

Exploring the Surge and Potential of Wireless Internet Users in Rural India

Mr. AMAN PRAKASH

PG SCHOLAR, DEPARTMENT OF MCA
DAYANANDA SAGAR COLLEGE OF ENGINEERING
AFFILIATED TO VTU, BENGALURU, INDIA

Dr. SRINIVASAN V

ASSOCIATE PROFESSOR, DEPARTMENT OF MCA
DAYANANDA SAGAR COLLEGE OF ENGINEERING
AFFILIATED TO VTU, BENGALURU, INDIA

Abstract: This study examines the growth trends of mobile internet users in India, focusing specifically on the rural areas. Analysis of key parameters reveals that rural India experiences a slower growth rate compared to urban areas and the country as a whole. Correlation, Compound Annual Growth Rate (CAGR), and mean analyses highlight the impact of various factors on mobile internet growth in rural India, including total internet access and subscription rates. Given that over 60% of India's population resides in rural areas, this research underscores the significance of targeting this demographic, particularly the youth population, which constitutes a substantial market for smartphones and internet usage.

Keywords: Correlation analysis, CAGR, mean analysis, mobile internet, rural India, subscription rate, tele-density, penetration.

Introduction

India, with its predominantly rural and agrarian economy, holds immense growth potential. Currently, 68.84% of the population resides in rural areas. The global COVID-19 pandemic has significantly impacted the Indian economy, leading to a sharp decline of 23.98% in GDP growth in 2020, resulting in negative growth rates. However, the agriculture sector has shown resilience with a growth rate exceeding 3%, providing a positive outlook for the Indian economy.

As of January 2020, the number of internet users in India stood at 696.77 million. Projections indicate that by 2025, this number is expected to reach 974.86 million, solidifying India's position among the top 20 countries with the highest number of internet users. In 2018, out of every 100 individuals in India, 38 were internet users, while globally, the figure stood at 51 out of 100 people.

In Europe, 80 out of 100 people were using the internet, while in Africa, the number was only 24 out of 100 people during the same period. The COVID-19 pandemic has contributed to an increased reliance on the internet, particularly for remote work.

In 2019, there were 420.70 million phone internet users in India, with an estimated increase to 500.90 million by 2023. Out of a total of 1161.71 million phone internet users, 669.14 million were in urban areas and 514.27 million were in rural areas. Currently, males account for 55% of internet users in India, while females make up 45%.

The tele-density of internet users per 100 people in India was 90.10 in 2019, with a mobile internet tele-density of 88.45 per 100 people. In urban areas, the tele-density was higher at 159.66 internet users per 100 people, while in rural areas, it was 57.50 per 100 people.

Rural India is experiencing a significant growth rate of 45% in monthly active internet users in 2020, surpassing the 11% growth rate in urban areas. Children under the age of 15 constitute 38% of the total internet users, indicating their increasing involvement in online activities. This growth can be attributed to the availability of local language software and video content, which have played a pivotal role in driving internet adoption in rural regions. In the near future, the internet user base in rural areas is expected to expand further as children and housewives become new adopters of internet technology. Notably, entertainment remains the primary purpose for 84% of internet users in rural India. Rural India presents a significant opportunity for increasing internet usage, as a large portion of the population currently lacks access. However, poor infrastructure poses a major challenge in terms of internet connectivity.

Limited power supply and slow bandwidth speeds contribute to low internet penetration in rural areas. Additionally, the affordability of computer systems and internet connections is a barrier for rural residents with low incomes. For instance, the average monthly income of a farmer family is around 6500 rupees. Furthermore, India's literacy rate, particularly in rural areas, remains low, with a national average of 77.7% in 2020. With 22 official languages and numerous unofficial and local languages, language diversity adds another layer of complexity to digital literacy and internet adoption in rural India.

Review of literature

In their study titled "Analyzing the Impact of Internet in Rural India," M. Prabu and R. Manoov discovered that the growth of internet in rural areas is not directly correlated with urban internet growth. Their study revealed that as the subscriber rate increases in rural areas, there is a corresponding increase in rural internet growth. Additionally, the study found that urban internet users predominantly rely on wireless modes to access the internet.

According to a report by Kathait and Singh (2014), teenagers are increasingly attracted to the internet due to several reasons.

Firstly, students have a significant amount of free time and seek activities to fill that time.

Secondly, many schools and universities offer free internet access, which further encourages internet usage among students.

Thirdly, teenagers in the age group of 18-22 years, who are away from parental control for the first time, often spend a majority of their time online without monitoring.

Lastly, young students who are new to hostel and university life face various challenges in adapting, and during this phase, they use different social networking applications to make new

friends, particularly of the opposite sex, and seek companionship. These factors contribute to the increased attraction towards internet usage among teenagers.

Due to the COVID-19 pandemic, students have been compelled to attend online classes, submit assignments and answer sheets through various mobile applications, and receive support from faculty and administration. Additionally, adolescents are well-versed in using different technological applications, making internet access essential for them. Students rely on internet resources to alleviate stress, excel in exams, and complete their degrees within the prescribed timeframe. Furthermore, students perceive university life as disconnected from social activities, and as they transition into the job market, they depend on the internet to participate and succeed in employment opportunities.

