Mobile dynamics: A digital fabric supporting India's socio-economic development

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Abstract: This study examines the contribution of mobile phones to social & economic development of the country particularly in the area of Delhi and nearby areas like Gurgaon, Noida. The study sample comprises of 250 respondents in the age group of 16-65 and focus groups. Data were collected through questionnaire, 10 focus groups and were analyzed using SPSS. The findings indicate positive contributions of mobile phones improving educational opportunities, supporting democratic participation, access & transfer of information, expanding and strengthening social and business networks thereby cutting down travel costs. Mobile technologies and in particular the mobile phone have changed our lives fundamentally. The study shows how mobile phones have become an intrinsic part of most people's lives, connecting them to the rest of the world. They shape how we interact with each other and how we organize friends and family as well as broader networks. In essence, they have become the digital framework of our lives. The present study sets out to investigate the types of impact that mobile technologies have on individuals, society and economy. It has been revealed that mobile phones will be spurring the social and economic development of the country. The Vodafone Institute Survey states that mobile subscriptions' contribution to India's GDP per capita growth will be 11.4% (2010-2012), 4.9% (2012-2015) and 2.1% (2015-2020).

Keywords: mobile phones, economic development, gender equality, social development, educational opportunities, mobile technology.

I. Introduction

Over the last two or three decades, mobile phones have grown into one of the most important technological advancement the world has ever witnessed. It has become the dominant form of telecommunications technology. Mobile phones are not just restricted to communication but have started playing major role in areas of social development, increasing quality of life, providing education, aiding financial inclusion, supporting law enforcement and in increasing social awareness. The advent of mobile phone has changed the way people interact across the world.

The mobile industry has seen a phenomenal change since its inception and is changing from hardware manufacturing to an emerging system of mobile business including mobile apps, mobile web, m-commerce & much more. Early studies ranging from Hardy (1980) to the recent Kathuria, Uppal, and Mamta (2009) have demonstrated the significant impact of telecom services on economic growth and development. From a more microeconomic angle, Donner (2006), Jensen (2007), Abraham (2007), Aker (2008), and de Silva and Ratnadiwakara (2008), among others, have shown how phones reduce the cost of information search, thereby reducing the transaction costs. Moving beyond pure economics, others like Bayes, von Braun, and Akhter(1999), Goodman (2005), Frost and Sullivan (2006), and KwakuKyem and LeMaire (2006) have shown how mobile phone adoption leads to greater cohesion and improved relationships thereby improving the economic development.

II. Mobile Phones In India

One of the milestones in India’s telecom history includes - the establishment of the governmental Telecom Regulatory Authority of India (TRAI) in 1997 followed by announcement of the first National Telecom Policy in 1999. According to TRAI, at the current levels, “cellular networks cover about 1.700 towns (out of 5,200), and covering 200 million (just about 20%) population. By 2006, the cellular networks were expected to cover 350,000 (out of 607,000) villages, covering 450 million people”. Total number of connections over the last 4 years grew at an average of more than 20 percent. This makes India, one of the fastest growing telecommunications systems in the world.

India’s mobile market displays widespread diversity - geographically, socially and economically. Popularity of cell phones is mounting at breakneck speed. They are already a part and parcel of urban cities and they are now fast breaking into the more conservative rural areas due to benefits provided such as low-cost equipment, promotional network schemes, an independence from detailed physical infrastructural support – apart from the general plusses of speed and convenience. According to a survey by leading telecommunications magazine, Voiceand Data, 45 million people owned cell phones in India compared with 44 million people who
had land lines, making mobile phones the devices for India’s common man and fixed phone lines those for the rich.

