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Is India ready for "Digital Disruption"?

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ABSTRACT

According to many, India has the potential to become one of the largest digitized economies in the world. By end of 2016, most sectors in the Indian economy ranging from healthcare to education, banking and finance as well as retail will face challenges and opportunities through digital disruption. In this fast changing scenario, the euphoria of new marketing opportunities may however be dampened by the reality of considering how sustainable such digital disruptions will be in the long run. One key element in this sustainability is the network readiness of the economy. The World Economic Forum publishes Networked Readiness Rankings for all economies where India is ranked 89 out of 143 countries for the year 2015 and India's rank has been declining consistently declining since 2013. This is a clear indication that despite the digital revolution which is now called the fourth industrial revolution, India may not be able to harness its full potential if the networked readiness of the country does not improve. The services sector of the Indian economy which contributes close to 60 per cent of the Gross Domestic Product should see incremental growth as the networked readiness improves. This paper seeks to examine this relationship as well as the reasons for the declining rank on Network Readiness. Only when such challenges are addressed both by the private sector as well

as the Government can we be confident that the digital disruption will indeed add a long run value for the economy.

Key Words: *Digital Disruption, Gross Domestic Product, India, Networked Readiness Index, Services*

Introduction

Digital disruption has been defined as the transformation that takes place in an economy when digital technology affects the erstwhile business models of the economy. The scope of this disruption is largely dependent on the spread of information technology and communication especially among the consumers. It has the potential to redefine markets at a pace never seen before. Its significance is visible not just in high technology sectors but across all sectors of the economy. Amazon transformed the consumer's purchase experience just as Netflix transformed the movie viewing of the consumer. High end fashion markets have seen disruption by net entrants like Net a porter or Gilt. Hospitality and travel has seen disruption by new entrants like AirBnB, Goibibo or Trivago. In fact digital disruption has been witnessed by all sectors including financial services, retail , education, telecommunications , health care and utilities to name a few.

This concept must be distinguished from the phrase disruptive technology, a term named by a Harvard Professor to describe a new technology displacing an older technology. Digital disruption can be perceived both as a threat and as an opportunity by the companies. On one hand it can invalidate the current business models but at the same time it can also offer new opportunities for the creation of new technologies to compete with others in the same field of business. Hence the key concerns for companies should be as to how fast they are responding to the threats caused by the digital disruption and how well are they utilizing the opportunities created by this change.

According to the Financial Express, India is expected to become one of the largest digitized countries across the globe. CISCO estimates that by 2019, India will 545 million internet users, 654.1 million smartphone users and 1.6 billion network devices. The Government of India has realized the immense potential for digital innovation in India and has laid the platform for it by the digital India initiative which includes large scale digital infrastructure, Government services which will be digitally enabled and greater empowerment to citizens through digital options.

The basis of digital disruption lies in connectivity. The transition has been from the desktop internet which perhaps connected one billion users to mobile internet which connected ten billion users to the Internet of things which connects 100 billion users. The last has been defined as the network of physical objects such as vehicles, phones, television sets, buildings that have net -work connectivity to collect and exchange data.

Based on the above transformation, it is no wonder then that half of the names of companies on the Fortune 500 list in 2000 have disappeared. And this is only the beginning. The world Economic Forum calls this the fourth Industrial Revolution marked with widespread use of digital technologies which like the earlier revolutions will have profound impact on society but through a digital transformation.

Digital Disruption in India

As early as 2002, the government of India moved to the digital platform with online booking of train tickets through the IRCTC making it more convenient for Indian commuters to book tickets. This was followed by the online airline tickets booking system in 2003. This gave way to market players like Makemytrip, Yatra and many others who, using the digital platform, made traveling more convenient. Online shopping became a favourite with consumers in India only after e-commerce companies like Flipkart, Amazon, Jabong made consumers in India fans of the deep-discount model.

Currently, in India, there are many successful companies across various sectors, in this space. Successful companies in the digital space are from varied industries. To name a few - Quikr, a Rs. 1000 crores is the largest online and mobile classifieds portal, Flipkart, valued at over 15 billion USD and Snapdeal, valued at 6.5 billion USD are both the successful e-commerce portals, Infibeam, is in the business of books, electronics, automobiles and has launched exclusive products in the books and electronics space. Paytm is India's most used mobile wallet with a user base of over 100 million and Ola is India's largest taxi aggregator and boasts of more than one million booking requests daily.