According to a report by Sandhya Keelery on July 7, 2020, internet usage in India is projected to reach 21 exabytes (one billion gigabytes) per month by 2025, with an average Indian currently utilizing approximately 12 GB of data monthly, indicating the highest consumption globally. According to projections, the use of data is expected to increase to approximately 25 GB per month by 2025 internet usage in India.

Research Methodology:

The present paper relies solely on secondary data collected from various sources, including TARI and Telecom Statistics India 2019. Data analysis in this study involves the use of charts, mean values, growth values, percentages, and correlation methods to examine and interpret the data.

Hypotheses:

H1: There is a relationship between total internet growth and rural internet growth.

H2: There is no relationship between rural internet growth and urban internet growth.

H3: Internet growth rate is associated with mobile internet growth.

H4: India's internet growth rate is not correlated with global internet growth.

$$r_{xy} = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2}}$$

Correlation method, Correlation coefficient. Here x_i is rural area, y_i is urban area.

Here x_i is Rural Subscribers, y_i is Urban Subscribers.

Compound Annual Growth Rate (CAGR) =

$(\text{Current Value} / \text{Base Value})^{1/n} - 1$

n = number of years, End= Current Value, Start= Base Value

Table no 1 Show that A significant correlation of 0.989 at a significance level of 0.05% was found between India and world mobile internet users. The mean value of individual internet users during the study period was highest in Europe (69.27%) and lowest in India (12.82%). Mobile internet users per 100 in developed countries were 2.46 times greater (72.45%) than in developing countries (29.45%) during the study period. The growth rate of mobile internet users in India was calculated to be 16.62%, which was higher than the growth rate of the world (7.5%), developed countries (2.61%), and underdeveloped countries (11.19%).

Table no 2 The data presented in the table reveals that mobile internet subscriptions per 100 people are highest in the CIS region (132.55%) and lowest in Africa (59.73%) worldwide. Developed countries have 1.45 times greater mobile internet subscriptions per 100 people (119%) compared to developing countries (82.27%).

In India, approximately 68.09% of the population uses mobile internet, which is lower than the global mobile internet user percentage (88.73%). The study indicates that the growth rate of mobile internet subscriptions in India is the highest at 10.5% globally, surpassing the growth rates of the world (5.40%), developed countries (1.56%), and underdeveloped countries (6.99%).

Table no 3 Shows that the data analysis reveals several significant correlations. Firstly, there is a strong correlation of 0.951 ($p < 0.01$) between mobile internet subscription rate and social network subscription rate. Additionally, a significant correlation of 0.995 ($p < 0.01$) exists between mobile internet subscription rate and internet subscription rate. The study also found growth rates of 12.55% for internet users, 8.37% for mobile internet users, 13.59% for social network users, and 14.09% for Facebook users during the study period.

Furthermore, the data shows significant correlations between various variables. A correlation of 0.986 ($p < 0.01$) is observed between social network users and Facebook users. Additionally, a significant correlation of 0.992 ($p < 0.01$) is found between Facebook users and mobile internet subscription rate. Lastly, there is a significant correlation of 0.995 ($p < 0.01$) between mobile internet subscription rate and social network subscription rate.

Chart no 1: In 2019, the highest number of mobile internet subscribers in big cities in India was recorded in Mumbai, with 11.7 million subscribers. On the other hand, Pune had the lowest number of mobile internet subscribers among these cities, with 3.6 million subscribers.

Chart no 2: The mobile internet penetration rate in India exhibited significant growth over the years. In 2008, the penetration rate was recorded at 4.4 percent, while by 2019, it had increased by a substantial 48.48 percent. This demonstrates a substantial increase in the adoption and usage of mobile internet services in India during this period.

Chart no 3: The social penetration rate in India witnessed notable growth. In 2015, the penetration rate stood at 19.13 percent, and it is projected to increase by approximately 67.4 percent by 2025. This indicates a significant expansion in the adoption and usage of social media platforms in India over the years, reflecting the increasing connectivity and engagement of the population with social networks.

Table no 4: The data indicates that at the all India level, 67% of mobile internet users are male, while 33% are female. In urban areas, 62% of male users and 38% of female users access the mobile internet, while in rural areas, 72% of male users and 28% of female users utilize mobile internet services. These statistics highlight the gender disparity in mobile internet usage, with a higher proportion of male users compared to female users across both urban and rural areas in December 2019.

Table no 5: The data shows that at the all India level, in urban areas, and in rural areas, the age group of 20-29 years has the highest percentage of mobile internet users, accounting for 35%, 33%, and 37% respectively. On the other hand, the age group above 50 years has the lowest percentage of mobile internet users, with figures of 6%, 8%, and 3% at all India level, in urban areas, and in rural areas respectively. This data highlights that the younger population, particularly those in their twenties, have a higher propensity for mobile internet usage compared to older age groups.

Table no 6: The data illustrates that at all India level, in urban areas, and in rural areas, the highest percentage of mobile internet users fall under the category of "everyday users," accounting for 65%, 72%, and 57% respectively. On the other hand, the category of "4-5 days in a week user" has the lowest percentage of mobile internet users, with a figure of 4%. This suggests

that the majority of mobile internet users in all three areas tend to use it on a daily basis, while a smaller portion utilizes it on a less frequent basis.