In India, the tele-density (number of phones per 100 people) has grown over six-fold during the past six years, going up from about 13 percent in March 2006 to over 75 percent currently. India has the fastest growing telecom network in the world with its high population and development potential. As per the reports of the Department of Telecommunication, Ministry of Communication and IT, the Indian Telecom network has 895.51 million telephone connections, including 864.72 million wireless telephone connections, at the end of December 2012 and is second largest network in the world after China. Out of this, 338.59 million telephone connections are in rural areas and 556.92 million are in urban areas of the country. There were 24.01 million Internet subscribers including 14.68 million Broadband subscribers at the end of September 2012. India's telecommunication network is the second largest in the world based on the total number of telephone users (both fixed and mobile phone). Indian telecom industry underwent a high pace of market liberalization and growth since 1990s and now has become the world's most competitive and one of the fastest growing telecom markets, with an addition of 18 million subscribers every month and contributing to nearly 2% of the Indian GDP. As per the Department of Industrial Policy and Promotion (DIPP), the country has received Rs 9,012 crore (Rs 58,782 crore) million US $. As per the Department of Industrial Policy and Promotion (DIPP), the country

According to the Economist, (2008) the market for smart phones is expected to grow from $39bn in 2007 to $95bn in 2013 by which time they make up nearly half of handset market by value. For individuals, mobile phones are not just a tool for communication but it serves as a platform of having a digital experience on the go. Photos, music, games, social and business applications and a million of other interesting applications serve as an icing on the cake. The study indicates that mobile devices support democratic participation, increase gender equality, and improve educational opportunities, reports The Times of India. The study shows that mobile phone and its technologies have not just benefitted the adopter but to the community at large. In this context, the objective of the current research is to examine, from a user perspective, the influence of mobile phone on the socioeconomic development of India.

OBJECTIVES

1. To study the impact of mobile phones on the socio-economic development.
2. To observe how the mobile technology supports various educational opportunities & helps in supporting democratic & social participation.
3. To understand how the mobile rage has changed the way people communicate and have become a global phenomenon for access and transfer of information.

III. Literature Review

As per International Telecommunication Union (ITU), the figures shows that information and communication technology (ICT) uptake continues to grow worldwide, spurred by a steady fall in the price of telephone and broadband Internet services. In the mobile sector, developing countries now account for the lion’s share of market growth. Mobile-cellular subscriptions registered continuous double-digit growth in developing country markets, for a global total of six billion mobile subscriptions by end 2011. Both China and India each account for around one billion subscriptions.

Mobile broadband continues to be the ICT service displaying the sharpest growth rates. Over the past year, growth in mobile-broadband services continued at 40% globally and 78% in developing countries. There are now twice as many mobile-broadband subscriptions as fixed-broadband subscriptions worldwide. One promising development is the growth of mobile-broadband services. In developing countries, mobile-broadband services are more widely accessible and, in the case of low-volume packages, less costly than fixed-broadband Internet services. Mobile broadband is expected to boost Internet use, which stood at 32% globally and 24% in developing countries at end 2011.

ICT has a growing impact on the Indian economy contributing majorly to economic growth. ITU data show that global revenues from telecommunication services reached USD 1.5 trillion in 2010, corresponding to 2.4 % of the world’s gross domestic product (GDP). In the same year, investment (measured by capital expenditure) in telecommunications amounted to more than USD 241 billion, or an estimated 2% of the world’s total gross fixed capital formation. The figures highlight the important role developing countries like India, are playing in terms of telecommunication revenues and investments, particularly during the recent economic crisis. Between 2007 and 2010, both telecom revenues and investment continued to grow by 22% in developing countries, whereas revenues stagnated in developed countries. India has now become an attractive destination for foreign direct investment (FDI) in telecommunications. As per the reports of Ministry of State for Communications and IT, actual Inflow of FDI in Telecom Sector from April 2000 to November 2012 is 12,623 (Rs 58,782 crore) million US $. As per the Department of Industrial Policy and Promotion (DIPP), the country
has received a cumulative inflows of 58, 929 million US $ from past 13 years (April 2000 to October 2013) and Rs 9,012 crore as FDI inflows in 2011-12. (Figure 1).

