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Value Creation for International Markets: Opportunities for Collaboration between India and Japan in Telecommunication Industry

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Abstract

Telecommunication market in India is one of the large and rapidly growing market in the world, and has vast potential to grow further. Japan's telecommunication market, although shows sign of maturity, is steady with the advent of new technologies and revived focus on customers. This paper analyses the strengths of telecommunication firms of India and Japan, and identifies the opportunities for collaborations to co-create values in domestic as well as in international market. Analysis uses the collaboration framework with secondary data as information source. Japan has high technological and country competitiveness. On the other hand India offers huge potential in terms of mobile market, human resources, technical skills, project management skills and cost efficient operations in highly competitive environment. Thus both the countries India and Japan have complementary opportunities for collaboration to co-create values in international market. Few areas are suggested as potential for further investigation for specific collaboration opportunities.

Keywords: *Telecommunication, Competitiveness, Collaboration,*
Sub-theme: *Learning and collaboration Strategy*

Introduction

Technological changes have lead to paradigm shift in business processes and management practices. Companies face intense pressure to be successful in the current dynamic environment. To sustain competitive advantage firms need to continuously innovate. To do continuous innovation, multiple skills and facilities are needed which is difficult to maintain within one firm in case of telecommunication. Thus, collaboration by providing multiple technical capabilities is the key to innovate and sustain in the competitive world. Technology oriented collaborations offer advantages like – increased access to knowledge, research and finding new

perspective and ideas. Further, it opens doors for other opportunities that would emerge at a later stage.

The objective of this paper is to study the collaborative patterns of telecommunication firms in India and Japan and to identify opportunities for mutual collaboration between the two. Secondary data has been analyzed and the key strengths and opportunities are identified.

The paper is organized into eight sections. The overview of the global scenario of telecommunication industry is presented in section 2. Section 3 and 4 presents the telecommunication industry in India and Japan respectively. In section 5 we use the conceptual framework to map the firm's competitiveness and analyse theoretically the collaboration pattern of the selected firm's pattern. In section 6, the framework is empirically tested for the current scenario of firms in the telecommunication industry. Section 7 presents the potential areas of collaboration between the two nations. Finally conclusions are presented in section 8.

Global Telecommunication Scenario

Telecommunications play an important role in the world economy. The worldwide industry's revenue was $3.85 trillion in 2008. Mobile cellular penetration in developing countries surpassed the 50% mark and reached an estimated 56% in year 2009.There are now more than twice as many mobile subscriptions in the developing world than in the developed world (3.2 billion vs. 1.4 billion). 26% of world populations (1.7 billion people) are using the Internet (64% in developed, 17.5% in developing countries). Broadband penetration in developed countries is 23.3% whereas it is only 3.5% in developing nations (Teltscher 2009). Overview of the major players in the countries is given in Table 1. It is found that china mobile ranks first in the number of subscribers. Telecommunication industry in

Table 1. Comparison of select mobile operators to identify growth patterns

Attributes / Country (Operator)	2005	2006	2007	2008	2009	Absolute Change in 5 years
Total Revenue(USD Million)						
China (China Mobile)	36,553		52,280	60,392	-	
Japan (NTT Docomo)-wireless (FOMA+mova)	47,481	47,474	47,675	46,030	42,448	-5,033
US (Verizon)-wireless	32,300	38,000	43,900	49,300		
India (Bharti Airtel)	1,729	2,473	3,905	5,727	7,919	6,190
Total Asset($ million)						
China (China Mobile)	56,478		8,253	96,326		39,849 (1)
Japan (NTT Docomo)	67,815	70,342	67,590	68,636	71,701	
US (Verizon)	186,959	188,804	186,959	202,352		15,393 (1)
Mobile subscribers(millions)						
China (China Mobile)			369.3	457.3	522.3	
Japan (NTT Docomo)	48.8	51.1	52.6	53.4	54.6	5.8
US (Verizon)	51.3	59.1	65.7	72.1		20.8 (1)
India (Bharti Airtel)	11.0	19.6	37.1	62.0	93.9	82.9
Company ARPU						
Japan (NTT Docomo) in USD	972.5	928.3	906.0	862.2	777.4	-195
India (Bharti Airtel)	157.4	126.3	105.1	92.4	84.3	-73.1
Employees(consolidated)						
Japan (NTT Docomo)	-	-	-	-	22,843.0	
India (Bharti Airtel)	-	-	-	-	24,538.0	
Revenue per employee						
Japan (NTT Docomo)	-	-	-	-	1.9	
India (Bharti Airtel)	-	-	-	-	0.3	
Notes#1 For 4 years						
Source: Annual Reports of the companies http://en.wikipedia.org/wiki/Verizon_Communications						

India shows exponential growth in the number of subscribers. The growth of subscribers in Japan is constant showing the signs of maturing. The average revenue per user (ARPU) is significantly higher than its Indian and US counterparts. DoCoMo has remarkably high productivity on internal front, as reflected in employee productivity which is measured in terms of revenue per employee.