Table no 7: The data analysis indicates several significant correlations. Firstly, there is a strong correlation of 0.989 ($p < 0.01$) between the number of mobile internet users and rural areas. However, there is no correlation between rural and urban areas. There is a significant correlation of 0.986 ($p < 0.05$) between urban areas and wireless internet users, as well as a significant correlation of 0.989 ($p < 0.05$) between rural areas and wireless internet users. The study also reveals the growth rates of various internet user categories during the study period. Mobile internet user growth rate is 12.10%, wireless internet user growth rate is 13.25%, mobile internet user growth rate in urban areas is 9.55%, mobile internet user growth rate in rural areas is 17.21%, public sector internet user growth rate is 4.41%, and private internet user growth rate is 13.87%. In contrast, wireline internet user growth rate is negative at -4.85%.

Table no 8: The data analysis reveals several significant correlations in relation to tele-density. There is a significant correlation of 0.950 ($p < 0.05$) between total mobile internet subscriptions and rural areas, as well as a significant correlation of 0.893 ($p < 0.05$) between total mobile internet subscriptions and urban areas. Furthermore, there is a significant correlation of 0.961 ($p < 0.05$) for tele-density between total mobile internet users in urban areas and wireless internet users, and a significant correlation of 0.982 ($p < 0.05$) for tele-density between total mobile internet users in rural areas and wireless internet users. The study also reveals the growth rates of various internet user categories and tele-density during the study period. The growth rates are as follows: tele-density (10.83%), wireless internet users (11.97%), urban internet users (7.59%), rural internet users (16.23%), public sector internet users (3.23%), and private sector internet users (19.69%). However,

the growth rate for wireline internet users is negative at -5.94%.

Table no 9: The data analysis indicates a significant correlation of 0.610 ($p < 0.05$) between mobile internet users in rural and urban areas. **H2:** Based on the statement that there is no correlation between rural and urban mobile internet user growth, it can be concluded that the growth of mobile internet users in rural areas is not related to the growth of mobile internet users in urban areas. This finding supports the hypothesis H2, which states that rural internet growth is not related to urban internet growth. This suggests that there is a relationship between the number of mobile internet users in these two areas. Furthermore, there is a significant correlation of 0.626 ($p < 0.05$) for tele-density between mobile internet users in rural and urban areas.

This implies that the tele-density, or the number of mobile internet subscriptions per 100 people, is also related between rural and urban areas.

Table no 10: The data analysis reveals that, according to service area, the average mobile internet subscriptions in Rural India are highest in UP east (14.51) and lowest in J&K (2.00) from 2015 to 2019. Additionally, the study finds that the highest growth rate of mobile internet users during the study period is observed in Mumbai (37.08%), while the lowest growth rate is found in Delhi (-7.25%), indicating a negative growth rate in mobile internet subscriptions in Delhi. These findings highlight variations in mobile internet adoption and growth rates across different service areas in India.

Result and discussion

H1: Based on the significant correlation of 0.989 at 0.01% (2-tailed) between the number of mobile internet users and Rural India, as well as the significant correlation of 0.950 at 0.05% between mobile internet subscription and rural areas, it can be concluded that the total internet growth is indeed related to rural internet growth. This

finding supports the hypothesis H1, which states that there is a relationship between total internet growth and rural internet growth in India.

H2: Based on the statement that there is no correlation between rural and urban mobile internet user growth, it can be concluded that the growth of mobile internet users in rural areas is not related to the growth of mobile internet users in urban areas. This finding supports the hypothesis H2, which states that rural internet growth is not related to urban internet growth.

H3: Based on the significant correlation of 0.969 at 0.01% (2-tailed) between the total internet subscription rate and the mobile internet user subscription rate, it can be concluded that the growth rate of internet is indeed related to the growth rate of mobile internet. This finding supports the hypothesis H3, which states that internet growth rate is related to mobile internet growth rate.

H4: The study found a significant correlation of 0.989 at 0.05% between Indian mobile internet users and world mobile internet users. This indicates that India's total mobile internet user growth rate is indeed correlated with the world's mobile internet user growth rate. Therefore, the finding contradicts the hypothesis H4, suggesting that India's mobile internet user growth rate is not correlated with the global mobile internet user growth rate.

The **study identified** various patterns and trends in the usage of mobile internet in India. It found that India had the highest growth rate of mobile internet users at 10.5% compared to the rest of the world. The study also highlighted disparities in mobile internet usage based on gender, age group, and geographical areas. The growth rates of Facebook users, social network users, and mobile internet users in India were found to be 14.09%, 13.59%, and 8.37% respectively. In rural India, only 28% of females use mobile internet, compared to 33% at the all India level. The age group of 20-29 years accounted for the highest proportion (37%) of mobile internet users in rural areas. However, the overall internet usage in rural areas stood at 57%, which is lower than the all India level (65%) and urban areas (72%). The growth rate of rural mobile

internet users was calculated at 17.21%, surpassing the growth rates of all India (12.10%) and urban areas (9.55%). Additionally, the tele-density growth rate of mobile internet users in rural areas was calculated at 16.33%, higher than the all India mobile internet user growth rate (10.83%) and urban mobile internet user growth rate (7.59%). Based on the correlation analysis conducted, we have observed significant correlations among various variables, except for rural and urban mobile internet users. The analysis highlights the importance of Facebook and social network users in relation to internet usage. However, it also indicates that the contribution of females and youth in internet usage, particularly in rural areas, is not satisfactory. It is evident that improving internet access in rural areas can positively impact wealth, health, and job opportunities. Nevertheless, there are several barriers hindering internet development in rural India, including low income, lack of internet knowledge, insufficient infrastructure, limited access to electricity, and personal beliefs. Many females in rural areas are unable to access the internet due to unemployment, lower levels of education, and lack of internet connectivity at home.