India currently has close to 4000 registered startups using technology to *disrupt* traditional business models. Digital disruption commenced with the e-commerce sector which surged from 3.8 billion USD in 2009 to 23 billion USD in 2015. India is preparing to venture ahead in the digital disruption space with Indian entrepreneurs vying to get into every aspect of

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modern life and business based on the model of 'Hybrid Software Companies or Internet+ Companies or even Online to Offline companies'.

In the first nine months of the year 2015, digital marketplaces succeeded to garner close to 3 billion USD of investments in 166 deals, as per venture capital analytics firm Tracxn; hence the ranking of 20 for India on the NRI for availability of venture capital funds. Despite this there was a stream of failed startups in the year 2015 alone for varying reasons. Ecommerce is a not easy business and for smaller players even tougher.

Dazo, a food startup, shut down in October 2015, within a year of launching as the food quality of its restaurant partners and delivery efficiency could not be managed by the startup. The 'hostage crisis' of the founders of TinyOwl, another food startup, has been in the news lately for laying off employees. Talent Pad, set up by IIT and IIM alumni, in the head-hunting space, failed citing inability to scale the model as a reason. A Bangalore-based logistics start up, 'Townrush' had to shut shop. Lumos, a hardware startup in the space of IoT (internet of things) space, failed despite a good product. They made smart switches that can automate all electrical appliances in a home.

The world economy has become a centre for digital disruption in every field with unprecedented amount of technology driven change. To survive in this rapidly transforming scenario every company has to leverage their potential. Yet companies are able to harness as much as the country is network ready.

This paper aims at firstly, understanding how India fares in preparedness to harness the potential of digital disruptive in terms of resources, manpower and infrastructure and secondly at examining the impact of digital preparedness on the economic growth of India. The current study has used India's rankings on the Networked Readiness Index, in Section I, to examine the first question and also focus on areas where improvement is needed. For the second question, in Section II, statistical analysis has been undertaken.

Section I

Networked Readiness Index (NRI)

The World Economic Forum publishes a "Global Information Technology Report "which reveals the network readiness of the economy. **Networked Readiness Index** (NRI), first published in 2001, is published by the World Economic Forum in collaboration with INSEAD.

This Index also known as '**Technology Readiness'**, measures the ability of economies in leveraging the opportunities offered by information and communications technology (ICT). The aim is to examine the competitiveness and well-being of economies based on their ability to harness their ICT potential. The Networked Readiness Index comprises of four subindexes viz. environment, readiness, usage and impact. The four subindexes further are calculated based on ten pillars which are further based on sub-index-particular indicators.

The index is a composite index which rests on six principles,

- Environment Index –
  a) Political and regulatory environment (9 indicators)
  b) Business and innovation environment (9 indicators)
- Readiness Sub index
  a) Infrastructure (4 indicators)
  b) Affordability (3 indicators)
  c) Skills (4 indicators)
- Usage Sub index
  a) Individual usage (7 indicators)
  b) Business Usage (6 indicators)
  c) Government Usage (3 indicators)
- Impact Sub index (**included in the year 2012**)
  a) Economic Impact (4 indicators)
  b) Social Impact (4 indicators)

Source : www3.weforum.org/docs/WEF_Global_IT_Report_2015.pdf

Each of the individual indicators is aggregated to obtain pillar scores which are then combined to make a sub index score. They are then further combined to make an overall score for the country and then the countries are ranked. The advanced economies have a higher score than the less advanced ones. Forty four of the fifty high income countries were included in the top fifty of the rankings. At the lower level of the rankings, 26 of the 30 worst performing economies are low income or lower middle income countries. As far as Asia is concerned, Singapore and Japan are the two countries in the top ten and within emerging and developing Asia, Malaysia is ranked 32nd, and Mongolia (61st), Thailand (67th) and Srilanka (65th) rank much lower. Unfortunately, India is in the 89th position as compared to China which is in the 62nd position.

India Ranking: 2003-2015

Table 1 shows India's NRI rankings from 2003 to 2011 on three sub-indices (environment, readiness and usage) and the composite NRI ranking in column 4. The NRI

from 2012 onwards includes the fourth sub-index – Impact index also and the composite index in the fifth column.

