business impact of rules on FDI* (*I-6.15*), 29 slots in *Degree of customer orientation* (*I-6.16*) and 22 slots in *Prevalence of foreign ownership* (*I-6.11*). Amongst the rest of 11 indicators under this pillar, China is ahead in 6 indicators, *I-6.02* (*Extent of market dominance*), *I-6.03* (*Effectiveness of anti-monopoly policy*), *I-6.06* (*Number of procedure to start a business*), *I-6.09* (*Prevalence of non tariff barriers*), *I-1.10* (*Trade tariffs, % duties*), *I-6.11* (*Prevalence of foreign ownership*) and *I-6.16* (*Buyers sophistication*) vis a vis India's 5, *I-6.04* (*effect of taxation on incentives to invest*), *I-6.04* (*Total tax rate,% profits*) *I-6.07* (*Number of days to start a business*), *I-6.13* (*Burden of customs procedures*) and *I-6.14* (*Imports as %age of GDP*), though the gap in the global rankings is not too high which varies from 2-15.

Pillar 7- Labor Market Efficiency: The labor market efficiency and flexibility are critical for ensuring that workers are employed in their most effective sector in the economy and incentivized to put in their best effort (Bassanini *et al.,* 2009). Efforts to promote meritocracy, gender equity and strong incentives for employees promote efficient labor markets.

Table 4. Global rankings of India and China based on the indicators of Pillar- Goods Market Efficiency

Indicators		Ranking	
Number	Name	India	China
*I-6.01	*Intensity of local Competition*	101	36
I-6.02	*Extent of Market Dominance*	41	28
I-6.03	*Effectiveness of Anti-Monopoly Policy*	41	36
I-6.04	*Effect of Taxation on Incentives to Invest*	38	50
I-6.05	*Total Tax Rate, % profits*	123	128
I-6.06	*No. Procedure to Start a Business*	129	123
I-6.07	*No. Days to Start a Business*	110	117
I-6.08	*Agricultural Policy Costs*	53	16
I-6.09	*Prevalence of Non-Tariff Barriers*	82	78
I-6.10	*Trade Tariffs, % duty*	124	117
I-6.11	*Prevalence of Foreign Ownership*	96	74
I-6.12	*Business Impact of Rules on FDI*	92	61
I-6.13	*Burden of Customs Procedures*	54	56
I-6.14	*Imports as a %age of GDP*	116	131
I-6.15	*Degree of Customer Orientation*	97	68
I-6.16	*Buyers Sophistication*	26	21

*I-Indicator

Table 5. Global rankings of India and China based on the indicators of Pillar- Labor Market Efficiency

Indicators		Ranking	
Number	Name	India	China
*I-7.01	*Cooperation in Labor-Employer Relations*	86	62
I-7.02	*Flexibility Wage Determination*	120	73
I-7.03	*Hiring & Firing practices*	25	17
I-7.04	*Redundancy Costs, Weeks of Salary*	70	117
I-7.05	*Effect of Taxation on Incentives to Work*	36	58
I-7.06	*Pay & Productivity*	47	20
I-7.07	*Reliance on Professional Management*	86	55
I-7.08	*Country Capacity to Retain Talent*	40	30
I-7.09	*Country Capacity to Attract Talent*	40	27
I-7.10	*Women in Labour Force, ratio to men*	132	60

*I-Indicator

Table 6. Global rankings of India and China based on the indicators of Pillar- Financial Market Development

Indicators		Ranking	
Number	Name	India	China
*I-8.01	*Availability of Financial Services*	81	61
I-8.02	*Affordability of Financial Services*	71	48
I-8.03	*Financing through Local Equality Market*	45	44
I-8.04	*Ease of Access to Loans*	29	21
I-8.05	*Venture Capital Availability*	13	16
I-8.06	*Soundness of Banks*	100	78
I-8.07	*Regulation of Securities Exchanges*	69	52
I-8.08	*Legal Rights Index*	44	80

*I-Indicator

These factors have a positive effect on the overall performance of workers and the attractiveness of the country for global talent. Rigid labor markets are generally characterized by high unemployment rates. There is a huge disparity between India and China regarding this pillar, China is ranked 37th and India 103rd. Out of ten indicators (Table 5), China is ahead of India in eight indicators. The biggest margin of 72 slots is in the indicator, *Women in labor force* (*I-17.10*) in which China occupies 60th global ranking and India is dismally placed at 132nd position. In four indicators, I-*7.01, I-7.02, I-7.06* and *I-7.07*, China is well ahead of India as the gap range varies from 27-47 in global rankings. India has edge over China in only two indicators i.e. *I-7.04* (*Redundancy cost, weeks of salary*) and *I-7.05* (*Effect of taxation on incentives to work*) where it leads China by 47 and 22 ranks in former and latter indicators. In the remaining three indicators, *I-7.03* (*hiring and firing practices*), *I-7.08* (*Country capacity to retain talent*) and *I-7.09* (*Country capacity to attract talent*) China leads India by slight margins ranging of 8-13 in the global rankings.

