

**Reliance Communications Limited's Response to the Consultation Paper on
Data Speed Under Wireless Broadband Plans**

Executive Summary

- A. **Robust financial health and a strong business case for the telecom industry is imperative for deployment of networks which are able to support better Quality of Services (QoS) levels.**
- B. **Not even a single telecom operator, across the world, is publishing any metric of data speeds available over their networks.**
- C. **The information on wireless broadband speeds, viz, in terms of technology / ideal conditions, currently being made available to consumers is transparent enough for making informed choices and should be continued.**
- D. **Due to stochastic behaviour of the dependent parameters, average / typical speeds cannot be specified by the service providers.**
- E. **No changes should be brought about to the existing framework on wireless broadband tariff plans as the existing framework on wireless broadband tariff plans already encourages high transparency and comparison between plans**
- F. **Manually obtained parameters listed at serial nos. 2 to 6, of the table in the CP, should be deleted.**
- G. **In case retained, then the benchmarks for the parameter 'Minimum download speed', for each plan should be replaced by 'Technology' viz, 2G, 3G and 4G.**
- H. **Any mention of average / typical speed would have legal bindings and accountability which no operator in the entire world is in a position to guarantee and defend.**
- I. **No disclosure of average network performance over a period of time or at peak times including through broadband facts / labels should not be made mandatory.**
- J. **No standard application / websites should be identified for mandating comparable disclosures about network speeds. It is best avoided and left to the open source environment simply as an informative service rather than making it a legal metric.**
- K. **From personal security, privacy or data sensitivity perspective, the issue of collecting device level data does create a challenge for the adoption of any measurement tools.**
- L. **Clause 72, of the IT Act, addresses the issue of sharing of information obtained without the consent of the owner of the information.**

- M. **There is indeed a need to address the issue of sharing of information obtained from a user's handset when the user gives his consent for only accessing the information and not sharing it with the third parties.**
- N. **The existing measures being adopted for increasing awareness among consumers about wireless broadband speeds are adequate and should be continued with.**
- O. **The non-uniformity of results of various speed testing apps / even of the same app, has the possibility of giving rise to arbitration, and it is best avoided.**