By beginning 2011, nine of the top 20 telecom markets globally in terms of revenues were developing country markets – including Brazil, China, India and Mexico – and developing countries accounted for 35% of world telecommunication revenue. Vodafone Institute Survey reveals that mobile phones will be spurring the social and economic development of the country. Conducted by the Cologne Institute for Economic Research (IER Cologne) on behalf of the Vodafone Institute for Society and Communications, the study reveals that India's per capita GDP will grow by $51 per year between 2010 and 2020 due to rising mobile phone subscriptions.

The rapid technological development of mobile devices and the mobile infrastructure, as well as the usage of mobile applications, has had a big impact on businesses. According to Accenture’s ‘Mobile-Web-Watch 2012’ survey, 20% of all Smartphone mobile usage is of a business nature. It seems that the functionality of such devices and applications has improved to a point where people are happy to use them professionally. Together with a powerful and comprehensive infrastructure, this is opening up new possibilities for mobile communication thereby making a strong social impact. These new ways of communicating, and the fact that information can increasingly be accessed from anywhere, have changed how the consumers and employees choose to communicate with each other. Social media and instant messaging services, such as Joyn or WhatsApp, are gaining popularity among people. Whether it’s a young adult or a senior citizen, the mobile technology is serving them in every bit for their respective purposes.

As per VFI reports, the global mobile subscribers account for 3.2 billion in 2012 and will touch 3.9 billion in 2017. Also the global mobile market had 6.8 billion connections and would account for 9.7 billion in 2017 marking a compound annual growth rate of 7.6%. Economists at IER Cologne calculated the percentage of economic growth that can be attributed to the increase in mobile phone subscriptions. The figure for India was 11.4% of per capita gross domestic product (GDP) between 2010 and 2012. According to the IER Cologne experts’ forecasts, mobile phones will continue to make a significant contribution to economic growth up to 2020. In India and South Africa, rising mobile phone subscriptions accounted for 11% of economic growth and almost 20% in Egypt, between 2010 and 2012.

Mobile technology has an even stronger impact on economic systems in developing nations. In these countries, for the first time ever mobile phones allow people the opportunity to communicate and do business across long distances thereby saving the travel costs. For example, long distance businesses can be done on phone to an extent where the physical presence is not required. Farmers receive information about the day's market prices or weather forecasts so they can make better decisions. Mobile communication infrastructure is a key one which has led to an establishment of economic institutions such as mobile banking services.

The Government approved National Telecom Policy (NTP) 2012, which addresses the vision, strategic direction, and the various medium- and long-term issues related to the telecom sector, on 31 May 2012. NTP-2012 is aimed at maximizing public good by making affordable, reliable, and secure telecommunication and broadband services available across the country. Some of the objectives of NTP-12 were to provide secure, affordable, and high-quality telecommunication services to all citizens thereby striving to create One Nation-One License across services and service areas. One of the main objective is to increase rural tele-density from the current level of around 39 to 70 by the year 2017 and 100 by the year 2020 and recognize telecom, including broadband connectivity, as a basic necessity like education and health and work and recognizing telecom as an infrastructure sector to realize the true potential of information communication technology (ICT) for development.
IV. Research Methodology

DATA COLLECTION
The study is based on both primary and secondary sources. The primary data were collected through surveys by using a structured questionnaire and focus groups. The secondary data were collected from various government departments, journals, articles, magazines concerning mobile and its technologies, among other sources. The study population constitutes all users of mobile phones in Delhi and nearby areas like Gurgaon, Noida. A total of 250 respondents were randomly sampled for the study. The primary data were collected at the individual level using mainly structured questionnaire. The questionnaires were self-administered and were distributed among the respondents who voluntarily participated in the study. The questionnaire began with socio-demographic characteristics of the respondents, followed by questions of their usage of mobile phones & its technology, to positive impacts of mobile phones on society as a whole. The collected data were checked for completeness and accuracy after which those certified to be completely and accurately filled was numbered to avoid double entry. The coded data were entered using Excel and the data were analyzed with SPSS version 18 and the results presented in tables.