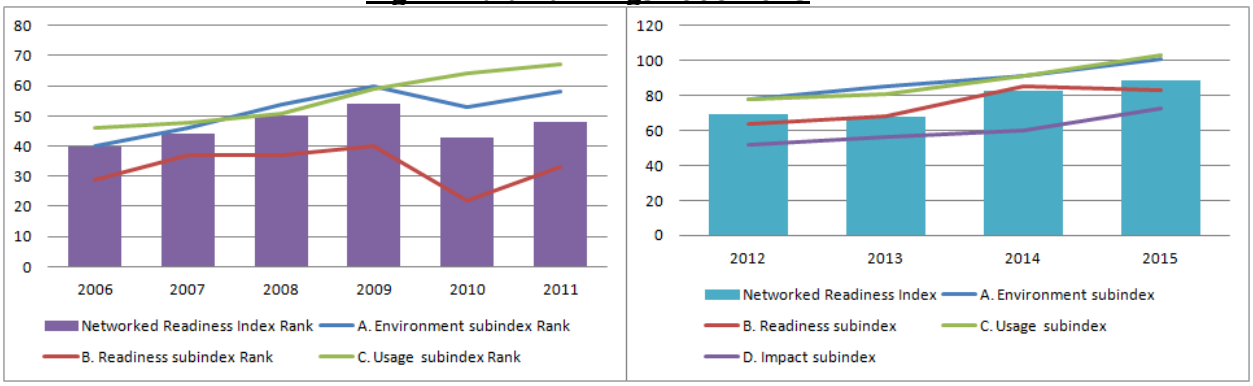
Table 1: **India Ranking: 2003-2015**

Networked Readiness Index				
Year	Environment subindex	Readiness subindex	Usage subindex	Networked Readiness Index
2003	34	40	42	37
2004	44	50	44	45
2005				39
2006	40	29	46	40
2007	46	37	48	44
2008	54	37	51	50
2009	60	40	59	54
2010	53	22	64	43
2011	58	33	67	48

NRI comprised a new pillar 'Impact Index'					
Year	Environment subindex	Readiness subindex	Usage subindex	Impact subindex	Networked Readiness Index
2012	78	64	78	52	69
2013	85	68	81	56	68
2014	91	85	91	60	83
2015	101	83	103	73	89

Source: The Global Information Technology Report: various issues

Fig. 1: India Rankings 2006-2015



India rankings have slipped consistently since 2009-2010 and a glance at the above table for the years 2012 to 2015.

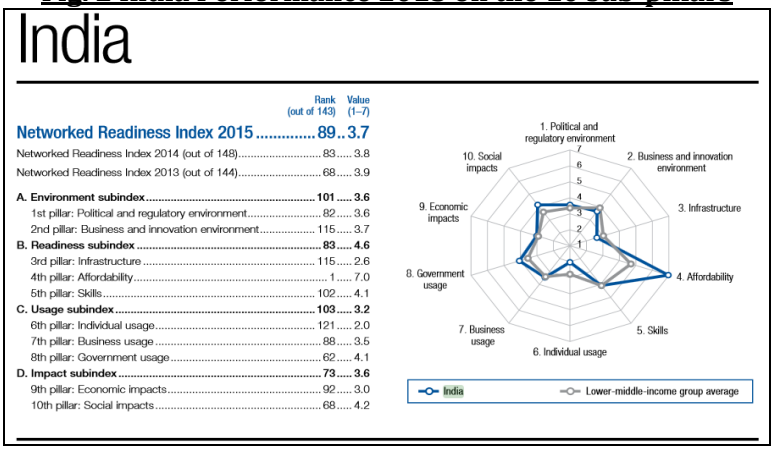
India slipped in rankings in 2015 to a position of 89 with a value of 3.7. In 2014, the rank was higher at 83 and at 68 in 2013. If one looks at the sub index of environment, the rank is 101 with a rank for political and regulatory environment at 82 and 115 for business and innovation environment.

In case of the sub-index named the readiness index, India ranked 115 in infrastructure, 1 in affordability and 102 in skills. The third sub-index of usage shows an overall rank of 103 with 121 for individual usage 88 for business usage and 62 for Government usage. The overall

rank for impact usage is 73 with a rank of 92 for economic impact and a rank of 68 for social impact.

