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Examining Quality Issues in 3G Services in India: An Empirical Study

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Abstract-*Internet and mobile telephony has transformed the human life and the way business conducted conventionally. India has witnessed a tremendous rise in the internet and mobile penetration. Especially mobile technology has reached the nooks and corners of the country where internet is still a farfetched dream. 3G services are the advanced services that facilitate internet access on 3G compatible devices like Smartphone's, tablets and PCs etc. The article is an attempt to comprehend the present scenario of 3G services in India and to assess its standing in comparison to the global counterparts. In addition, the shortcomings of the 3G quality services in India are highlighted along with the regulatory protocols regarding the same.*

Keywords- *Internet, 3G, Quality services, Regulatory protocol, Mobiles.*

1. INTRODUCTION

1.1 Introduction to the Indian internet scenario

It has been just four decades to the inception of internet, but it has radically transformed the human life. It has facilitated swift transfer of information encompassing every concept under the sun. It has woven the world into a global web, bringing people closer through multiple modes of interpersonal communication like email, instant messaging, video conferencing and social networking. It has also boosted commerce through propelling online business that has benefit for both the buyers and the sellers. Across the globe, Internet is a booming industry stimulated through entrepreneurship and backed by many industries. Internet offers a wide range of advanced productivity and communication tools that ought to bring advantage to people, establishments and governing bodies. Internet has gradually taken over the entire human life with influencing every single dimension of it. It is so much a part of human life that it is impossible to imagine life without internet access (Young, 2006). Gnanasambandam et. al. (2012) studied the Indian internet scenario and concluded that with a base of nearly 120 million internet users, India stands third globally with substantial changes observed in online behavior of the Indians. By 2015, India will become the second largest internet user base with highest incremental growth ranging between 330-370 million. Internet access and mobile telephony is comparatively cheaper in India, which is catapulting an internet boom in the country. India showcases an exclusive growth tessellation wherein users accessing internet through mobile or tablet devices exclusively comprise of nearly 75 percent of the new users and 55 percent of the total user base. However, in spite of a huge user base, internet enabled services add an insignificant 1.6 percent to the country's GDP which is expected to grow by nearly 3.3 percent by 2015. India is blessed with abundant human and financial resources but it ranks feebly in terms of internet infrastructure, internet assignation, e-commerce manifesto, simplification of internet backed entrepreneurship and the acceptability of e-governance (Gnanasambandam et. al., 2012).

1.2 Growth of use of internet in India

The growth of internet usage in India has been phenomenal in recent times. Singh (2013) reported that as per International Telecommunication Union, India is swiftly heading towards 13 percent overall internet penetrations with nearly 160 million registered users, which comprise nearly 40 percent of the world's online population which is estimated at 2.7 billion. Moreover, it is estimated that the internet users shall double up to 330 million by 2015. India's National Telecom Policy foresees nearly 175 million broadband subscribers by 2017 and 600 million by 2020. Economic Times (2013) reported that India is primed to experience the maximum Internet Protocol (IP) traffic growth rate of nearly 44 percent compound annual growth rate (CAGR) during the 2012-2017 period trailed by Indonesia (42 percent CAGR) and South Africa (31 percent CAGR). The Hindu (2012) quoted the Boston Consulting Group's Connected World series which estimated that the share of the Indian Internet segment in the general economy is Rs.3.2 trillion which is round 4.1 percent of the GDP and is anticipated to escalate up to Rs.10.8 trillion by 2016. The Internet is the eight largest segment in India goaded primarily by the exports of IT and ITeS services. The net export of such services is 59 percent as compared to the consumption which low at 20 percent.

The demographic characteristics for internet usage in India are very exciting. There is a dearth of infrastructure and low penetration rate of internet obstructs the growth of internet in the country while on the contrary, mobile

internet has gained far more acceptance than the personal computer. It has been observed that mobile internet is being used for its convenience and smartphones serve the dual purpose of voice calling and data usage (Research and Markets, 2013).This is evident from the report by Internet and Mobile Association of India (IAMAI) and IMRB which states that in 2015, the mobile internet users are anticipated to reach 165million as compared to 87.1 million in 2012 (Indian Express, 2013).