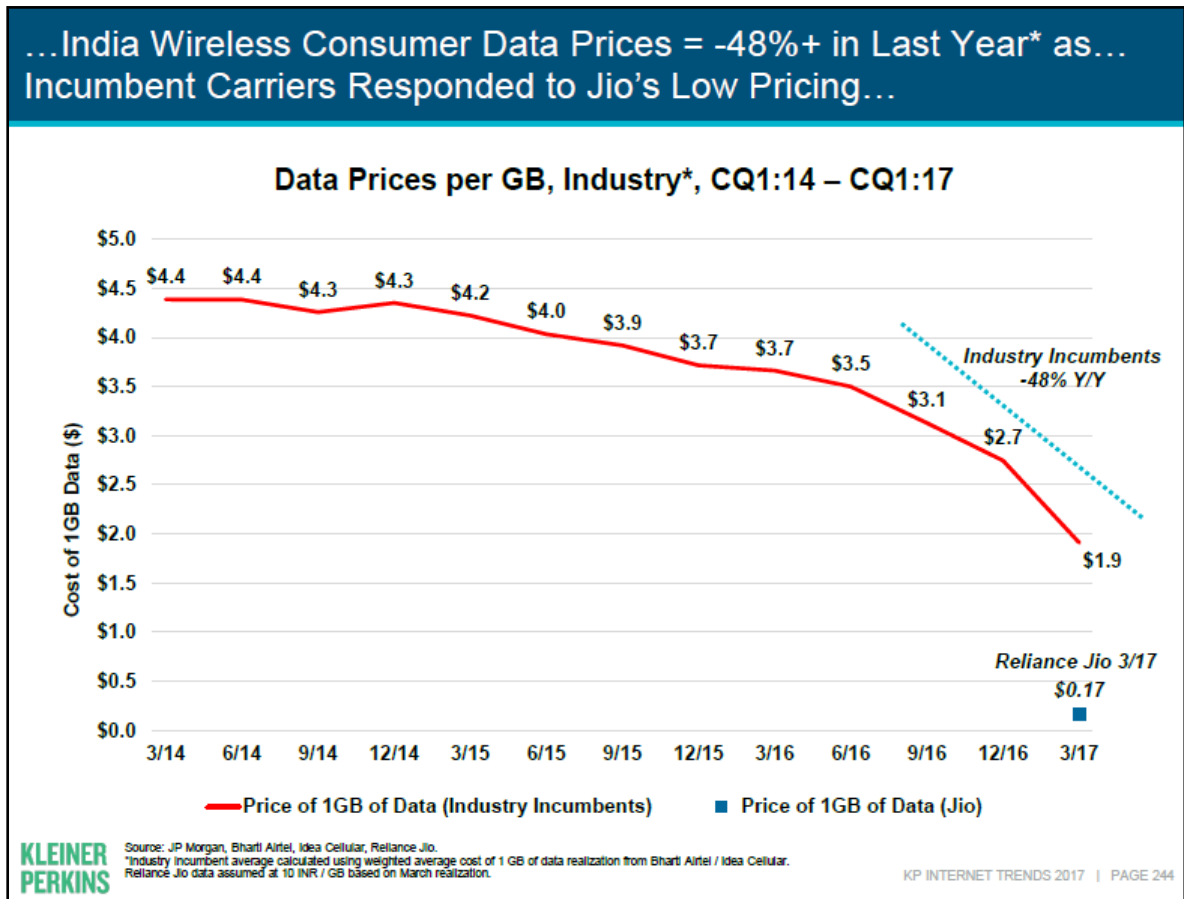
Preamble

1. With the paradigm shift of telecom networks from predominance of voice to data, the issue of data speeds has become a USP for the telecom operators. Competitors are trying to outdo each other through concerted advertisements quoting one or the other data speed testing website as the authority. But what is strange is the fact that despite almost the same equipment, almost similar technology, more or less similar skill sets of individuals maintaining these networks and almost the same managed services providers providing operational and business support for the networks, yet the **data speeds being achieved in different regions of the world vary vastly.**
2. As regards India, it is indeed perplexing as to why is the country is placed at the bottom of the inverted triangle of the data speeds of the OpenSignal's "Global State of Mobile Networks (February 2017)" report (**Appendix I refers**). Even Akamai's report 'State of Internet, Q1 2017'¹ has specifically mentioned that, *"All 15 of the surveyed Asia Pacific countries / regions had average connection speeds above 4 Mbps, and eight of them had speeds above 10 Mbps, the same as in the fourth quarter of 2016. India and the Philippines once again had the lowest average connection speeds among surveyed Asia Pacific countries / regions, at 6.5 Mbps and 5.5 Mbps respectively."* This despite LTE having been introduced in the country around Q1 of 2016.
3. A closer scrutiny of the countries being ranked higher in terms of data speeds vis-à-vis India reveals that apart from the factors listed in the CP itself, following additional factors are weighing down on the quality of telecom services in India resulting in lower data speeds.
 - a. **Declining Investments in Network Infrastructure.** A scan of the cost of 1 GB of data being offered by various TSPs in US is as given at **Appendix II**. It is observed that the in contrast to present minimal cost of approx \$4.3 per GB (calculated from the tariffs listed above), the cost of 1 GB of data in India was \$3.5 in Q2 of 2016 (Mary Meekers internet trends report 2017²). As per this Mary Meekers report, "By March 2017, the average cost of 1GB of data was down by 20 per cent among

¹ <https://www.akamai.com/us/en/multimedia/documents/state-of-the-internet/q1-2017-state-of-the-internet-connectivity-report.pdf>

² <http://www.kpcb.com/internet-trends>

incumbents, and if one were to include Jio, the average cost per GB stood at \$0.33 or Rs 21 by March 2017.”



Graph Showing the declining prices of data in India

Source : Mary Meekers internet trends report 2017

Given the fact that the Indian Telecom sector is the most leveraged industry in India (Cumulative debt of ₹ 4.5 Lakh Cr), such low tariffs lead to razor thin / almost negligible profit margins for the TSPs. Consequently, the industry is forced to pull down its bottom line by limiting investment into the network equipment as well as the manpower (both in terms of numbers and the level of skill sets). **This lack of adequate level of support for the network and services is one of the major reasons for India's poor ranking for internet data speeds.**

b. **Marginal Subscription of Data Services due to Lower Per Capita Income.**

Given India's vast population and the fact that India's economic growth story is only quarter of a century old the exploits of economic progress show a very minimal increase for the Indian Diaspora. There is a large gap between the per capita incomes of the already developed countries, vis-à-vis India.