Conclusion

The calculated correlation values indicate a strong positive correlation between mobile phone internet subscribers and Facebook/social network subscribers in rural areas. Additionally, there is a correlation between Facebook and social network subscribers, suggesting their interdependency. India presents a rapidly growing market for emerging technologies, with immense potential for internet growth, particularly in rural areas. However, the contributions of the rural population and females, both in rural and urban areas, have been relatively low. The demand from these segments has played a crucial role in driving the growth of the Indian economy during the COVID-19 pandemic, with the rise of remote work and online classes. Analyzing the upward trend in the growth of internet access rates, developing social networking applications in Hindi and regional languages can further facilitate increased internet usage in rural India.

Providing web series targeted towards youth and women, online coaching classes, specialized applications for students and teenagers in their respective languages is crucial. Such initiatives can drive immense business growth in both rural and urban India. The rise of work-from-home setups, online teaching, coaching classes, online banking, mobile payment apps, children's games, and applications catering to students and professionals significantly contribute to the growth and usage of the internet in rural and urban India.

To capitalize on this potential, the Indian government and IT researchers should acknowledge the significance of these developments. Efforts should be made to develop applications and establish robust infrastructure to cater to the needs of the rural and urban populations in India. By addressing these requirements, the internet can serve as a powerful tool for economic and social development across the country.

Table No 1: The data on individual internet users per 100 people in the world from 2008 to 2018.
shows a steady increase in internet penetration.

Year	World	Developed	Developing	India	Africa	Arab States	Asia & Pacific	CIS	Europe	America
2008	23	61	14	7	4	19	16	21	57	44
2009	25	63	17	11	5	21	19	24	60	46
2010	29	67	21	16	7	24	22	36	63	49
2011	31	68	23	34	8	27	25	43	65	51
2012	34	72	26	39	10	30	28	54	67	55
2013	37	74	29	13	12	33	31	59	71	56
2014	40	76	32	20	14	36	34	62	72	58
2015	43	76	36	24	18	40	38	63	74	62
2016	46	79	39	27	20	43	41	66	76	65
2017	49	80	42	33	22	49	44	69	77	68
2018	51	81	45	38	24	55	47	71	80	70
Mean	37.09	72.45	29.45	12.82	13.09	34.27	31.36	51.64	69.27	56.73
Total	408	797	324	262	144	377	345	568	762	624
CAGR	7.5	2.61	11.19	16.62	17.69	10.14	10.29	11.71	3.13	4.31

Source: ITU website, TARI& Telecom Statistic India 2019.

Table No 2: The data on mobile internet subscriptions per 100 people in the world from 2008 to 2018.
shows a significant growth in mobile internet usage.

Year	World	Developed	Developing	India	Africa	Arab States	Asia & Pacific	CIS	Europe	America
2008	60	108	49	29	32	63	47	110	117	81
2009	68	112	58	43	38	76	56	129	117	87
2010	77	113	69	61	44	88	67	137	115	94
2011	84	113	78	71	52	96	77	129	118	101
2012	88	116	83	68	58	102	81	130	120	104
2013	93	118	88	69	65	107	86	135	122	108
2014	97	122	91	73	70	106	90	136	121	112
2015	97	125	92	76	75	105	92	138	120	112
2016	101	127	95	85	73	102	99	139	121	112
2017	104	127	99	87	74	102	104	138	120	112

2018*	107	128	103	87	76	103	110	137	120	113
Total	976	1309	905	749	657	1050	909	1458	1311	1136
Mean	88.73	119	82.27	68.09	59.73	95.45	82.64	132.55	119.18	103.27
CAGR	5.40	1.56	6.99	10.50	8.18	4.57	8.04	2.02	0.23	3.07

Source: ITU website, TARI& Telecom Statistic India 2019.

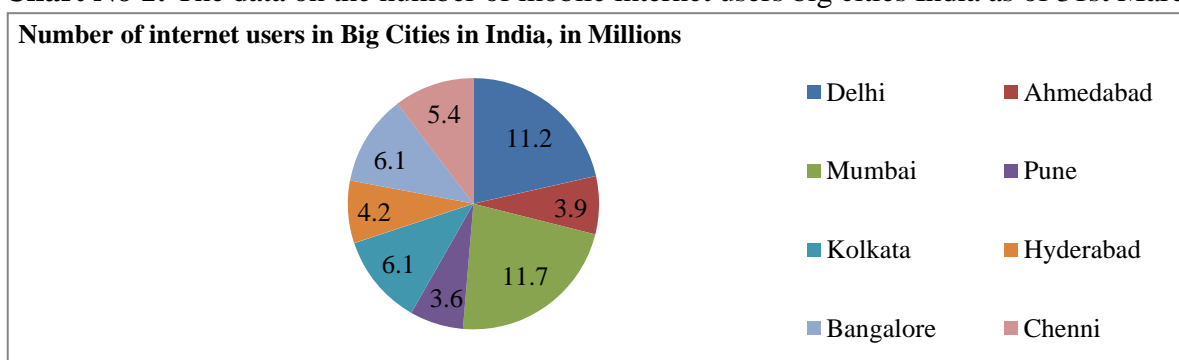
*Estimated Data

Table no 3: the data on the number of mobile internet users in India from 2015 to 2020, along with a forecast until 2023