1.3 Advent of 3G in India

3G services are the third generation mobile telecommunication services which encompass services like wide-area wireless voice telephone, video calls, and wireless data, all facilitated in a mobile format. It enables the users to concurrently use speech and data services and higher data rates. 3G services are propagated to foster growth, expanded bandwidth and support more assorted applications (Singh et. al., 2010). The density of telecommunication services is as high as 129.8 percent in the urban sections of India, this has compelled the telecom players to divert their focus on the rural market which showcases a low density of 27.32 percent and also on value-added services especially mobile internet. 3G services were introduced in India in 2010. The preceding 2G technology is witnessing a lot of problems like congestion in networks, restricted and slow speed, restrained bandwidth and security concerns. These problems can be prominently tackled through 3G and value added services can be augmented (Deloitte, 2011b). India has been reported to have 39 million 3G subscriptions by the end of 2011 with a low 4 percent penetration rate but with a tremendous Year-on- Year growth rate of 841 percent (Vikas, 2012). The 3G service subscriber base is very small in India. The acceptance of 3G services has been very disheartening on the contrary to the expectations. The primary reason is the high prices of the 3G services which are much higher than GPRS services for similar usage. Moreover, many 3G services consume significant amount of data which culminates to quicker depletion of data pan. Thus, service providers must strive to lower the prices and also elevate the download quota limit for each price unit for boosting the sales as subscribers can use it without worrying about the bills. Moreover, 3G data service providers need to be priced competitively as desktop broadband services which can help in motivating the target customers to use mobile internet services for heavy downloads like video streaming, file downloading and live streaming (PwC, 2012).

1.4 Major players

3G services have been recently launched in India and have received a slow response especially because India is a highly price sensitive market. Nevertheless, almost all the major mobile telecommunication service providers provide the facility of 3G data services like Airtel, Vodafone, Reliance, Idea, BSNL, MTNL, Tata Docomo etc. By the end of 2012, Reliance Communications had 3.2 million subscribers; Idea had 2.6 million and Airtel nearly 9 million 3G subscribers. Vodafone had 35 million subscribers which encompasses both 2G and 3G users, out which estimation is made that nearly 9 million subscribers are of 3G. BSNL, MTNL, Aircel and Tata Tele collectively have 15 million subscribers for 3G services (Vikas 2012). Public sector undertakings, BSNL and MTNL got the 3G spectrum licenses one year earlier than the private players and have been providing the services since then but haven't been successful in securing a substantial customer base. BSNL and MTNL facilitate 3G services in nearly 700 towns and cities and have a collective 3 million users in which MTNL's share is very small totting up to a few lakhs only. Likewise, RCom which incurred a significant loss due to mobile number portability game was an initiator of 3G and expanded the services swiftly across 150 locations across 13 circles. This helped the company to entice a significant number of subscribers. Tata Docomo has 1.5 million subscribers with presence in nine circles with nearly 100 cities (Jha, 2011). In this background, the article in hand conducts a study through getting an insight into the issues and future prospect of 3G services in India.

The main objective of the paper is to deeply understand the effect of Advent, Growing Importance and quality issues on consumers and futures of 3G services in India i.e. a road ahead. To achieve the objectives of the study the paper is divided into following sections; Section 1 i.e. the present section gives deep insights of Indian Internet scenario. Section II gives a brief snap shot of review of existing literature, Section III deals with Data analysis and methodology used. Section IV brings out analysis and interpretations regarding 3G services in India. This section also compares the quality of 3G services to that of other countries. Section V the conclusion to the study of 3G services issues in India and its future, followed by references contained in the last section.

2. REVIEW OF LITERATURE

2.1 The advent of 3G in global scenario

The advancement of technology and communications is supreme to the progress of any society. Experts consider the third generation technologies as critical elements for the evolving socio-economic development across the globe. It is anticipated that the usage of internet on mobile devices will witness an exponential up surge and proliferated market growth in the approaching times. This is indicative from the humongous 1.3 billion global customer base of internet and other auxiliary services in 2012 (Qualcomm, 2009).

The 3G services trails were instigated across the world since 2001 and the fact was proven the 3G services are far more superior to 2G and 2.5 G services in respect of speed through wider bandwidth. The key facet of 3G services is to provide mobile multimedia services at a very fast speed. The up gradation to 3G services provide the users with better improved means of communication and an array of

value-added services (Karjaluoto, 2006). The concept behind 3G services is to establish a single network standard in place of the multiple variant systems adopted in the US, Europe and Asia. 3G enabled phones can access internet with the maximum possible speed limit of 2 Mbps but only inside the premises or in stationary mode. With rise in mobility, the speed declines to 144 kbps (Ashiho, 2003).Statistically, nearly 159 countries across the globe have commenced the commercialization of 3G services and the count of functional mobile- broadband subscriptions have mounted upto 1.2 billion. There is a contrast of usages of broadband in developing and developed nations. In developed countries, people use mobile –broadband services as a supplementary service along with the fixed PC broadband connection while in the developing countries, mobile-broadband is the sole mode of accessibility availed. Even till date, the magnitude of the coverage of 2G spectrum broadband services is twice that of the 3G services. In 2011, the 3G covered nearly 45 percent of the global population (International Telecommunication Union, 2011).