The above values clearly show that having an overall rank of 89 despite a rank of 1 in a sub-index is a clear indication that India lags far behind in all other indices, especially in infrastructure, business and innovation environment and individual usage.

Fig. 2 India Performance 2015 on the 10 sub-pillars



Source: The Global Information Technology Report: 2015

Having seen India's ranking on the sub-indices for the year 2015, a further analysis on India's progress on these sub-indices for the past four years will shed light on the trends in the rankings.

India: Comparison of 10 pillars - 2012 to 2015:

Series	2012	2013	2014	2015
Series	India	India	India	India
A. Environment subindex	**78**	**85**	**91**	**101**
1st pillar: Political and regulatory environment	**71**	**75**	**73**	**82**
1.01 Effectiveness of law-making bodies, 1-7 (bes	44	53	61	57
1.02 Laws relating to ICTs, 1-7 (best)	48	52	54	67
1.03 Judicial independence, 1-7 (best)	51	45	40	50
1.04 Efficiency of legal system in settling disputes	64	59	62	57
1.05 Efficiency of legal system in challenging regs	51	52	48	43
1.06 Intellectual property protection, 1-7 (best)	68	63	71	65
1.07 Software piracy rate, % software installed	58	58	58	54
1.08 No. procedures to enforce a contract	126	131	134	130
1.09 No. days to enforce a contract	137	140	146	140
2nd pillar: Business and innovation environment	91	99	105	115

(i) On the 1st pillar – Political and regulatory environment - India is ranked amongst the lowest few economies in number of procedures and also number of days to enforce a contract. Moreover, India has dropped below 100th rank on the Environment Index as a whole.

2nd pillar: Business and innovation environment	**91**	**99**	**103**	**115**
2.01 Availability of latest technologies, 1-7 (best)	47	47	58	110
2.02 Venture capital availability, 1-7 (best)	27	26	27	20
2.03 Total tax rate, % profits	121	125	134	126
2.04 No. days to start a business	99	103	108	111
2.05 No. procedures to start a business	121	126	133	132
2.06 Intensity of local competition, 1-7 (best)	31	34	24	31
2.07 Tertiary education gross enrollment rate, %	101	96	92	87
2.08 Quality of management schools, 1-7 (best)	30	33	30	56
2.09 Gov't procurement of advanced tech, 1-7 (be	78	83	92	61

(ii) On the 2nd pillar – Business and innovation environment - India has ranked below 100 in the last two years on account of the Taxation rates and ease of doing business criteria where again India ranks amongst the last ten economies, especially on number of procedures to start business.

2.09 Gov't procurement of advanced tech, 1-7 (be	78	83	92	61
B. Readiness subindex	**64**	**68**	**85**	**83**
3rd pillar: Infrastructure	**100**	**111**	**119**	**115**
3.01 Electricity production, kWh/capita	102	102	101	99
3.02 Mobile network coverage, % pop.	111	113	122	110
3.03 Int'l Internet bandwidth, kb/s per user	96	99	111	113
3.04 Secure Internet servers/million pop.	107	106	108	104
4th pillar: Affordability	1	1	1	1

(iii) On the 3rd pillar – Infrastructure – India has ranked below 100th rank since 2012 consistently. We need to make some progress in terms readiness in infrastructure for technology and also electricity.

5th pillar: Skills	**100**	**95**	**101**	**102**
5.01 Quality of educational system, 1-7 (best)	38	34	33	45
5.02 Quality of math & science education, 1-7 (be	32	30	32	67
5.03 Secondary education gross enrollment rate, %	109	108	105	104
5.04 Adult literacy rate, %	122	121	127	94
C. Usage subindex	**78**	**81**	**91**	**103**

(iv) On the 5th pillar – Skills – India has ranked for 3 out of 4 years below 100th rank mainly on account of sub-100 rank in secondary education and adult literacy.

C. Usage subindex	**78**	**81**	**91**	**103**
6th pillar: Individual usage	**117**	**121**	**121**	**121**
6.01 Mobile phone subscriptions/100 pop.	117	117	122	123
6.02 Individuals using Internet, %	124	119	119	115
6.03 Households w/ personal computer, %	114	112	112	109
6.04 Households w/ Internet access, %	104	108	108	102
6.05 Fixed broadband Internet subs/100 pop.	101	102	102	104
6.06 Mobile broadband subs/100 pop.	107	102	104	113
6.07 Use of virtual social networks, 1-7 (best)	90	96	91	134
7th pillar: Business usage	47	45	51	88

(v) On the 6th pillar – Individual usage – India has all the four years been ranked in the bottom 20 per cent of the economies. These rankings in individual usage show that per 100 Indians we are ranked very poorly on internet and mobile phone usage. India has performed worst on this sub-index.