Year	Internet User	Mobile Phone Internet User	Social Network User	Face-book User
2015	302.36	242.92	142.23	135.6
2016	342.65	281.81	168.10	165.57
2017	422.20	361.60	296.30	248.3
2018	493.96	390.90	326.10	281.0
2019	636.73	420.70	351.40	313.6
2020	696.77	448.20	376.10	346.2
2021	761.29	469.30	400.30	378.9
2022	820.99	486.70	422.70	411.5
2023	876.25	500.90	447.90	444.2
Mean	594.8	400.34	325.68	302.76
CAGR	12.55	8.37	13.59	14.09

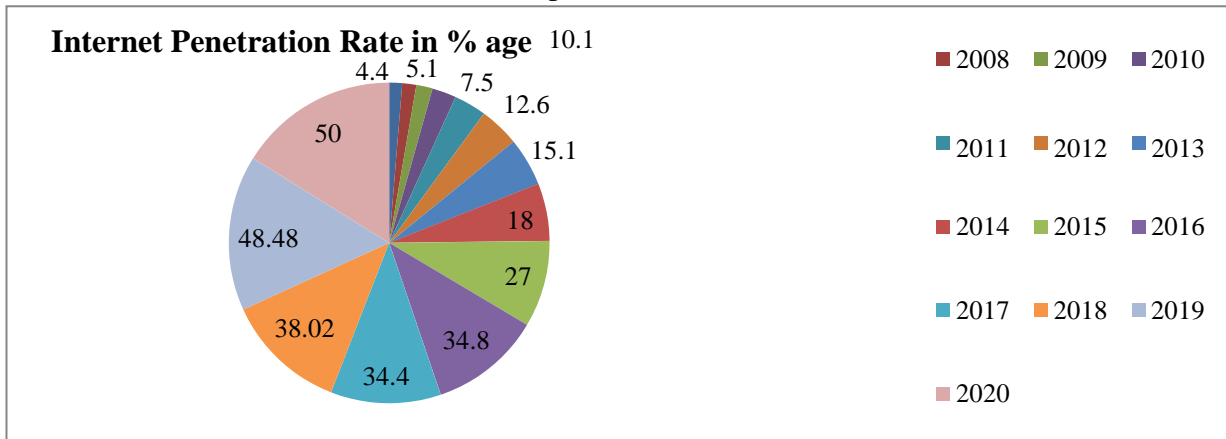
Source: TARI& Telecom Statistics India 2019

Chart No 1: The data on the number of mobile internet users big cities India as of 31st March 2019:



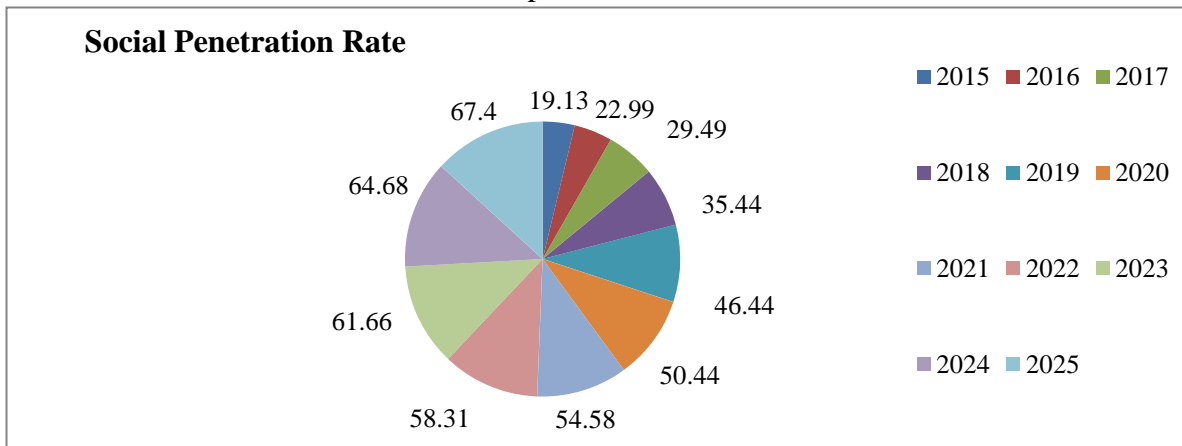
Source: TARI& Telecom Statistics India 2019

Chart No 2: Mobile Internet penetration rate India from 2008 to 2020



Source: TARI& Telecom Statistic India 2019.