2.2 Benefits of 3G internet to strong growth of a developing economy

The mobile telecommunication services enduringly provide exceptional opportunities for economic growth in both developing and developed countries and have emerged as an integral aspect of the functionality of an economy. Deloitte (2012) after a comprehensive study concluded that with technological advancement and superior mobile data and internet services like 3G and 4G which can be accessed through multiple devices like smartphones, tablet computers and internet dongles, the communication between businesses, channel partners and customers have improvised manifolds. It is also observed that with a10 percent shift of customers from 2G to 3G has resulted in 0.15 percent point rise in the GDP per capita growth. It was also empirically deduced that with a 100 percent rise in usage of mobile internet, the GDP per capita growth experiences a rise of 0.5 percent. Mobile telephony is highly beneficial for developing economies and a 10 percent rise in mobile penetration enhances the Total Factor Productivity eventually by 4.2 percent points.

Qualcomm (2009) also highlighted the impact of mobile telephony and 3G services on the economies of the world. The expansion of 3G penetration and mobile devices have improved the quality of life and are enlarging the economic opportunities across sectoral vertices. The rise in economic opportunities has intensified competition and propels innovative product/service offerings for the consumers along with enhanced employee productivity. The latest mobile connected devices and excellent services are altering sectors like healthcare, education, entertainment, banking etc. 3G services provide multiple access to varied networks, thus, kindling the prospects of even more advanced services like 4G which will provide even better user friendly interface for consumers. Also, 3G services and cellular services and mobile phone market are emerging as promising sectors all over the world and with expansion of network, economies of scale can be attained which in turn shall make the services affordably viable.

2.3 Industries- opportunities lost or gained through 3G

With the rapid and topical growth in the acceptance of 3G services and smartphones market, there has been tremendous upsurge in the commercial opportunities for multiple industries. Nevertheless, the evolution of the internet, mobile technologies have made many industries and product obsolete or propelled towards obsolescence like pagers, telegram services, landline phones, postal services, paper greeting cards, etc. 3G services and mobile devices have benefitted a lot of industries like banking, travel and tourism, education and e-commerce, healthcare etc.

Banking sector have experienced radical expansion due to technological advancement. Internet banking and mobile banking are usually collectively considered as electronic banking but are alternative modes of accessing banking services. Both internet and mobile banking provide customers with the convenience and time utility as it facilitates anytime, anywhere banking. Mobile banking has an added advantage of mobility provided by 3G services that allows customers to access banking services on the move along with saving time and always-on functionality. 3G mobile services have provided the opportunity for banks to reach out to remote areas where internet access is highly limited but mobile services have its presence. Mobile banking will help the customers to avail banking services on their mobiles in absence of internet (Yu, 2012). Online travel is one of the prominent segments on online B2C transactions. 3G services have benefitted the customers to book train and air tickets hassle free with mobility. Also, cater to the rural segments where internet is limited. This has added volume to the business (India Brand Equity Foundation, 2013). 3G services have also opened up many avenues in the education sector. It fosters development and usage of applications that help students globally by providing them information related to exams, admissions, question papers, interactive language training applications, mobile reading, subject tutorials, teacher training etc. However, m-education is still in its gestation period (Deloitte, 2011a).Mobile value added services as 3G service has tremendous potential but not been accepted by the customers as readily as anticipated. This is because of the perceived risk of the consumers in terms of authenticity and sharing vital personal information online.

2.4 Situation of 3G in other countries: developing and developed countries

3G services have been unanimously accepted across the globe. However, the magnitude of penetration and acceptance of the services vary from country to country and on the economic development of the country. Developing economies like China and Singapore have shown commendable growth in the 3G sector. The 3G sector in china have attracted the attention of all due to the

huge market potential and investment option in 3G infrastructure. In spite of having market penetration lower than western European counterparts have, China is the largest market globally (Yan, 2007). In 2012, China was on the verge of crossing 1 billion mobile connection mark propelled by the growth of 3G which is estimated to contribute nearly 25 percent of the connections in coming time. The growth rate was nearly 16 percent year-on-year in 2012. The count of 3G connections was as high as 200 million by the end of 2011 and represented nearly 22 percent of the total connections at that time. Market penetration is nearly 72 percent, which is 10 percent more from the previous year's statistics (Dewar, 2012). Likewise, Singapore has emerged as a world telecom leader with establishing a supreme quality and highly proactive regulatory environment for the local telecom sector. Even the 3G segment is displaying great potential. In the commencement of 2010, there were 4.8 million 3G subscribers, which accounted for nearly 66 percent of the total mobile subscriber base, which escalated, to 80 percent by end of 2012, when the total subscribers were nearly 8 million (Evans, 2013).Japan has been the pioneer of 3G mobile services and had nearly 130 million at the beginning of the year 2013. Out of this huge mobile subscriber base, nearly 97 percent users are availing 3G services as well (Research and Markets, 2013). Likewise, Australia with a small population size of 22.7 million, have mobile penetration rate of 142.9 percent and that of 3G is 88.3 percent. Nearly 75 percent of the mobile users are 3G subscribers as well (Ernest & Young, 2012).