Telecommunication Industry in India

Availability of telecommunication infrastructure and services is critical for economical growth of the nation. According to the Telecom Regulatory Authority of India (TRAI 2009), the number of subscribers in the country increased from 384.79 in 2008 to 562.21 million in 2009. The subscriber growth is shown in Figure 1. The overall teledensity (telephones per 100 people) has grown from 3.45 in 2000 to 48 in 2009. Mobile telephones has become the dominant means for communication primarily because deploying mobile network is not only cost-efficient but provides greater flexibility and convenience to its subscribers than landline telephone. FDI in telecommunication has increased 4 times since 2005-06 (ICR2009). Although there has been significant growth in the telecommunication market in India, product development in local industry has been sluggish. The operators have access to low cost equipment form international markets and this result in low motivation to invest in developing equipment manufacturing capabilities. We conducted SWOT analysis of two leading Indian telecom firms to know the current capabilities and future opportunities for them. The SWOT analysis of the two Indian telecommunication firms- Reliance Infocomm and Bharti Airtel is presented in Figure 2 (a) and 2(b). We found that Indian firms have both the technological and managerial capabilities. It also shows that Indian firms have to enhance R&D and technology development capability to improve country competitiveness. To strengthen R&D and technology development at a fast pace would require firms to build long term collaborations with firms having strong R&D and technological competence.

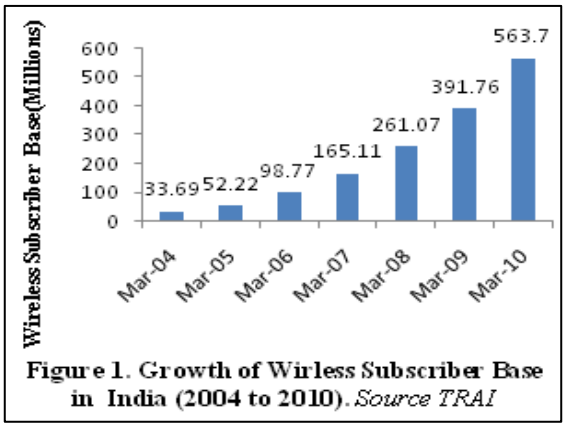

Figure 1. Growth of Wirless Subscriber Base in India (2004 to 2010). *Source TRAI*

Strength		Opportunities	
Cost Efficient Operations	S1	Mobile data services and VAS	O1
Effective partner-engagement model	S2	Telecom infrastructre need for enterprise	O2
Large pool of skill set and project roll out capability	S3	Huge potential for mobile internet in rural area	O3
International operations and experience	S4	Emerging areas e.g. Mobile Security, mCommerce, SDP, 3G, BWA	O4
Growing subscriber base & revenue	S5		
Weakness		**Threat**	
Lack of R&D and technology development	W1	External dependency for technology know-how	T1
Low on equipment manufacturing and technology transfer	W2	Intense competition	T2

Figure 2 (a). SWOT Analysis for Bharti AirTel

Strength		Opportunities	
Dual technolgy operator	S1	Mobile data services and VAS	O1
Large inventment in telecom infrastructure	S2	Telecom infrastructre need for enterprise	O2
Excellent Project roll out capability	S3	Huge potential for Mobile internet and applications	O3
Growing subscriber base	S4	Emerging areas e.g. Mobile Security, mCommerce, service delivery platfoorm, 3G	O4
Weakness		**Threat**	
Fall in Voice revenue and low data service revenue	W1	External dependency for technology know-how	T1
Lack of R&D and technology development	W2	Intense competition	T2
Low on equipment manufacturing and technology transfer	W3	Availability of spectrum	T3
Lack of customer service focus	W4		