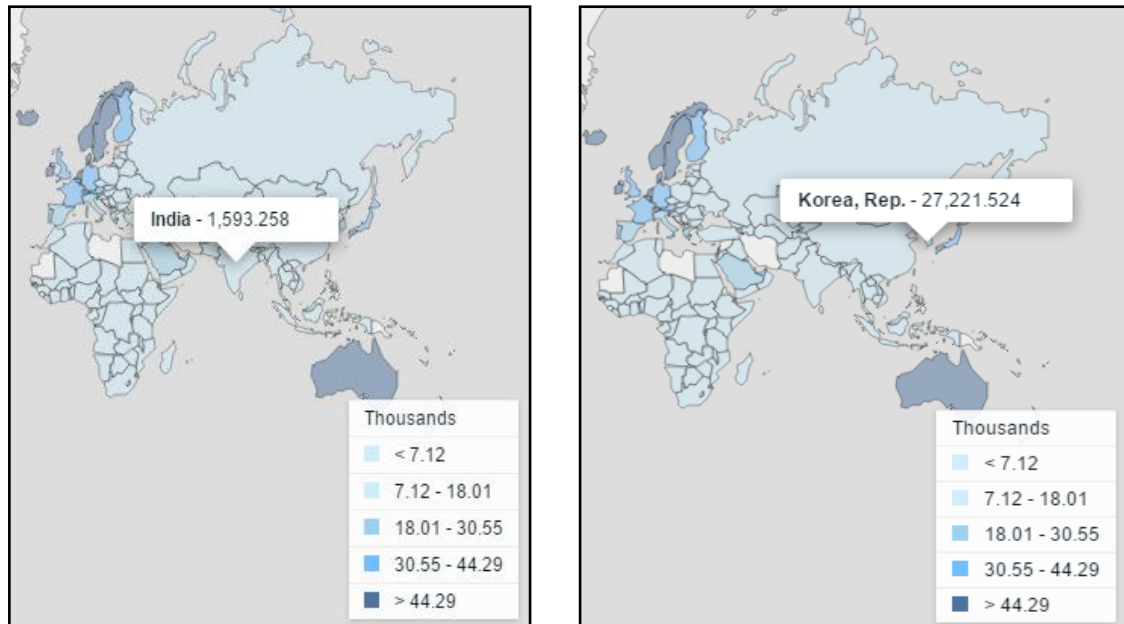


Figure Showing the difference in Per capita Incomes of India and South Korea

Source : <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?view=map>

Consequently, despite one of the lowest tariff rates for data services, the same are out of the reach of a vast majority of Indians. The same is corroborated in the Mary Meekers internet trends report 2017.

" *India Smartphone + Data Costs =
Declining But Still High for
Majority of India's 1.3B Citizens* "

Quote from Mary Meekers internet trends report 2017

This directly translates into a much lower number of internet services subscribers (391.5 Mn out of a total telecom subscriber base of 1151.78 Mn³) resulting in lower revenues for the TSPs. **Therefore, the TSPs have no option but to maintain a low bottom line, thereby contributing towards India's poor ranking for internet data speeds.**

- c. A study by Nishantha Palihawadana of the Telecommunications Regulatory Commission⁴ of Sri Lanka has unmistakably shown the adverse effect on quality of telecom services due to lower investments on telecom networks.
- 4. A clear deduction that emerges from the foregoing discussion is that **a robust financial health and a strong business case for the telecom industry is**

³ http://tra.gov.in/sites/default/files/Indicator_Reports_Dec_16_07042017.pdf

⁴ https://www.itu.int/ITU-D/finance/work-cost-tariffs/events/tariff-seminars/Indonesia-12/pdf/Session4_SriLanka_Nishantha.pdf

imperative for deployment of networks which are able to support better Quality of Services (QoS) levels.