STUDY FRAMEWORK

DATA ANALYSIS & INTERPRETATION

<table>
<thead>
<tr>
<th>Table1: Socio-demographic Characteristics of respondents</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (in yrs.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 30</td>
<td>165</td>
<td>73.30</td>
</tr>
<tr>
<td>31-40</td>
<td>41</td>
<td>18.20</td>
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<tr>
<td>41-50</td>
<td>14</td>
<td>6.20</td>
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<tr>
<td>51 and above</td>
<td>5</td>
<td>2.30</td>
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<tr>
<td>Total</td>
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<tr>
<td>Gender</td>
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</tr>
<tr>
<td>Male</td>
<td>148</td>
<td>59.70</td>
</tr>
<tr>
<td>Female</td>
<td>100</td>
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<tr>
<td>Total</td>
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<tr>
<td>Marital Status</td>
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<tr>
<td>Unmarried</td>
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<td>86.30</td>
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<tr>
<td>Married</td>
<td>32</td>
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</tr>
<tr>
<td>Divorced</td>
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<td>0.80</td>
</tr>
<tr>
<td>Total</td>
<td>249</td>
<td>100.00</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>198</td>
<td>77.80</td>
</tr>
<tr>
<td>Unemployed</td>
<td>55</td>
<td>22.20</td>
</tr>
<tr>
<td>Total</td>
<td>248</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: Field Survey, 2014
Above is a summary of the socio-demographic characteristics involved in the study. As can be seen most (73.30%) of the respondents were below 30 years and the mean age of respondents was 27 years and variability of 7. This shows that usage of mobile phone is widely dispersed. The number of respondents above 50 years was 5 representing 2.30% of the respondents. About 18% of the respondents were also aged between 30-40 years. With respect to gender, 59.70% of the respondents were males while 40.30% were females. Married respondents accounted for 12.90% while 86.30% were unmarried and 0.8% was divorced. With occupation, 77.80% are employed while 22.20% are unemployed (Table 1).

About 93% of the respondents indicated that they do use mobile phones whereas 7% of the respondents do not use mobile phone. On the reason for mobile phone usage, 67.3% indicated that they used mobile phones to maintained social networks, 55.2% used the phone to consult in times of difficulties, and 84.4% of the respondents used it in accessing information while 43.6% used the mobile phone for business. 98% of the respondents have used phones for more than one year, 1% for more than 6 months but less than a year and another 1% of the respondents have used phones for less than 6 months. On the question how often they use their phones, 60% of the respondents use their mobile phone multiple times in a day, 12% used it ones to five times in a week while 28% use their phones once a day.

About 95% of the respondents indicated that mobile phones are important to society while 5% while 5% of them thought otherwise (Table 2). On the other hand, 98.70% of the responded specified that, the use of mobile phone is important in building and sustaining relationships while 1.30% however disagreed. The positive impacts mentioned by the respondents include improving relationships, representing 84.80%, access to information (educational, business etc.) representing 63.20%, quick transfer of information(security, e-banking, bill payment, online purchase and sale etc.), representing 74.80%, improving social & economic development, representing 80.40% and enhancing communication was the most cited positive impacts of mobile phone on society and this was indicated by 94% by the respondents.