3. RESEARCH METHODOLOGY

The following section gives data and methodology used. In this paper for analysis and interpretations secondary sources are used, mainly the corporate reports, journals etc. Comparative study method is used to interpret the results. TRAI regulations are analyzed in detail to explain the regulatory framework and actual scenario of services provided by the service providers that further explains the what needs to be provided and where India stands in this regard.

4. ANALYSIS AND INTERPRETATION

4.1 Service quality of 3G to customers in India

Indian telecom market is showing tremendous potential for growth. Nokia Siemens Networks (2013) estimated that the data consumption over 3G networks have tripled within the last one year. This warrants the requirement of providing superior quality mobile broadband services with enhanced speed and service quality to serve the consumers satisfactorily. Moreover, the reflections of the tendencies in various telecom circles of the country accentuate the necessity of emphasizing upon expanding and improving the existing 3G network coverage in A, B and C circles of India. It is only through constant enhancement of the data services that mounting demands of the consumers be met profitably. Pwc (2012) analyzed the 3G services and deduced that the leading three facets hindering the customer experience are expensive 3G data plans, dearth of customized apps and services and mediocre mobile internet experience. Low data speed in contrast to the wired broadband services and low mobile transaction trustworthiness are also prominent limitations face by the customers. Although 3G data services do provide better speeds of data transfers, graphic- heavy websites take considerable time to load and thus consume a substantial part of the subscriber's download quota. Furthermore, most of the websites developed for viewing on PCs and laptops are intricate to navigate on the smaller mobile screen. This ensue a substandard consumer experience. Though users admit that 3G services are better than the GPRS services, they are still disappointed with the services because of the promises undelivered by the service providers. In addition, with India's expansive geographical landscape, there is a severe issue of unreliable and intermittent connectivity, which the consumers face when in areas with poor network or are on roaming (PwC, 2012).

4.2 TRAI regulations for service quality in India

The Telecom Regulatory Authority of India (TRAI) in 2012 issued draft regulations on Standards of Quality of Service for Mobile Data Services Regulations. There was an ardent need of service standards for the mobile data services compared to wired Internet connection such as broadband. TRAI, thus, has resolute to set standards for the quality of service parameters for mobile data services like 2G, 3G and the 4G LTE that are founded on BWA (Broadband Wireless Access) spectrum. The regulations were set with an intention to safeguard the consumer interest and facilitate disposal of regulated and appropriate data services for which the consumers have paid. It is mandatory for every cellular mobile service provider or Unified Access Services provider ought to abide by the Quality of Service benchmarks. The main benchmarks proposed by TRAI are as follows:

- Service Activation/ Provisioning must instigate within 3 hours observing 95 percent success rate.
- Successful data transmission download attempts should be more than 95 percent and upload attempts must be beyond 85 percent.
- Average throughput for packet data must be above 90 percent of the subscribed speed.
- Latency must be lesser than 150ms for audio; 250ms for data and 75ms for data (interactive).
- PDP Context Activation Success Rate should be more than or equal to 95 percent.
- Drop rate must be lowered than or equal to 2 percent.

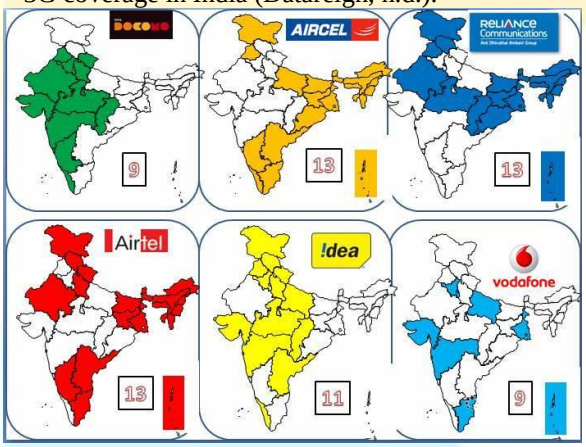
TRAI has also set rules for every service provider to document the data collection process for every Quality of Service parameter that be reviewed on regular basis by TRAI officials (Srivatsan, 2012).