7th pillar: Business usage	**47**	**45**	**51**	**88**
7.01 Firm-level technology absorption, 1-7 (best)	41	40	48	102
7.02 Capacity for innovation, 1-7 (best)	35	42	41	48
7.03 PCT patents, applications/million pop.	63	62	61	61
7.04 Business-to-business Internet use, 1-7 (best)		59	69	119
7.05 Business-to-consumer Internet use, 1-7 (best)		78	71	95
7.06 Extent of staff training, 1-7 (best)	63	54	53	77
8th pillar: Government usage	46	49	41	62

(vi) On the 7th pillar – Business usage – India's performance on firm level technology absorption and business to business internet use and in the current year deteriorated by more than 100 per cent.

3.04 Secure Internet servers/million pop.	107	106	108	104
4th pillar: Affordability	**1**	**1**	**1**	**1**
4.01 Prepaid mobile cellular tariffs, PPP $/min.	5	6	7	4
4.02 Fixed broadband Internet tariffs, PPP $/month	6	4	4	13
4.03 Internet & telephony competition, 0–2 (best)	60	1	1	1
5th pillar: Skills	**100**	**95**	**101**	**102**

(vii)) On the 4th pillar – Affordability – India's performance has been number one in all the last four years. On PPP terms, mobile phone tariffs and internet tariffs are the lowest amongst 143 countries.

Source: The Global Information Technology Report: 2015

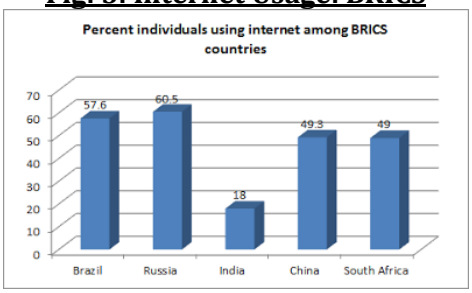
The detailed look into India's performance on the specific sub-indices within the 10 pillars makes the decagon (Fig. 2) on the NRI – 2015 be better understood. In India, usage of mobile and internet is amongst the lowest in the world despite the fact that India ranks first in terms of affordability.

Low Usage of Internet Services in India

According to the report, "State of Broadband 2015: Broadband as Foundation of Sustainable Development 2015", United Nations, India is ranked 131 on the fixed broadband subscription and is ranked 155 on mobile broadband subscription from a total of 189 nations. Amongst the BRICS nations, India fares the worst with 1.2 per 100 capita fixed and 5.5 mobile per 100 capita broadband penetration. India was ranked 90 out of 144 countries with only 18 per cent of the population using internet. The current low rankings for internet usage could be on account of low penetration of personal computers.