Figure 2 (b). SWOT Analysis for Reliance Infocomm

Telecommunication Industry in Japan

Japan has 116 million Subscribers (90.7 % penetration). NTT DoCoMo (NTT), au (KDDI), SoftBank, Wilcome and Emobile are key telecommunication operators. DoCoMo's share is 55% while KDDI has 32% market share followed by Softbank with 22.5 %share. Total Revenue of NTT DoCoMo was US $46.86 billion (2009). Excellent management skills, investments in R&D and relationships with manufacturers are the key success factors that allowed DoCoMo to secure its dominant position in the Japanese market. DoCoMo has invested heavily in technology development. It has developed capability to absorb technology and create next generation of acquired technologies to expand their reach to new markets. The SWOT analysis for Docomo and KDDI is shown in Figure 3(a) and 3(b). It is observed that the growth in number of subscribers and revenue is stagnant for last four years. With the rich experience in telecommunication technology, growth opportunity lies in pursuing value added services and expanding in other geographies. NTT Docomo has very strong R&D and innovation capability. They can leverage this strength by collaborating with firms in other geographies where market growth rate is high and co-create value across the world.

Strength		Opportunities	
Strong R&D and in-house technology innovation	S1	License for use of its technology and platforms	O1
Proven Expertise and know-how	S2	Partner for high growth (Subscribers and Revenue) in other geography	O2
Well established partner-collaboration model for service delivery	S3	Capitalize on know-how and establish technology leadership	O3
International Operations and strategic investments	S4	strategic Partner and alliances to co-create value	O4
Steady stream of revenue and revised focus on subscriber	S5		
Quality manufacturing bases	S6		
Dominant market leader	S7		
Weakness		**Threat**	
Stagnant subscriber growth and revenue	W1	Incompatibility with technology outside Japan limits geographical growth	T1
Compatibility with other contemporary technology	W2		

Figure 3 (a). SWOT Analysis for NTT DoCoMo

Strength		Opportunities	
In-house technology R&D	S1		
Partner-collaboration model for service delivery	S2	Partner for high growth (Subscribers and Revenue) in other geography	O1
Steady stream of revenue	S3	Capitalize on know-how to expand operations internationally	O2
Customer Centric Services	S4	strategic Partner and alliances to co-create value	O3
Quality manufacturing bases	S5		
Weakness		**Threat**	
Stagnant subscriber growth and revenue	W1	Incompatibility with technology outside Japan limits geographical growth	T1
Compatibility with other contemporary technology	W2		

Figure 3 (b). SWOT Analysis for KDDI

Collaborative Patterns of Selected Players – A Theoretical Perspective

Conceptual framework about taxonomy of co-operative strategies is used to identify patterns. The collaborative patterns of the firms are assessed on two factors-Country competitiveness and Technological competitiveness. Country competitiveness in an industry is the ability of companies in the country to produce and sell products domestically and in other countries. Ability of to sell (export ability), Ability to attract (inflow of FDI) and ability to adjust are the three indicators of competitiveness of a country (Reiljan, et al, 2000). Ability to adjust refers to the ability to adapt changes in the market and technology at a faster pace. Technological competitiveness is the ability to provide leading-edge technical capabilities, superior performance characteristics and reliability. Technological competitiveness can sometimes be more important than price competitiveness in international trade, particularly in advanced-technology industries such as telecommunications equipment and aerospace. Patents are used as one of the key measures for technological competitiveness. Momaya (2008) has proposed a conceptual framework to identify the pattern of collaboration considering technological and country competitiveness. The framework is shown in Figure 4. We have used this framework to find whether there is possibility of collaboration among firms in these two countries on the basis of technology and country competitiveness.