5. A sustained internet based scrutiny of the tariff plans, through the websites of various telcos across the world as listed below, reveals that despite having better QoS levels, the tariff plans are advertised without any mention of the data speeds being available over their networks. Just as in India, the telcos, across the world, mention only the following information while advertising their tariff plans (**Appendix II refers**).
 - a. Volume of data.
 - b. The price at which it is being provisioned.
 - c. The time period within which that volume of data is to be consumed before it lapses.
 - d. Any fair usage conditions that are imposed from network management perspective.
6. This clearly points to the fact that irrespective of better QoS being supported over telecom networks in other parts of the world, the stochastic behavior of the wireless channels is beyond the control of the telcos. Even for the landline (OFC / Copper) based networks have a large number of variables which a telco cannot control completely. Therefore, apart from the information being provided as listed at para 5a to 5d above, telcos are refraining from putting a metric to the speeds being offered over the telecom networks and hence, **not even a single telecom operator, across the world, is publishing any metric of data speeds available over their networks.** The same can be corroborated from the tariff plans available at various telcos websites as given below.
 - a. *Verizon*: <https://www.verizonwireless.com/plans/verizon-plan/>
 - b. *T-Mobile*: https://prepaid-phones.t-mobile.com/prepaid-plans-individual?icid=WEB__Q117PREP_AI_YYP087QVHNJ7801#getting-started
 - c. *Sprint*: <https://www.sprint.com/landings/unlimited-cell-phone-plans/index.html?INTNAV=TopNav:Shop:UnlimitedPlans>
 - d. *Etisalat UAE*: http://www.etisalat.ae/nrd/en/personal/mobile/mobile_data_plan_catalogue.jsp
 - e. *BT*: <http://www.productsandservices.bt.com/mobile/sim-only-deals/#>
 - f. *Telstra Australia*: <https://www.telstra.com.au/broadband/mobile-broadband/plans>
 - g. *Optus Australia* : <http://www.optus.com.au/shop/mobile/phones/sim-only>

Our specific comments on the issues posed by the Authority are given in the subsequent paragraphs.

Detailed Response

Q1: Is the information on wireless broadband speeds currently being made available to consumers is transparent enough for making informed choices?

Q2: If it is difficult to commit a minimum download speed, then could average speed be specified by the service providers? What should be the parameters for calculating average speed?

Our Response

Yes, the information on wireless broadband speeds currently being made available to consumers is transparent enough for making informed choices.

No, average speed cannot be specified by the service providers due to stochastic behaviour of the dependent parameters.

1. As has been brought out in numerous earlier representations by the industry, a host of parameters as listed at **Appendix III**, need to be simultaneously aligned for achieving the ideal high speeds for data services of the relevant wireless technology. Since, these parameters exhibit stochastic behavior and are neither under the control of the TSPs nor can they be captured as a structured algorithm that can accurately enable their control, the delivery of broadband data services through wireless channels is akin to the returns from the stock market. Just as the returns from the stock market cannot be predicted accurately, the situation is similar for delivery of broadband services over wireless channels.
2. Internet based research of the websites of various telcos across the world has revealed that all operators, without any exception, mention only the following information while advertising their tariff plans (**Appendix II refers**) and non of them is publishing any metric of data speeds, including average, typical, etc, available over their networks.
 - a. Volume of data.
 - b. The price at which it is being provisioned.
 - c. The time period within which that volume of data is to be consumed before it lapses.
 - d. Any fair usage conditions that are imposed from network management perspective.

Our Recommendation

1. In view of the foregoing, it is recommended that,
 - a. **The information on wireless broadband speeds, viz, in terms of technology / ideal conditions, currently being made available to consumers is transparent enough for making informed choices and should be continued.**
 - b. **Due to stochastic behaviour of the dependent parameters, average / typical speeds cannot be specified by the service providers.**

Q3: What changes can be brought about to the existing framework on wireless broadband tariff plans to encourage better transparency and comparison between plans offered by different service providers?

Our Response and Recommendation

No changes should be brought about to the existing framework on wireless broadband tariff plans as the existing framework on wireless broadband tariff plans already encourages high transparency and comparison between plans offered by different service providers.

Q4: Is there a need to include / delete any of the QoS parameters and / or revise any of the benchmarks currently stipulated in the Regulations?

Our Response

Yes, there is a need to delete some of the QoS parameters that are obtained manually and limit the monitoring to only network level parameters.