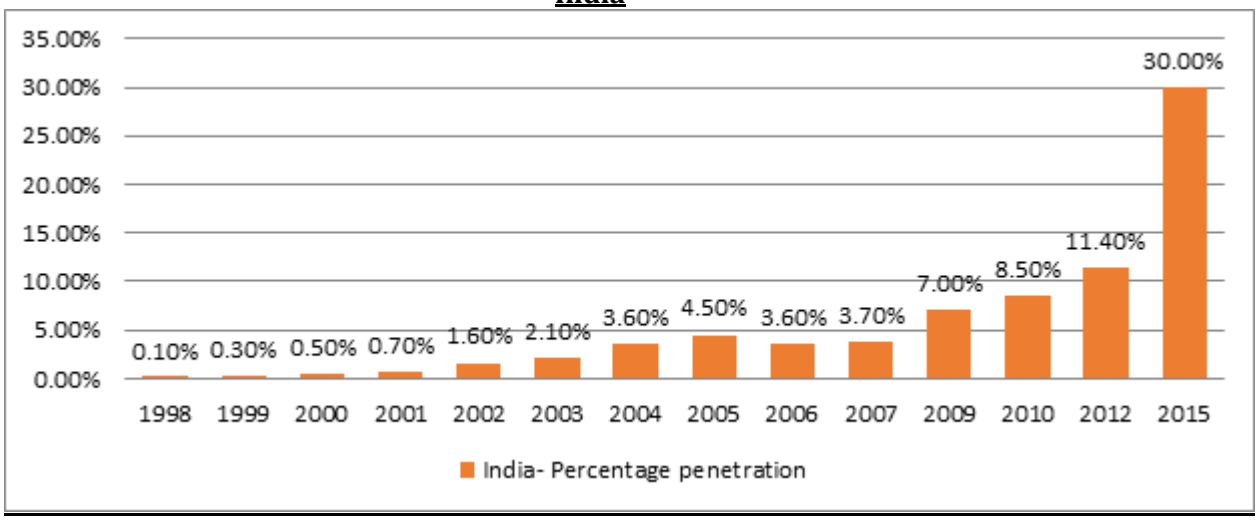
MAIT-KPMG's 2013 report found that India, as a market has a PC penetration of 10 per cent as compared to more than 45 per cent in countries such as Brazil, Malaysia, Russia, Saudi Arabia, Turkey and 35 per cent of China (MAIT, 2015). The barrier in mobile based internet is that 2G phones with T9 keypads and no data support - Nokia 1100 or similar models are mostly used. Voice calls are affordable but data is still expensive at minimum of Rs.99 per month and 10 paise per 10 KB usage. Linguistic barriers also keep internet usage low in a country like India having many regional languages. Hence the products being made available by the digitized companies are aimed only at the 2 million English-speaking elite of the country.

Fig: 3: Internet Usage: BRICS



However, these data points exhibit the untapped potential in internet – based services in India and the good news is that between 1998 and 2015, the percent of penetration has increased significantly as is visible in the following table.

Fig. 4: Internet usage statistics - India



Source: Internet Usage Stats and Telecommunications Market Report

Affordability

A most encouraging result amid India's mediocre performance is the country's 1st position in the Affordability pillar, as a result of the fierce competition within the vibrant telecommunications sector in the Networked Readiness Index and India has been ranked first on the sub-index since the past four years. India's Internet revolution is being shaped by telecom players' strategies to reduce cost of access.

The high competition amongst the companies in the telecom industry keeps the tariffs in India low. Industry analysis shows that the Hirschman-Herfindahl Index (HHI) for mobile

services for the whole of India stood at 1421.29 which indicates healthy competition and also the four firm concentration ratio of 66% which also suggests fairly strong competition (Gupta S. 2011).

Section II

Economic growth and the NRI

As the economy shifts to a more digitized environment, with devices capturing more data and increased digital interaction between people, the impact on economic output is multifold. Companies are increasingly trying to reap gains through digital business transformation keeping technology at the heart to being able to deliver more value. In India, the Government has realized the potential of embracing technology and its potential to add to the Gross Domestic Product (GDP) of our economy and use technology to catapult economic progress for the millions. Digitization leads to economic growth through increase in efficiency, productivity and quality of output in terms of goods and services. World Bank's 2009 report stated that 10 per cent increase in computer and broadband penetration increases GDP in developing economies by 1.38 per cent (MAIT, 2015).

The NRI of an economy can be a proxy for its 'digital economy' i.e. sum total of digital inputs include digital skills, digital equipment (hardware, software and communications equipment) and the intermediate digital goods and services used in production or in simple terms 'digital economy' is the share of total economic output derived from a number of broad 'digital' inputs.

The objective is to ascertain the impact the digital economy in India, proxied by the Networked Readiness Index, has had on India's GDP growth and also on the Services sector growth rates. Services sector has been selected for analysis separately as most of the digitized value addition has been in the services sector in India till now.

For the purpose of analysis, three data series have been selected: (i) India – NRI (ii) India – GDP annual growth rate and (iii) India – Services sector growth rate. Data series (ii) and (iii) have been taken from the Planning Commission Data tables and the NRI is from the various issues of the World Economic Forum, Global Information Technology Report for the period 2002 to 2014. Pearsons's Correlation Coefficient has been calculated to understand the relation between the NRI and Economic output.

Results and Findings

The Correlation output run through SPSS is as follows:

Correlations				
		grGDP	grSERVICES	NRI
NRI	Pearson Correlation	-.47	-.52	1.00
	Sig. (2-tailed)	.10	.07	
**. Correlation is significant at the 0.01 level (2-tailed).				