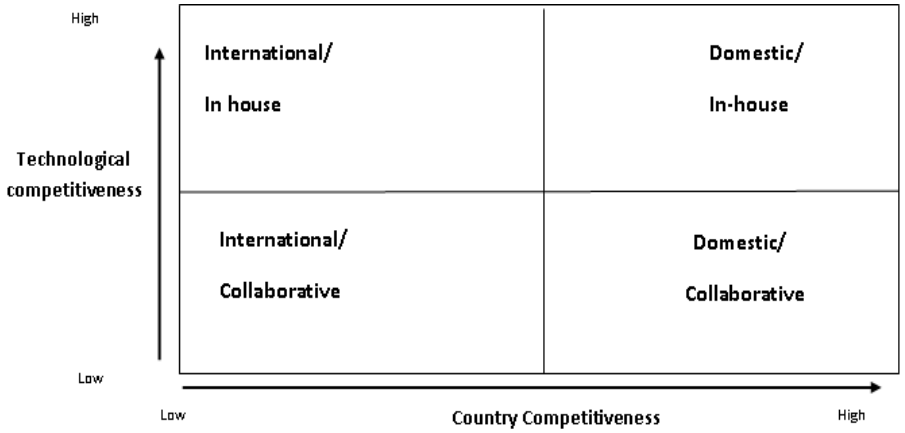

Figure 4. Framework for determinants of collaboration. *Source: Adapted from Momaya (2008)*

The global competitiveness report (GCR 2009-2010) ranks the countries is the based on several parameters (global competitiveness index). India ranks 49 whereas Japan holds a strong position at 8 indicating a very high competitiveness globally. A comparative overview of some of the parameter indicating the global competitiveness is shown in Table 2. to find a win-win situation for collaboration.

Table 2. Parameters for country competitiveness (India and Japan)

Parameters	India (Rank)				Japan (Rank)			
Higher Education and Training	66				23			
Goods Market Efficiency	48				17			
Technological Readiness	83				25			
FDI and technology transfer	19				57			
Availability of latest technologies	39				12			
Market Size	4				3			
Capacity for innovation	35				1			
Availability of scientists and engineers	4				2			
Company spending on R&D	36				2			
Trade competitiveness index	2008	2007	2006	2005	2008	2007	2006	2005
	-	-0.87 (0.65*)	-0.87	-0.91	-	0.21 (6.05*)	0.31	0.3
Exports of goods and services (% of GDP)	24	21	22	20	12	13	14	16
Imports of goods and services (% of GDP)	30	25	25	23	10	11	13	15
Notes : (*) indicates values converted on linear scale from 0 to 10.								
Sources: global competitiveness report(2010);Mittal(2009);http://www.worldbank.org								

It is clear from the table that India ranks fourth in terms of Market Size, indicating tremendous growth potential. The competitiveness of India has improved over year in terms of ability to attract FDI but still low in innovation and R&D as compared to Japan. Trade competitiveness Index is quite low for India indicating trade imbalance and low competitiveness at country level. Hence there are opportunities for Japan to tap Indian market and India to build R&D and innovation capability through collaboration.

The patent statistics for four players is presented in Table 3. It indicates that the Japanese firms like DoCoMo and KDDI have very large number of patents as compared to Indian firms. This clearly suggests potential for technological collaboration to improve the innovation throughput or product development cycle time.

Table 3. Patent statistics for the firms

Company	International Patent applications and granted		
	Year 2000	2005	2010
NTT DOCOMO	666	7254	20864(8.35 *)
KDDI	836	2014	4047(1.62*)
Bharti Airtel	---	---	---
Reliance Infocomm Limited	---	3	10 (.004*)
Notes : (*) indicate values converted on linear scale from 0 to 10.			
Source: Delhion Database			

Thus based on the key statistics on competitiveness parameters, the firms are placed in the framework of collaboration as presented in Figure 5. The country competitiveness score is computed using trade competiveness index from Table 2. Score 0 refers to -1 and score 10 refers to +1. The technology competitiveness score is computed using data from Table 3. Score 0 refers 0 patents and score 10 refers to 30000 patents. The framework suggests that NTT DoCoMo is a technology leader whereas Bharti Airtel and Reliance are technology followers. Indian firms must collaborate with the firms in Japan like DoCoMo. DoCoMo has capacity and capability to expand their business to India and offer value added services to their customers. To enhance the country competitveness Indian firms will require to develop both the R&D and equipment manufacturing capabilities. This will further accelerate the growth of the local industry in India.