Pillar 8- Financial Market Development: A sound and well-functioning financial sector allocates the natural resources or resources generated by a nation's citizens, as well as those entering the economy from abroad, to their most productive uses for economic activities (Tobin 1984). Financial market development is determined by capital availability from sources such as loans, securities exchanges, venture capital, and other financial products for which the banking sector needs to be trustworthy and transparent. India and China are almost at par in the overall ranking which is 53rd and 54th respectively. Amongst the eight indicators of this pillar, China is clearly

ahead in four indicators, namely, *Availability of Financial services* (*I-8.01*), *Affordability of financial services* (I-8.0), *Soundness of banks* (*I-8.06*) and *Regulation of security exchange* (*I-8.07*) as mentioned in Table 6. India is faring better than China in *Legal rights index* (*I-8.08*). In rest of three indicators i.e *I-8.03- 8.05*, there is not much difference in the global rankings of both the countries (Table 6).

Pillar 10- Market Size: Traditionally, the markets available to firms have been constrained by national borders and the size of the market affects productivity since large markets allow firms to exploit economies of scale. However, in this era of globalization, international markets have emerged as a substitute for domestic markets, especially for small countries.

Table 7. Global rankings of India and China based on the indicators of Pillar- Technological Readiness

Indicators		Ranking	
Number	Name	India	China
**I-9.01*	*Availability of Latest Technologies*	108	95
I-9.02	*Firm-Level Technology Absorption*	102	66
I-9.03	*FDI & Technology Transfer*	95	69
I-9.04	*Individuals Using Internet,*	107	70
I-9.05	*Fixed Broadband Internet Subscriptions/100 pop*	104	57
I-9.06	*International Internet Bandwidth, kb/s per User*	116	119
I-9.07	*Mobile-Broadband Subscriptions/100 pop*	124	71

**I-Indicator*

Table 8. Global rankings of India and China based on the indicators comprising of Pillar- Business Sophistication

Indicators		Ranking	
Number	Name	India	China
**I-11.01*	*Local Supplier Quantity*	54	15
I-11.02	*Local Supplier Quality*	66	63
I-11.03	*State of Cluster Development*	29	24
I-11.04	*Nature of Competitive Advantage*	47	48
I-11.05	*Value Chain Breadth*	29	43
I-11.06	*Control of International Distribution*	48	29
I-11.07	*Production Process Sophistication*	61	49
I-11.08	*Extent of Marketing*	82	64
I-11.09	*Willingness to Delegate Authority*	56	48

**I-Indicator*

Table 9. Global rankings of India and China based on the indicators comprising of Pillar-Innovation

Indicators		Ranking	
Number	Name	India	China
**I-12.01*	*Capacity for Innovation*	50	49
I-12.02	*Quality of Scientific Research Institutions*	45	42
I-12.03	*Company Spending on R&D*	31	23
I-12.04	*University-Industry Collaboration in R&D*	50	32
I-12.05	*Govt Procurement of Advanced Tech. Products*	26	9
I-12.06	*Availability of Scientists & Engineers*	49	36
I-12.07	*PCT Patents, Application/million pop*	61	32

**I-Indicator*

Pillar 9- Technological Readiness: The pillar of Technological Readiness measures the efficiency with which existing technologies are adopted by an economy to enhance industrial productivity, with particular emphasis on its capacity to fully leverage information and communication technologies (Comin and Hobijn 2010). The application of technology is increasingly becoming essential for firms to compete and prosper in the globalized economy. Under this pillar though the overall ranking of China (70^{th}) and India (120^{th}) indicates better performance of China than India, but both countries need tremendous improvement in the pillar of Technological Readiness. Out of seven indicators, China leads in six indicators (*1-9.02-05* and *I-9.07*) by a margin of at least 26 ranks (Table 7). There is not much to chose from India and China in the indicator, *International internet bandwidth, kb/s per user* (*I-9.06*) as their global rankings are 116 and 119 respectively (Table 7).

Thus market size is inclusive of both domestic and foreign markets. Market size is important due to the fact that a single idea can generate more profits when sold in larger markets (Romer 1996). In this pillar, China leads the global ranking and India occupies 3^{rd} ranking. Out of four indicators, China is ranked number one in the indicators, *Foreign market size index* (*I-10.02*) and GDP, PPP$ billions (*I-10.03*) and number two in the indicator *Domestic market size index* (*I-10.01*). India is placed at number three in all the three indicators. However, in the fourth indicator, *Exports as a percentage of GDP* (*I-10.04*) both countries do not figure in top 100 rankings, China is placed at 110 and India at 114.

Category 3: Innovation and Sophistication factors

The pillars of this category determine the level of sophistication in terms of business operations as well as

application of technological innovation. This category is comprised of two pillars i.e., Business Sophistication and Innovation. The global rankings of 34 and 46 of China and India (Fig. 5) suggest that although China is ahead of India, but both countries can take a leaf out of many countries ahead of them.