The above Correlation Matrix includes the Correlation coefficient of NRI with GDP growth rate (***grGDP***) in column 3 and the Correlation coefficient of NRI with Services sector growth rate (***grSERVICES***) in column 4. The correlation coefficient of the NRI- ***grGDP*** (r= - 0.47) is negative although not statistically significant and the correlation coefficient of the NRI- ***grSERVICES*** (r= - 0.52) is negative and statistically significant at 10 per cent level of significance. The negative relation between the NRI and both the growth rates shows that as the rank improves towards rank 1, growth rate increases. Hence on the basis of the direction of movement, the correlation coefficients are good. The NRI- ***grSERVICES*** correlation coefficient is negative and significant but not very strong.

From the above output, it can be said that till now India's networked readiness does not have an appreciable relation with our GDP growth rate. On the other hand, our networked readiness has a relation with the services sector growth rate although there is a lot of scope for improvement.

Conclusion

As the world redefines itself through a process of continuous digital disruptions, India will not be left behind. In fact, according to data from Cisco, the digital disruption in India is going to be so staggeringly massive that it will see the addition of 8.3 million networked devices and 5 million Internet users on a monthly basis. It is expected to be the second largest market for smartphones by 2016.The claim of the cheapest smartphone at Rs 251 is perhaps the latest in the process of digital disruption. Yet all these disruptions will contribute to the growth of the economy and remain as sustainable business ideas, when India's readiness is

far beyond what it is now. It is time India used its potential of demographic advantage and the vast untapped rural markets to make digital disruption here to stay. There is huge potential to be tapped in embracing digital technologies in manufacturing and agriculture which will not only improve productivity but will also add more jobs and eventually convert into value addition for the companies and for the country. When our readiness complements our growth rate, can we truly claim that India is a leader in digital disruptions.

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Annexure I:

Sub Indices in the Networked Readiness Index: India and China									
Series	2012	2013	2014	2015		2012	2013	2014	2015
Series	India	India	India	India		China	China	China	China
A. Environment subindex	**78**	**85**	**91**	**101**		**64**	**71**	**77**	**77**
1st pillar: Political and regulatory environment	**71**	**75**	**73**	**82**		**46**	**56**	**56**	**52**
1.01 Effectiveness of law-making bodies, 1-7 (bes	44	53	61	57		29	33	39	37
1.02 Laws relating to ICTs, 1-7 (best)	48	52	54	67		47	51	52	49
1.03 Judicial independence, 1-7 (best)	51	45	40	50		63	66	57	60
1.04 Efficiency of legal system in settling disputes	64	59	62	57		42	44	43	49
1.05 Efficiency of legal system in challenging regs	51	52	48	43		44	53	47	47
1.06 Intellectual property protection, 1-7 (best)	68	63	71	65		47	51	53	53
1.07 Software piracy rate, % software installed	58	58	58	54		80	79	80	72
1.08 No. procedures to enforce a contract	126	131	134	130		41	68	67	70
1.09 No. days to enforce a contract	137	140	146	140		35	35	32	46
2nd pillar: Business and innovation environment	**91**	**99**	**103**	**115**		**105**	**105**	**115**	**104**
2.01 Availability of latest technologies, 1-7 (best)	47	47	58	110		100	107	105	97
2.02 Venture capital availability, 1-7 (best)	27	26	27	20		22	22	16	13
2.03 Total tax rate, % profits	121	125	134	126		124	127	135	130
2.04 No. days to start a business	99	103	108	111		116	112	118	118
2.05 No. procedures to start a business	121	126	133	132		133	132	137	127
2.06 Intensity of local competition, 1-7 (best)	31	34	24	91		22	37	46	44
2.07 Tertiary education gross enrollment rate, %	101	96	92	87		84	82	91	85
2.08 Quality of management schools, 1-7 (best)	30	33	30	56		59	68	83	85
2.09 Gov't procurement of advanced tech, 1-7 (be	78	83	92	61		16	16	13	10
B. Readiness subindex	**64**	**68**	**85**	**83**		**66**	**66**	**73**	**76**
3rd pillar: Infrastructure	**100**	**111**	**119**	**115**		**87**	**83**	**86**	**92**
3.01 Electricity production, kWh/capita	102	102	101	99		70	69	61	59
3.02 Mobile network coverage, % pop.	111	113	122	110		46	48	54	61
3.03 Int'l Internet bandwidth, kb/s per user	96	99	111	113		114	120	125	123
3.04 Secure Internet servers/million pop.	107	106	108	104		110	111	111	105
4th pillar: Affordability	**1**	**1**	**1**	**1**		**42**	**40**	**60**	**57**
4.01 Prepaid mobile cellular tariffs, PPP $/min.	5	6	7	4		26	9	13	5
4.02 Fixed broadband Internet tariffs, PPP $/mont	6	4	4	13		55	51	84	74
4.03 Internet & telephony competition, 0–2 (best)	60	1	1	1		92	109	110	116
5th pillar: Skills	**100**	**95**	**101**	**102**		**57**	**53**	**59**	**59**
5.01 Quality of educational system, 1-7 (best)	38	34	33	45		54	57	54	52
5.02 Quality of math & science education, 1-7 (be	32	30	32	67		31	33	48	56
5.03 Secondary education gross enrollment rate, %	109	108	105	104		90	90	82	70
5.04 Adult literacy rate, %	122	121	127	94		68	65	66	38
C. Usage subindex	**78**	**81**	**91**	**103**		**51**	**58**	**61**	**57**
6th pillar: Individual usage	**117**	**121**	**121**	**121**		**82**	**83**	**80**	**80**
6.01 Mobile phone subscriptions/100 pop.	117	117	122	123		113	115	115	108
6.02 Individuals using Internet, %	124	119	119	115		76	74	78	75
6.03 Households w/ personal computer, %	114	112	112	109		64	71	70	71
6.04 Households w/ Internet access, %	104	108	108	102		67	71	72	69
6.05 Fixed broadband Internet subs/100 pop.	101	102	102	104		54	48	51	51
6.06 Mobile broadband subs/100 pop.	107	102	104	113		82	76	76	80
6.07 Use of virtual social networks, 1-7 (best)	90	96	91	134		89	108	126	124
7th pillar: Business usage	**47**	**45**	**51**	**88**		**37**	**35**	**44**	**46**
7.01 Firm-level technology absorption, 1-7 (best)	41	40	48	102		61	71	71	68
7.02 Capacity for innovation, 1-7 (best)	35	42	41	48		23	23	30	40
7.03 PCT patents, applications/million pop.	63	62	61	61		38	35	32	31
7.04 Business-to-business Internet use, 1-7 (best)		59	69	119			89	66	61
7.05 Business-to-consumer Internet use, 1-7 (best)		76	71	95			47	41	34
7.06 Extent of staff training, 1-7 (best)	63	54	53	77		45	45	48	46
8th pillar: Government usage	**46**	**40**	**41**	**62**		**33**	**38**	**38**	**39**
8.01 Importance of ICTs to gov't vision, 1-7 (best)	35	45	54	71		16	22	24	25
8.02 Government Online Service Index, 0–1 (best)	53	55	55	57		53	59	59	47
8.03 Gov't success in ICT promotion, 1-7 (best)		24	29	81			46	37	38
D. Impact subindex	**52**	**56**	**60**	**73**		**41**	**55**	**56**	**47**
9th pillar: Economic impacts	**41**	**43**	**50**	**92**		**79**	**83**	**81**	**71**
9.01 Impact of ICTs on new services & products, 1	35	36	40	87		38	49	52	49
9.02 ICT PCT patents, applications/million pop.	56	57	55	58		32	29	28	30
9.03 Impact of ICTs on new organizational models	32	27	40	89		33	37	35	34
9.04 Knowledge-intensive jobs, % workforce	n/a	n/a	n/a	n/a		102	100	108	106
10th pillar: Social impacts	**65**	**73**	**73**	**68**		**30**	**42**	**44**	**40**
10.01 Impact of ICTs on access to basic services,	69	64	63	76		31	39	45	46
10.02 Internet access in schools, 1-7 (best)	74	75	77	87		28	31	35	38
10.03 ICT use & gov't efficiency, 1-7 (best)	53	54	53	70		31	39	47	41
10.04 E-Participation Index, 0–1 (best)	56	70	71	40		32	62	63	33
Networked Readiness Index	**69**	**68**	**83**	**89**		**51**	**58**	**62**	**62**