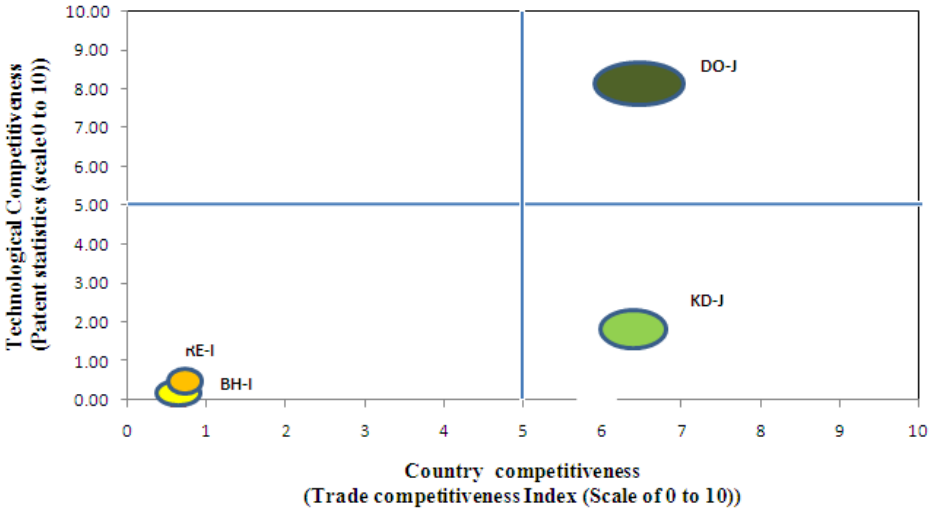

Figure 5. Relative position of Firms in India and Japan

Notes: Nomenclature Firm-Country.
I-India;J-Japan;DO- NTT DOCOMO ;KD-KDDI;BH-Bharti Airtel;RE-Relaince Communications

Collaborative Patterns of Selected Players - An Empirical Perspective

Since 1999, NTT DoCoMo has been expanding its influence in Asia Pacific by establishing its position in companies through investments. These investments have enable DoCoMo to use its technical expertise and business know-how to help partners increase their value. DoCoMo has also invested in other companies that have potential for not only future growth but also has synergy with DoCoMo. NTT DoCoMo has many domestic alliances for technology development and value chain. KDDI has relatively no major international alliance. Bharti Airtel has international alliance with organizations which have expertise in technological know-how (product and operational) and suppliers of technologies. Bharti Airtel is also expanding its market reach and developing operational alliances in developing markets

(Srilanka, Bangaladesh, and South Africa) to capitalize its expertise on cost effective operations. We have captured the data for the alliances of the telecommunication firms in India (Airtel and Reliance) and Japan (NTT DoCoMo and KDDI). Summary of the findings is presented in Table 4.

Table 4. Collaborative pattern of the select telecommunication firms

Teleocm Operators	Domestic		International	
	In house	Co-operative	In-house	Co-operative
Bharti Airtel	Bharti Telesoft	Multiple Companies for VAS and Applications	Bharti Airtel Seychelles Bharti Airtel - Srilanka (Srilankan Army) Bharti Airtel - Bangladesh (Warid Telecom) Airtel - Africa (Zain Africa BV)	Singapore Telecom Ericsson India Nokia Google
Reliance		Multiple companies for VAS Apps / Contents		Qualcomm Polycom Inc Microsoft Tech China Mobile Google Universal
NTT DoCoMo		Multiple companies for VAS Contents	Multiple collbaoration with domestic company for manufacturing supply of equipments and content	TATA Teleservices, India KTF, South Korea AT&T, USA KPN, Dutch U-Mobile Malaysia TMI, Bangadesh Guamcell, Guam China Mobile FarEas Tone (Taiwan), PLDT (Philippines), Blue Ocean Wireless, DoCoMo intertouch, KTF NTT DoCoMo, Mobile Internet, Gobi Fund (China), Mobile Innovatio (Thai) Net Mobile (Germany).
(KDDI)	KDDI Technology Labs Fiber Labs incorporation			

Source: Based on Analysis from the websites of the select firms

It is evident from the above patterns that organizations which are low on country competitiveness and also low on technological competitiveness seek international collaboration. Pattern indicates that Indian firms have more collaboration with those firms which are more competitive whereas, Japanese firms have more collaboration with firms that are less competitive but located in growing market. The primary purpose of these collaborations is to reduce the time to market and leverage the pool of complementary capabilities of the firm. Similarly, organizations which are high on country competitiveness and low on technological competitiveness also seek international collaboration to enhance their geographical reach and enhance capitalize their investment in R&D. The above findings are in line with the conceptual framework of the collaboration which is based on the two competitiveness criterion and other contexts such as biopharmaceutical (Momaya 2008). Some divergence in pattern of Japanese firms hints at need for further refinement of the framework.