1. From the table provided in the CP (reproduced below for reference), it is observed that parameters at serial 2 to 6 require manual intervention for ascertain their values. The manual intervention brings in a lot of subjectivity and hence it is suggested that the same should be done away with. Instead, monitoring of QoS parameters should be restricted to this that are obtained from the network level statistical tools.

| Name of Parameter | Benchmarks | Average over a period |
|--|---|------------------------------|
| Service activation/ provisioning | Within 4 hrs with 95% success rate | One Month |
| Successful data transmission download attempts | >80% | One Month |
| Successful data transmission upload attempts | >75% | One Month |
| Minimum download speed | To be measured for each plan by the service provider and reported to TRAI | One Month |
| Average throughput for packet data | >75% of the subscribed speed | One Month |
| Latency | Data < 250ms | One Month |
| PDP context activation success rate | >= 95% | One Month |
| Drop rate | <=5% | One Month |

Table showing QoS parameters as given in the CP on page No 15

2. However, in case it is decided to retain these parameters then, it is suggested that in the benchmarks for the parameter ‘Minimum download speed’, for each plan should be replaced by ‘Technology’ viz, 2G, 3G and 4G, as TSP’s do not vary the speed on the basis of the plan. Different tariff plans offer only different data quantity and the speed difference comes only when there is a change in technology.

3. Additionally, it is brought out that standardization of these parameters, across technologies, curbs innovation. Therefore, it would be ideal to mention the plans as being of a particular technology instead of the individual plans being classified on the basis of speed of data transfer.

Our Recommendation

4. In view of the foregoing discussion, it is recommended that,
 - a. **Manually obtained parameters listed at serial nos. 2 to 6, of the table in the CP, should be deleted.**
 - b. **In case retained, then the benchmarks for the parameter 'Minimum download speed', for each plan should be replaced by 'Technology' viz, 2G, 3G and 4G.**

Q5: Should disclosure of average network performance over a period of time or at peak times including through broadband facts / labels be made mandatory?

Our Response

No, disclosure of average network performance over a period of time or at peak times including through broadband facts / labels should not be made mandatory.

1. As has been brought out in our response to the questions 1 & 2, the physical and technical parameters of the telecom networks exhibit stochastic behavior and are neither completely under the control of the TSPs nor can they be captured as a structured algorithm that can accurately enable their control. Therefore, the delivery of broadband data services through wireless channels is unpredictable and akin to the returns from the stock market. It is because of this reason that even the most well designed, most well maintained, most resourceful telecom networks too are not subjected to declaration of any kind of average / typical speeds.
2. **Any mention of average / typical speed would have legal bindings and accountability which no operator in the entire world is in a position to guarantee and defend.** Acknowledging this fact, even FCC has kept labelling of telecom products as voluntary for the TSPs of USA.

Our Recommendation

3. In view of the foregoing, it is recommended that,
 - a. **Any mention of average / typical speed would have legal bindings and accountability which no operator in the entire world is in a position to guarantee and defend.**
 - b. **Hence, no disclosure of average network performance over a period of time or at peak times including through broadband facts / labels should not be made mandatory.**

Q6: Should standard application / websites be identified for mandating comparable disclosures about network speeds?

Our Response

No standard application / websites should be identified for mandating comparable disclosures about network speeds.

1. It has been observed that the speeds of the same network, at the same place, at the same time, with the same device and even with the same testing algorithm being used by different applications are predicted differently by different testing websites / applications. This variance can once again be attributed to the dynamics of network condition, physical environment at the testing site, test server selection, etc.
2. The counter claims of their networks being fastest based on the TRAI's MySpeed and on Ookla applications, by competing networks in India itself, are a testimony to the variance that is seen in results of such applications. Standardizing / trying to bring in objectivity in a scenario where the dependent parameters are absolutely non-predictable is fraught with the probability of arbitration. **It is best avoided and left to the open source environment simply as an informative service rather than making it a legal metric.**

Our Recommendation

3. In view of the foregoing, it is recommended that,
 - a. **No standard application / websites should be identified for mandating comparable disclosures about network speeds.**
 - b. **It is best avoided and left to the open source environment simply as an informative service rather than making it a legal metric.**

Q7: What are the products / technologies that can be used to measure actual end-user experience on mobile broadband networks? At what level should the measurements take place (e.g. on the device, network node)?