4.3 Reach, and price factor issue of 3G in India

As per the estimations, India's 3G subscriber base will surpass the 200 million mark by 2016. In addition, the period of 2011-2014 is to be the key phase wherein 3G subscription with sore with tremendous growth with a compound annual growth rate of 106 percent. Further than the year 2014, the growth may retard considerably due to the introduction of better, innovative technologies like 4G and Wi Max, and comparative market maturity (Gupta and Singh, 2012). This estimations hold water on the present coverage of 3G services in India. Following is the coverage as per each service provider:

- Bharti Airtel- provides services in 84 cities in 13 3G circles. It aspires to cover nearly 1000 cities and towns in near future.
- Idea Cellular: have presence in 11 3G circles with 6989 3G BTSs. Provides 3G services in 825 towns in 15 circles and is intended to reach out to customers of 3000 towns in near future.
- Reliance Communications (GSM): owns 11000 3G BTSs in 330 towns in 13 circles.
- Vodafone India: owns 5600 3G BTSs in 9 3G circles and is working to establish 12000 BTSs in approaching time.
- Tata DoCoMo: has presence in 135 towns in 9 3G circles (Broadband India, 2011).

Following is the diagrammatic representation of the 3G coverage in India (Datareign, n.d.).



(Source: Datareign, n.d.)

Indian marketis highly price sensitive market. The telecom tariffs have been one of the lowest across the world. Altering consumption patterns and market dynamics, along with competitive forces of the industry demonstrate the requirement of operators to augment their product offerings in terms of innovation and creativity. With mobile portability coming into existence, pricing is the main influencing factor of purchase decision making and switcher service providers. With a decline in the subscriber base in 2012 and market approaching towards saturation, service providers need to work out the pricing and other marketing strategies to win the marketing games (Deloitte, 2013).

4.4 Comparative overview of 3G in India and other countries

The 3G services in India are of mediocre quality due to lack of infrastructure. The population of India is 1241.3 million with mobile penetration of 80.3 percent and 3G services penetration as low as 1.3 percent. This is a highly discouraging figure as compared to the corresponding statistics of other developing and developed countries like Brazil has mobile penetration of 124.6 percent and that of 3G is 21.7 percent and Greece have mobile penetration of 140.8 percent and 3G, 32 percent. These two economies though are comparatively smaller than India has significantly progressed in the area of communication technology. Neighbour China has a 3G penetration rate of 9.5 percent with mobile penetration of 77.9 percent. Likewise, Russia has 3G penetration rate at 18.2 percent but mobile penetration is very high at 166.2 percent. If compared with the developed countries like Australia, US and UK, India is a far behind in terms of access to 3G services as they have developed the requisite infrastructure and investments and enjoy extensive 3G penetration rate of 88.3 percent, 64 percent and 139.1 percent respectively (Ernst and Young, 2012). Thus, it is evident that though India has a commendable mobile penetration rate but 3G services are still in its primitive stage and need a lot of infrastructural and capital requirement along with government support to grow commendably. Service operators also need to develop competitive advantage to develop product offerings that are innovative and meet the customer demands satisfactorily.

4.5 Customers- what they are getting/ not getting in 3G in India as compared to other countries

The 3G service by private players launched in 2010 is still in their infancy stage. 3G are not very dependable and users are experiencing high call drops as compared to 2G services. Since the service providers paid a substantial amount in the auction to get the 3G spectrum license, companies have kept the prices quite high that are unlike in other countries where 3G services are available at a nominal rate and thus have maximum affordability. In India, there is patchy connectivity across the expansive geographic landscape that is a major hindrance in effective usage of 3G services thatexpect to provide connectivity with the internet speed of more than 2Mbps. However, in actuality, such high speed is available only in stationery mode. The speed fluctuates considerably while traveling. Such things are very rare in services in other countries primarily due to well-established systems and technological infrastructure that has been into existence for a considerable number of years and been improved gradually with experience and expertise (Deloitte, 2011a).

5. CONCLUSION

3G services is India are still in primitive stages but has tremendous potential to grow. Service providers, government must work collectively to promote this service. Factors like expansive network, better

affordability and availability of affordable 3G compatible devices shall act as catalysts for the same. While comparing the Indian services with their overseas counterparts, it is quite clear that there are many stones left unturned and the potential of this dynamic service that can radically influence the human life and commercial undertakings is still untapped to the full potential. Indian economy is on a boom and is a highly lucrative consumer market and service providers must develop strategies based on price, coverage and content to create a win-win situation for all.

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