Potential Areas of Collaboration

The Evaluation in previous section hint at opportunities of collaboration among various stakeholders in India and Japan in many areas. Specific collaboration areas among the select firms are identified illustratively first. Then general areas among other stakeholders are also identified. This section is based on the SWOT analysis, and current status of telecom industries. Based on the SWOT analysis from Figure 2 and 3, Figure 6 shows the collaboration opportunity between the firms in India and Japan. DoCoMo can collaborate with Bharti Airtel by leveraging its strength S5 for opportunity O2 and Bharti Airtel can leverage DoCoMo's strength S6 for its opportunity O2 and O4. It is also seen that there exists a weak collaboration opportunity between KDDI and Indian firms

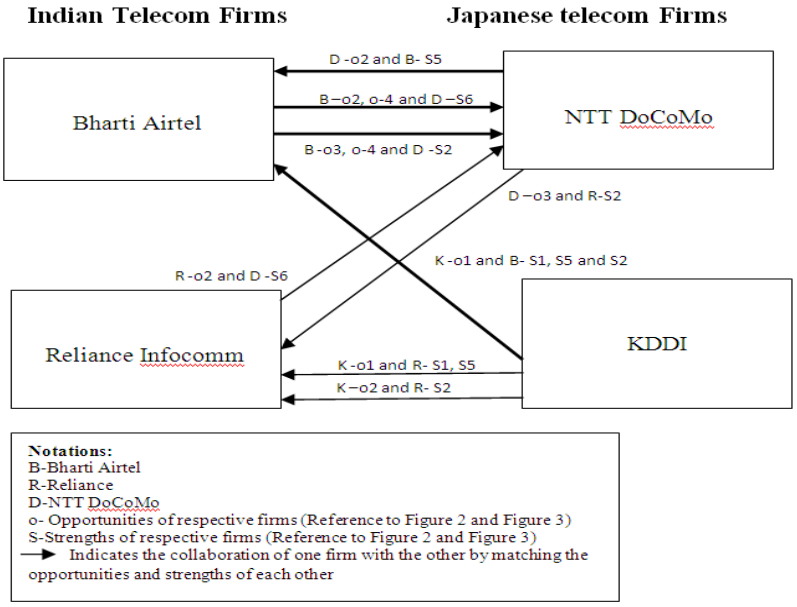

Figure 6. Potential Areas of collaboration based on SWOT Analysis

Telecommunication tariffs in India are among the lowest in the world (approximately 1 cent / min) and average revenue per subscriber per month is approximately $5, which makes Indian telecommunication operators as one of the low cost service providers in the world. A threefold increase in subscriber base in last 6 years underlines the excellent project management and execution skills of Indian telecommunication firm. Indian operators provide innovative and a wide variety of value added services (VAS). An innovative business engagement model allows operators, application developers and content aggregator together to deliver the most advance VAS solutions. On the other hand, Indian telecommunication firms are heavily dependent on international firms for technology and finance, while firms in Japan are self-reliant due to strong in-house R&D. The two countries share a similar structure with respect to contribution in GDP by service sector. In Japan the services sector account for 68 per cent of the GDP (WDI 2007), and in India, it accounts for 52 percent of GDP. India has large pool of skilled resources, excellent experience in creating operational efficiency and expertise in managing scale of operation. Large market potential and growing economy complement the capabilities of Japanese firm. Some of the potential areas for collaboration could be:

1. Strategic alliances for technology, particularly in the area of telecommunication product development and enterprise solutions. Firms can establish cooperative research and development at university campus.
2. Pooling the resources and leveraging the complementary capabilities to co-create the value in global market.
3. Need for standardization on service delivery framework and fragmentation of network elements for service delivery chain offers huge challenge to application developers and application providers across multiple operators (14 operators).

Concluding Remarks

An attempt has been made to identify the potential areas for collaboration between Indian and Japan. This exploratory study is limited to the field of telecommunications. Collaboration framework has been used to find the indicative collaboration pattern for the four telecommunication firms –Bharti Airtel (India), Reliance Infocomm (India), NTT DoCoMo (Japan) and KDDI (Japan). The evidences have been collected based on the collaboration of these firms in past few years. While the paper explores only select large firms, opportunities of collaborations exist for smaller firms, academia and other stakeholders also. It has been found that Japan has high technological and country competitiveness. On the other side, India has huge potential in terms of mobile market and human skills and the industry is highly competitive in terms of cost efficient operations. The study suggests that firm seeks collaboration are those which have complementary competitiveness with each other.

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