Our Response and Recommendation

Actual end-user experience on mobile broadband networks can only be measured at the end-users' handset / device through the use of speed testing apps like Ookla, MySpeed, etc.

Q8: Are there any legal, security, privacy or data sensitivity issues with collecting device level data?

- a) **If so, how can these issues be addressed?**
- b) **Do these issues create a challenge for the adoption of any measurement tools?**

Our Response

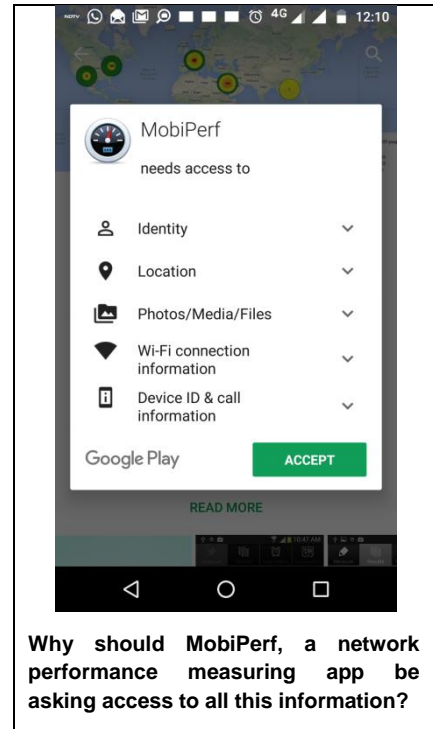
Yes, there are legal, security, privacy or data sensitivity issues with collecting device level data.

1. It is observed that almost all apps, without exception, ask for access to a host of information from the user before permitting download of the app. It is difficult to understand as to why should a speed testing app or a network performance measuring app like 'MobiPerf' be accessing the users' personal information.
2. Though the user gives his consent for 'ACCESS' to the information on his device, but the apps 'SHARE' this information with the third parties, e.g. True Caller App shares an individuals' mobile number with all users using True Caller app. **The IT act, clause**

72 (reproduced below for ready reference), addresses sharing of information obtained without the consent of the owner of the information and not the scenario, where the owner of the information gives his consent for only accessing the information and not sharing it with the third parties.

“72. Penalty for breach of confidentiality and privacy.

Save as otherwise provided in this Act or any other law for the time being in force, any person who, in pursuance of any of the powers conferred under this Act, rules or regulations made thereunder, has secured access to any electronic record, book, register, correspondence, information, document or other material without the consent of the person concerned discloses such electronic record, book / register, correspondence, information, document or other material to any other person shall be punished with imprisonment for a term which may extend to two years, or with fine which may extend to one lakh rupees, or with both.”



3. The licensed operators are bound by their respective license conditions as well as the laws of the land such as the IT Act. However, the app providers have no such obligations that prevent them from sharing the information obtained from the user’s device. **There is indeed a need to address this issue of sharing of information obtained from a user’s handset when the user has consented only to give access to that information.**
4. In view of lack of any legal framework for sharing of information, obtained from a users’ handset, which the user consents only to give access to the app and not to share it with a third party, the subscriber faces the challenge to either agree to the terms of the app provider and putting at risk his as well as others’ privacy or is prevented from the use of the app only.
5. **Therefore, from personal security, privacy or data sensitivity perspective, the issue of collecting device level data does create a challenge for the adoption of any measurement tools.**

Our Recommendation

6. In view of the foregoing, it is recommended that.
 - a. **From personal security, privacy or data sensitivity perspective, the issue of collecting device level data does create a challenge for the adoption of any measurement tools.**

- b. **The IT act, clause 72 (reproduced below for ready reference), addresses sharing of information obtained without the consent of the owner of the information.**
- c. **There is indeed a need to address the issue of sharing of information obtained from a user's handset when the user gives his consent for only accessing the information and not sharing it with the third parties.**

Q9: What measures can be taken to increase awareness among consumers about wireless broadband speeds, availability of various technological tools to monitor them and any potential concerns that may arise in the process?