Chart No 3: Mobile Internet penetration rate India from 2015 to 2025



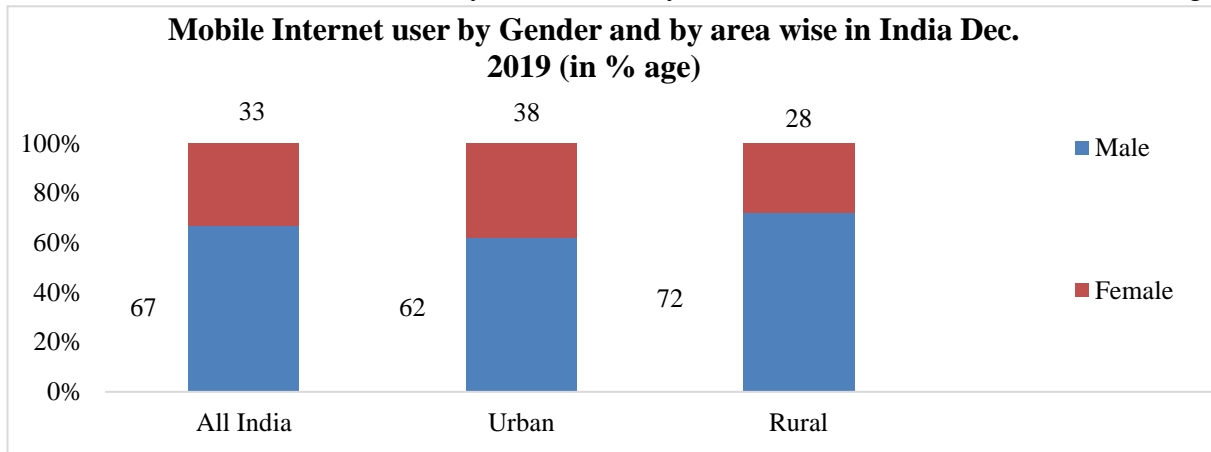
Source: TARI& Telecom Statistic India 2019.

Table No 4: As of December 2019, the distribution of mobile internet users by gender at India

	Male	Female	Total
All India	67	33	100
Urban	62	38	100
Rural	72	28	100

Source: TARI& Telecom Statistic India 2019.

Chart No-4: Distribution of Internet user by Gender and by area wise in India in Dec. 2019 (in % age)



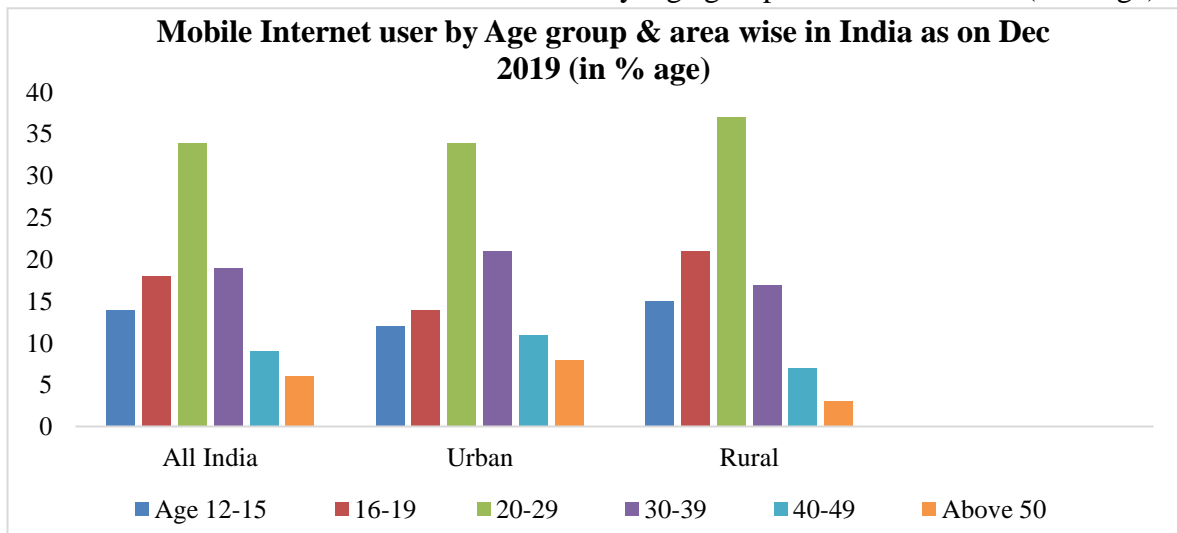
Source: DOT compiled data, TARI& Telecom Statistic India 2019.

Table No 5: Distribution of Mobile Internet user by Age group in % age Dec 2019

	12-15 Year	16-19Year	20-29 Year	30-39 Year	40-49 Year	More than 50 year
All India	14	18	35	19	9	6
Urban	12	14	33	21	11	8
Rural	15	21	37	17	7	3

Source: DOT compiled data, TARI& Telecom Statistic India 2019.

Chart No-5: Distribution of Mobile Internet user by Age group in India Dec 2019 (in % age)



Source: DOT compiled data, TARI& Telecom Statistic India 2019.