V. Findings & Conclusions

Impact on society & social relationships

Mobile phones help to create an informative, connected, culturally innovative, participative, and converging society and contributions to collective welfare of the individuals via social responsibility. Mobile communication has shown its power for collective activities as well as on individual life. It can prevent isolating members from social connection and empower citizens through convenience for connecting to others. It also increases social connections between different segments of the society creating equalities and distribution of wealth as well as creating positive changes in the dynamics of the society which involves contributions such as competence in communications, accessibility of information, socialization, political and social union. With the creation and accessibility of mobile phones, more and more individuals own their own mobile phone and using them every day to communicate within their social network. Mobile phones also make individuals available anywhere, and anytime, which changes the way that individuals are choosing to interact in social settings with others. The impact of mobile phone on our personal life include constant accessibility, safety, individuality, status and confidence, competence in communications, communications and connectedness and instantaneous contact with members of their social network regardless of where they are in the world. In addition to keeping up with social relationships, individuals have also been able to increase productivity with their work because they can be hundreds of miles away from the office, and still have instant access to their e-mail, documents and contacts wherever they are.
Ability to communicate

ICT and mobile phones in particular enable faster and easier information delivery that is cheap and effective. In terms of social development for instance, relevant health information can be delivered to people in developing countries like India. People can link locally as well as globally to pursue their interests. Such networks can have an influence on people’s empowerment. The infrastructure of mobile phones, in particular in developing countries, can help to create a more transparent and effective public service. Such improvements can range from simple bulk SMS/text information on governmental issues to the delivery of public services to citizens in rural and remote areas. More fundamentally, the three effects introduced above can significantly transform people’s lives and lead to decentralization and empowerment. With the ability to access and exchange information, people can live, learn and conduct business in different ways. Moreover, modern communication technologies like mobile phones and social network sites (SNS) present a double-edged sword. On the one hand, they can be an enabler of self-organization and self-help processes when started by or involving socially excluded people, transforming weak-tie relationships into effective collective structures of engagement and participation.

Access to educational opportunities

In India, access to education is limited and the effect that mobile phones have on education is likely to be twofold. On the one hand, mobile phone adoption enables direct access to education. Content and exercises can be delivered via SMS/ texts or apps to the recipient, who may otherwise not be able to access any education due to the distance to the nearest institution. On the other hand, mobile phones’ various other benefits free up time and resources that can be used by people for educating themselves and/or their children. People can access information through online journals, online dictionaries, newsgroups etc. The evidence gathered in this study highlights that mobile phones help to coordinate our lives.

Economic Effects of the Mobile Phone

In Delhi, the effect of mobile phone was spectacular. It is considered to be a life-line for them as regard to their daily life. At a country level, the economic impact is more fundamental: mobile phones are often the first and only communication infrastructure for the greatest part of the population. As such, first and foremost they enable communication, but they also bring new ways of accessing information, coordinating supply chains and facilitating the delivery of services that used to be non-existent for most people such as mobile payment systems (substitute for bank accounts) or mobile health applications. Opportunities to generate income also emerge in India. They stretch more obviously into the physical world. Due to a lack of infrastructure, for instance, there is a growing market for mobile phone charging services in many developing countries. Also networks of prepaid card distributors, repair services and accessories are valid entrepreneur opportunities. Furthermore, other services have been developed that build on the mobile phone infrastructure such as private transport or information services.

Access to information is clearly the most relevant precursor for economic impact in India. For instance, it enables farmers and fishermen to make better decisions about where to plant crops or where to fish. Such information can lead to increases in daily catches by up to five to ten times (Gandhi et al. 2009).

Furthermore, they can achieve much better prices for their goods as they get quick information about prices and supply in different markets within their reach. As a result, they can circumvent often abusive intermediaries and sell directly to their customers improving both their revenues and prices for customers.

Increased communication that facilitates coordination across supply chains but also within circles of friends and family is an enormous social benefit, which also has direct economic implications

References

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Figure 1
Figure 2

TRAI Reports, New Delhi, 7th February, 2013

- Population data/Projections are available state wise only.
- Teledensity figures are derived from the subscriber data provided by the operators and the population projections published by the Office of the Registrar General & Census Commissioner, India.
- Delhi Service area, apart from the State of Delhi, includes wireless subscribers of the areas served by the local exchanges of Ghaziabad & Noida (in UP) and Gurgaon & Faridabad (in Haryana). West Bengal service area includes Kolkata, Maharashtra