Our Response

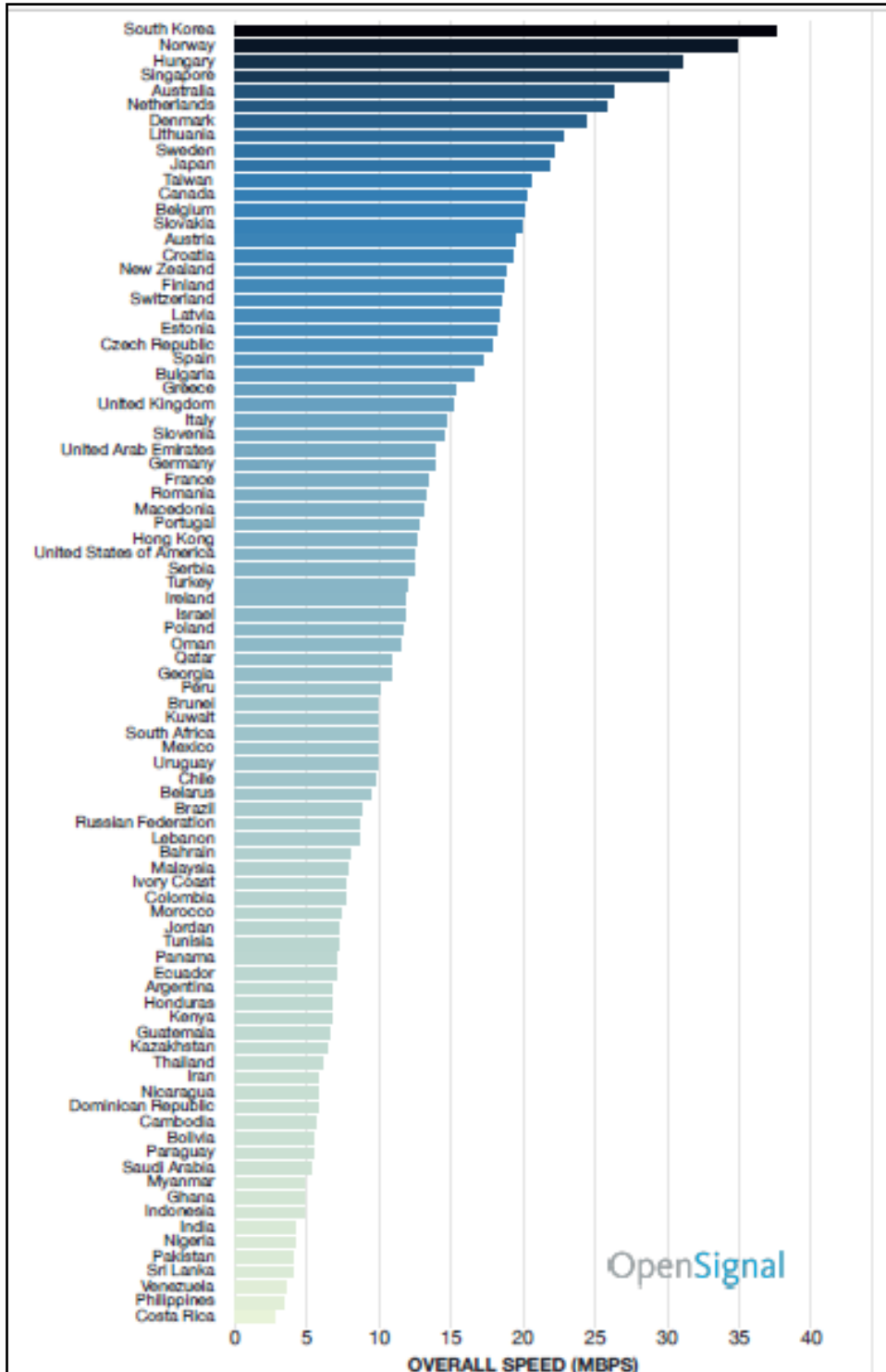
- 1. In this era of internet, services which are to the liking of the consumers are adopted by the users themselves. The usefulness of an application / a website ensures that it is **advertised through word of mouth of the subscribers itself**. In the initial days of internet, google never had front page advertisements in news paper, FaceBook never advertised through TV / Radio adds, yet they have become immensely popular. A deeper study into this phenomenal rise in popularity of some sites / apps reveals that they addressed the needs of the subscribers. E.g. WhatsApp provided an avenue for innovative messaging instead of the plain olf SMS and hence, its popularity spread from one person to the other.
- 2. It is brought out that the retailers of TSPs provide adequate information to the subscribers when they are purchasing the SIMs. It is upto the subscriber to take an informed decision based on the information made available by the TSPs retailer / in print media / over the television channels. As has been brought out earlier, the non-uniformity of results of various speed testing apps / even of the same app, has the possibility of giving rise to arbitration, and it is best avoided.