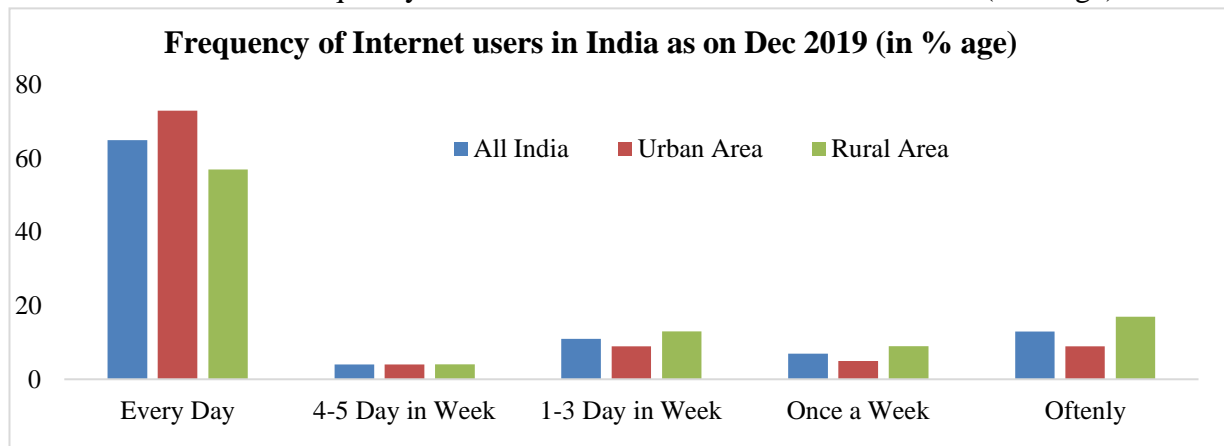
Table No 6: Frequency of Mobile Internet users by Regions in % age Dec 2019

	Every Day	4-5 Day in Week	1-3 Day in Week	Once a Week	Less often than Once a Week	Total
All India	65	04	11	07	13	100

Urban	72	04	09	05	09	100
Rural	57	04	13	09	17	100

Source: DOT compiled data, TARI& Telecom Statistic India 2019.

Chart No-6: Frequency of Mobile Internet users in India Dec 2019 (in % age)



Source: DOT compiled data, TARI& Telecom Statistic India 2019.

Table No 7: Area-wise & Sector-wise No of Mobile Internet user in India from 2008 to 2019(In Millions)

Year	No of Phone	Wireless	Wire-line	Urban	Rural	Public	Private
2008	300.49	261.08	39.41	223.99	76.50	79.55	220.94
2009	429.72	391.76	37.96	306.21	123.51	89.55	340.18
2010	621.28	584.32	36.96	420.51	200.77	105.87	515.41
2011	846.33	811.6	34.73	564.04	282.29	126.00	720.33
2012	951.35	919.18	32.17	620.52	330.83	130.27	821.08
2013	898.02	867.81	30.21	548.80	349.21	130.11	767.91
2014	933.02	904.52	28.50	555.23	377.78	120.05	812.96
2015	996.13	969.54	26.59	580.05	416.08	100.34	895.79
2016	1059.33	1034.11	25.22	611.56	447.77	108.65	950.68
2017	1194.99	1170.59	24.40	693.18	501.81	122.18	1072.81
2018	1211.80	1188.99	22.81	685.93	525.87	131.66	1080.14
2019	1183.14	1161.71	21.70	669.14	514.27	133.51	1049.90
Mean	885.47	855.42	30.06	539.93	345.56	114.81	770.68
Total	10625.6	10265.0	360.66	6479.16	4146.69	1377.74	9248.13
CAGR	12.10	13.25	-4.85	9.55	17.21	4.41	13.87

Source: TARI& Telecom Statistic India 2019.

Table No 8: Area-wise & Sector-wise Tele-density of Mobile Internet User in India from 2008 to 2019 (per 100)

Year	Tele-density	Wireless	Wire-line	Urban	Rural	Public	Private
2008	26.22	22.78	3.44	66.39	9.46	6.94	19.28
2009	36.98	33.71	3.27	88.84	15.11	7.71	29.27
2010	52.74	49.60	3.14	119.45	24.31	8.99	43.75
2011	70.89	67.98	2.91	156.93	33.83	10.55	60.34
2012	78.66	76.00	2.66	169.17	39.26	10.77	67.89
2013	73.32	70.85	2.47	146.64	41.05	10.62	62.69
2014	75.23	72.94	2.30	145.46	44.01	9.68	65.55
2015	79.36	77.24	2.12	149.04	48.04	7.99	71.36
2016	83.40	81.41	1.99	154.18	51.26	8.55	74.85
2017	93.01	91.11	1.90	171.52	56.98	9.51	83.50
2018	93.27	91.51	1.76	166.64	59.25	10.13	83.14
2019	90.10	88.45	1.65	159.66	57.50	10.16	79.94
Mean	71.10	68.63	2.47	141.16	40.01	9.30	61.80
Total	853.18	823.58	29.61	1693.92	480.06	111.6	741.56
CAGR	10.83	11.97	-5.94	7.59	16.23	3.23	19.69

Source: TARI& Telecom Statistic India 2019.

Table No 9: Service Area wise no of Mobile Internet Subscriber in India from 2008 to 2019 (Share In % age& Tele-density per 100)

Name	% age Share			Tele-density Per 100		
	Total	Urban	Rural	Total	Urban	Rural
Andhra Pradesh	6.82	7.33	7.57	80.98	161.83	43.20
Assam	1.65	1.22	2.36	47.53	131.83	31.88
Bihar	6.5	5.41	8.65	39.58	149.86	27.44
Gujarat	5.97	6.13	5.87	84.76	129.74	48.56
Haryana	2.32	2.05	2.84	75.45	118.10	52.49
Himachal Pradesh	0.87	0.53	1.43	110.79	362.21	78.16
Jammu & Kashmir	0.88	0.79	1.05	65.59	127.60	42.08
Karnataka	6.12	7.00	4.65	87.34	160.98	41.92
Kerala	3.95	3.44	5.01	95.28	204.07	58.22
Madhya Pradesh	5.77	5.62	5.96	51.36	111.06	29.20
Maharashtra	7.92	7.13	9.36	72.09	111.36	50.46
North East	0.97	0.89	1.12	38.61	143.50	39.18
Odisha	2.65	2.02	3.70	57.80	152.32	38.06
Punjab	3.47	3.58	3.43	98.86	148.10	62.18
Rajasthan	5.52	4.64	7.07	68.71	146.69	44.00
Tamil Nadu	7.71	9.06	5.66	100.91	130.76	64.86
Utter Pradesh	13.25	11.80	14.26	49.32	117.83	29.34