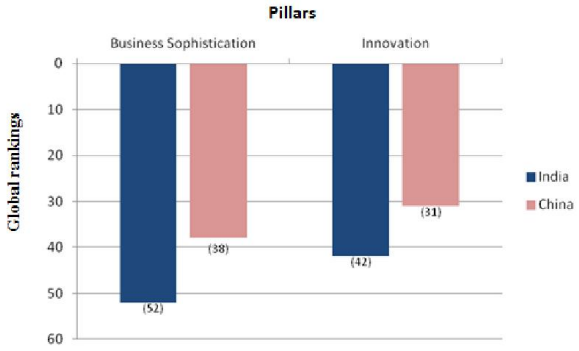

Fig. 5. Global rankings of India and China based on the Pillars of Category 3: Innovation and Sophistication factors

Pillar 11- Business Sophistication: It is a common knowledge that sophisticated business practices lead to higher efficiency in the production of goods and services. The qualities of a country's overall business networks and of individual firms' operations and strategies are two closely interlinked factors that determine business sophistication (World economic forum 2008). The assessment of the sophistication factors such as branding, marketing, distribution, advanced production processes, and the production of unique and sophisticated products are grouped under this pillar. As far as this pillar is concerned there is a difference of 14 positions in the ranking between India and China which are placed at the 52th and 38rd rank respectively. This pillar is divided into nine indicators (Table 8). There is not much difference in the rankings of India and China in six indicators (*I-11.02-05, I-11.07* & *I-11.09*). In the remaining three indicators, China is way ahead of India by 39 slots in *Local supplier quality* (*I-11.01*), 19 slots in *Control of International Distribution* (*I-11.06*) and 18 slots in *Extent of marketing* (*I-11.08*).

Pillar 12- Innovation: This pillar of competitiveness focuses on technological innovation. Technological breakthroughs or innovations have been at the very foundation of many dramatic productivity gains that our economies have historically experienced because in the long run, standards of living can be largely enhanced by technological innovations alone. The acceptability of new, unconventional and disruptive ideas has a great impact on creative innovations that break new frontiers in knowledge creation (Acemoglu *et al.,* 2014) A comparison of India and China on the basis of this pillar will provide some important insights into the role that Science and Technology played in the emergence of China and the potential it holds for the development of India. In this pillar, China is ranked 31st and India is ranked 42nd (Table 9). There are seven indicators under Innovation pillar. As listed in Table 9, there is not much difference in the global rankings of India and China in three indicators, namely *Capacity for innovation* (*I-12.01*), *Quality of scientific research institutions* (*I-12.02*) and *Company spending on R&D* (*I-12.03*).

In the next three indicators (*I-12.04-06*) India lags behind China by margins ranging between 13-17 global rankings. However, in the last Indicator related to PCT Patents (*I-12.07*) China's global ranking of 32 *vis a vis* India's 61 clearly indicates the superiority of China over India in this indicator (Table 9).

Conclusion

China and India are two mostly populated countries of the world having a huge market potential, as evidenced by their global ranking of 1st and 3rd in this indicator. Both countries got independence in 1940s and were very similar in socio-economic parameters till 1970s. From 1980s onwards, both countries improved their economic, educational and science policies by bringing in many reforms. However, China was more successful than India in implementing the reforms with the result that global rankings of China and India in the GCI index are 28 and 55 respectively. Though China is ahead of India in all the three main categories of GCI ranking, biggest gap is observed in the 'Basic Requirement' category, thereby suggesting that India has to improve vastly in the areas of infrastructure development, administrative and Legal structures, Health and Primary education. Amongst the factors related to 'Efficiency Enhancers', India clearly lags behind China in Goods market efficiency, Labor market efficiency and Technological readiness.

In the third category of 'Business Sophistication and Innovation', China is ahead of India but not by a big margin. Both countries have a reasonable global ranking in this category. Even though China is distinctly ahead of India, it has to have a serious look in areas such as *Efficacy of corporate boards, Strength of investor protection, Mobile telephone subscriptions, Total tax rate, No. of procedures to start a business, No. of days to start a business, Trade tariffs, Imports as % of GDP, Redundancy cost, International internet bandwidth, Exports as % of GDP* etc.) where more than 100 nations are ahead of this country. Currently, China has been placed in Efficiency driven stage. For it to advance to Innovation driven stage, it should also improve in indicators grouped under the category Innovation and sophistication factors like *Local supplier quality, Nature of competitive advantage, Production process sophistication, Extent of marketing, Willingness to delegate authority and Capacity for innovation* where its global rankings are hovering around fifties. Similarly, India requires a strong intervention and commitment by the government agencies for it cross the barrier of developmental stage to efficiency driven stage. It has to redesign its policies and their implementation in more than 25 areas, spanning all the three categories, where its global rankings do not figure in top 100 nations. Majority of the indicators are related to infrastructure, education, goods and labor market efficiency.

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