Our Recommendation

- 3. In view of the foregoing, it is felt that,
 - a. **The existing measures being adopted for increasing awareness among consumers about wireless broadband speeds are adequate and should be continued with.**
 - b. **The non-uniformity of results of various speed testing apps / even of the same app, has the possibility of giving rise to arbitration, and it is best avoided.**

Q10: Any other issue related to the matter of Consultation.

OpenSignal’s Global State of Mobile Networks (February 2017)
Overall Speeds Comparison



Source : <https://opensignal.com/reports/2017/02/global-state-of-the-mobile-network#wifi>

Tariff Plans of T-Mobile and Verizon In USA

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|---|--|---|

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Source : <https://prepaid-phones.t-mobile.com/prepaid-internet>

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Data Only Plan

For tablets, hotspots and other network-capable devices.

Choose your data

Share data across your devices. Switch sizes any time.

| | | | |
|-------------------|-------------------|-------------------|-------------------|
| 2 GB \$20 /mo. | 4 GB \$30 /mo. | 6 GB \$40 /mo. | 8 GB \$50 /mo. |
|-------------------|-------------------|-------------------|-------------------|

What you can do with 4 GB

- 12,000 webpages
- or 52,000 emails
- or 12 hrs streaming video
- or 800 hrs turn-by-turn navigation

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Data Only Plan

For tablets, hotspots and other network-capable devices.

Choose your data

Share data across your devices. Switch sizes any time.

| | | |
|---------------------|---------------------|----------------------|
| 60 GB \$410 /mo. | 80 GB \$560 /mo. | 100 GB \$710 /mo. |
|---------------------|---------------------|----------------------|

What you can do with 4 GB

- 12,000 webpages
- or 52,000 emails
- or 12 hrs streaming video
- or 300 hrs turn-by-turn navigation

Verizon Tariff Plans

Source : <https://www.verizonwireless.com/plans/data-only-plan/>

IDEAL CONDITIONS OF PARAMETERS AFFECTING DELIVERY OF BROADBAND SERVICES THROUGH WIRELESS CHANNELS

| Throughput (Mbps) | | 1 | 2 | 5 | 2 | 4 | 7 | 2 | 4 | 7 | 5 | 8 | 12 |
|------------------------------|--|---|----------------|---|----|---|---|----|---|---|----|----|----|
| Weather | | Sunny | | | | | | | | | | | |
| Subscriber's Handset | Original Equipment Manufacturer (OEM) | Reputed | | | | | | | | | | | |
| | Authenticity of IMEI | Authentic | | | | | | | | | | | |
| | RAM | Minimum 2 GB | | | | | | | | | | | |
| | No of Application(s) Active Simultaneously | 1 | | | | | | | | | | | |
| | Sensitivity (dbm) | -117 | -120 | | | | | | | | | | |
| | Handset Capability | Cat 6 | | | | | | | | | | | |
| | 64 QAM | Support required | | | | | | | | | | | |
| | Carrier Aggregation (CA) | Support required | | | | | | | | | | | |
| Subscription Profile | No Throttling on speed | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Subscriber's Location | Nearness to the BTS | Near to 100 Mtr | | | | | | | | | | | |
| | Number of subscribers accessing the net simultaneously from 1 Node-B/E Node -B | 12 | 7 | 2 | 15 | 8 | 4 | 15 | 8 | 4 | 18 | 11 | 7 |
| | | | | | | | | | | | | | |
| Website Server | Number of hops from Service Provider's gateway | 1 | | | | | | | | | | | |
| | Number of subscribers accessing the site simultaneously | Accessing server should not have congestion , we could not define this number | | | | | | | | | | | |
| NETWORK QUALITY | CQI | 25 and above | 22 and above | | | | | | | | | | |
| | RSRP | better than-75 | better than-75 | | | | | | | | | | |
| | Backhaul | 16 Mbps | 100 Mbps | | | | | | | | | | |
| | | | | | | | | | | | | | |

* All conditions are to be satisfied simultaneously for achieving the ideal data speed.