West Bengal	4.56	2.76	7.55	53.21	134.36	39.63
Kolkata	2.64	3.91	0.49	145.77	#	#
Chennai*	2.26	3.17	0.09	136.02	134.61	#
Delhi	5.01	7.75	0.40	213.92	#	#
Mumbai	4.0	6.29	0.19	150.24	#	#
Total	100.81	102.52	98.71	1924.12	2876.81	820.86

#: Rural- Urban Breakup of population is not available.

*Included in Tamilnadu from year 2011

Source: TARI& Telecom Statistic India 2019.

Table No 10: Service Area wise Total Mobile Internet Subscriptions in Rural India from 2015 to 2019 (in Millions)

Year	2019	2018	2017	2016	2015	Mean Value	CAGR
AP	19.94	12.83	12.10	9.13	8.14	12.43	19.62
Assam	5.68	5.04	4.25	3.22	3.25	4.29	11.81
Bihar	22.62	13.51	11.91	8.87	7.94	12.97	23.29
Delhi	0.70	0.72	0.69	0.94	1.02	0.81	-7.25
Gujarat	11.44	8.26	8.26	6.05	6.46	8.09	12.11
Haryana	5.54	3.80	3.65	2.97	3.15	3.82	11.95
HP	3.21	2.04	2.10	1.75	1.63	2.15	14.52
J & K	2.57	1.92	1.87	1.85	1.81	2.00	7.26
Karnataka	11.93	6.69	6.37	5.54	5.31	7.17	17.57
Kerala	10.04	7.49	6.72	5.58	5.93	7.15	11.10
Kolkata	1.53	1.00	0.76	0.55	0.44	0.86	28.31
M P	15.69	6.94	7.70	6.25	5.70	8.46	22.45
Maharashtra	20.21	12.79	11.75	9.75	9.19	12.74	17.07
Mumbai	1.21	0.75	0.50	0.28	0.25	0.60	37.08
North East	2.78	2.38	2.22	1.97	1.91	2.25	7.80
Orissa	9.64	5.67	4.93	3.36	3.52	5.42	22.32
Punjab	7.13	4.58	4.67	4.71	4.83	5.18	8.10
Rajasthan	15.57	9.47	8.71	7.0	7.30	9.61	16.36
Tamil Nadu	11.37	9.31	8.08	6.85	6.50	8.36	11.83
U P East	22.81	14.46	13.41	11.22	10.65	14.51	16.45
UP West	11.90	7.03	7.10	6.48	5.67	7.64	15.98
West Bengal	13.49	9.14	8.80	7.64	6.90	8.19	14.35
Total	227.01	145.82	136.52	111.95	107.56	145.77	

Source: TARI& Telecom Statistic India 2019.

References

1. Ashok Jhunjhunwala, Janani Rangarajan, 2011, 'connecting the next billion: Empowering rural India'.
2. Bernstein, L. (1989), Financial Statement Analysis; Theory, application and Interpretation, Richard D. Irwin, 4th edition.
3. Chitra G Desai, Saheb Rao N Shinde, 2009, 'Web based education in India: A changing scenario'.
4. Partha Goswami, Rajarshi Mahapatra and Divyasukananda, 2013, 'bridging the digital gap in rural India Vivekddisha: A novel experience'.
5. Prahalad and Hart, (2002), Fortune at the Bottom of the Pyramid, New Delhi: Pearson Publication, New Delhi.
6. R. Rastogi, 'Connecting the next billion web users', presentation at panel discussion, Proc. 20th Int'l worldwideconf., 2011; www.www2011india.com/panel.html.
7. Sinha, Sidharth (2001), Regulation of Tariffs and Interconnection: Case Studies, India Infrastructure Report 2001, Oxford University Press, New Delhi, India.
8. The Indian telecom services performance indicators, telecom regulatory authority of India (TRAI) 2013.
9. Vyas, V. S. (2002), Changing Contours of Indian Telecom Sector in the Changing Environment, Raj Kapila & Uma Kapila (Editors), Ghaziabad: Academic Foundation.
10. ZahirKoradia, Aadi Eshwar Seth, 2012, 'Rural net: Understanding the state of internet connectivity in rural India'.
11. Telecom statistics India-2019, Economics research unit, Department of Telecommunications Ministry of Communications, Govt. of India, and New Delhi.
12. <https://www.ibef.org>
13. KPMG.com, ASSOCHAM, August 2017.
14. GSM Mobile Economy Report India, 2016, accessed on 20 July 2017.
15. India Ericsson Mobility Report, June 2017, accessed on 20 July 2017.
16. GSMA India Digital Promise Report, Feb 2017, accessed on 20 July