

Cost-strained optimization

User perspectives on Internet use in India

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July 2017



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This work was carried out with the aid of a grant from Mozilla, the UK Government's Department for International Development, and the International Development Research Centre, Canada. The views expressed in this work are those of the creators and do not necessarily represent those of Mozilla, the UK Government's Department for International Development, the International Development Research Centre, Canada, or its Board of Governors.



Executive Summary

The report presents an analysis of the perspectives on Internet use from low- and middle-income respondents in India. The findings are based on fieldwork that took place in Delhi in December 2016. Eighty-three respondents were interviewed through a series of focus group discussions and in depth interviews.

The research took place following the Telecom Regulatory Authority of India's prohibition of discriminatory tariffs that disallowed telecommunications service providers from providing zero-rated content. Factors that influenced the debate such as the barriers to Internet use, factors that drove people online, content accessed by users, and cost optimization strategies have been addressed in the report. User perspectives around earned reward models and Reliance Jio, in particular, were explored.

Social networking platforms, WhatsApp and Facebook were key drivers of Internet use. Respondents spoke of how they started using the Internet due to the networking effects surrounding the use of these platforms. The digital skills necessary to navigate these platforms, and the wider Internet, were learnt through family and friends.

Respondents adjusted usage patterns to maximize their utility under constrained budgets. Some relied on social capital, and shared Internet access to lower expenditure. Many closely monitored their use of data, sometimes relying on applications to do so. Some switched to lower speeds to reduce costs. Evidence of waiting to connect to Wi-Fi before consuming heavier content such videos also emerged.

Earned reward models --which were suggested as an alternative mechanism to zero-rating following the prohibition of discriminatory tariffs to provide free data to connect the unconnected- were not frequently used among respondents. While some had used the apps and earned rewards, many discontinued use due to dwindling offers. Asymmetric information led to skepticism surrounding the content; some respondents had difficulty differentiating between authentic and non-authentic offers, and in determining the size of downloads. Concerns of the earned reward apps nudging users to use specific content, thereby creating a "tunneling effect", hence seem premature.

Respondents not using the Internet cited affordability and the lack of digital skills amongst the reasons for not being online. Reliance Jio, which offered free 4G data during the period of fieldwork, served as a counterfactual to zero-rated offers, where specific content was subsidized. Many of those who owned a Jio SIM were already online, and used it as a secondary SIM to

enhance their user experience. Some were not able to capitalize on the availability of free data, due to difficulties in affording a compatible device. This highlights the sequential nature of the problem of affordability, whereby the problem of cost of data becomes relevant only once an individual is able to purchase a device. Provision of free data alone, thus, may not be the magic bullet. Increased efforts to make devices affordable and impart digital skills may be needed to enhance Internet use.

1. Background

India had 277 million Internet users in 2015, making it the second largest user base in the world behind China. This was a result of 40% year on year growth between 2014 and 2015 (Meeker, 2016). At the time of writing, the number of users is likely to have increased significantly from the above number. Though high in absolute numbers, this is still only 22% of India's vast population. As of 2012, nearly 21% of the population lived below the international poverty line, earning less than \$1.90 PPP (PovcalNet, 2016).

Galpaya (2015) shows how expenditure on data accounted for only 4.9% of India's GNI per capita. India therefore falls within the UN Broadband Commission for Digital Development's target for 2015 which was that entry level broadband expenditure should account for less than 5% of average monthly income. But with nearly 21% of the population living below the international poverty line and earning less than USD 1.90 PPP (PovcalNet, 2016), it's clear that affordability for the poorest segments does not meet the 5% target. However, that still leaves around 60% of the population that is not below poverty line, but are unconnected. Could something, in addition to cost, be keeping them from coming online?

Some have argued that zero-rated data may be one solution. When a specific content or application is zero-rated, the user may consume an unlimited amount of that specific content without incurring data charges. (Galpaya, 2017). Examples include Facebook Flex, which is a video- and image-free version of Facebook, the world's largest social media platform. While this version of Facebook is free, it has adopted a "freemium" model where consumers pay data charges as they move out of the free version of Facebook to consume the "full Facebook" with video and images.

Proponents argue that these lower costs make Internet access more affordable, allowing those who weren't online previously to start using the Internet (Pegoraro, 2014). Kartik Hosanagar, for instance, agrees that the situation was anti-competitive, but still argues that "some connectivity is better than no connectivity" (Wharton Digital Press, 2016). Moreover, social media such as Facebook are the most attractive content for most users across the world. By giving a version of it free, the "why should I get online?" question is also addressed, in addition to the "can I afford it?" question in most users' minds.

Opponents of zero-rating are not convinced, stating that the provision of zero-rated content violate the principles of net neutrality. One of the key arguments is that zero-rating will shuttle already marginalized communities into “walled gardens” (van Schewick, 2015). The rationale here is that a user would be confined to using the content provided by the service, and if unable or unwilling to pay to move out of this ‘walled garden’, wouldn’t be able to experience the full and free internet. Other arguments related to the likelihood of anti-competitive behavior zero-rating could lead to.

When Facebook launched its FreeBasics (formerly known as Internet.org) in India, the opposing voices were strong, and argued against Facebook, for net neutrality. Partially as a result, in February 2016, the Telecom Regulatory Authority of India released the Prohibition of Discriminatory Tariffs for Data Services Regulations preventing service providers from ‘offer[ing] or char[ging] discriminatory tariffs for data services on the basis of content’ (Telecom Regulatory Authority of India , 2016).

However, recognizing that the problem of getting people online is unsolved, they released another consultation paper, this time to find alternative methods to provide free data. The paper spoke of the need to find a telecommunications service provider (TSP) agnostic platform to ‘enable smaller entrepreneurs to flourish without permitting gate keeping function in the hands of TSPs and also to give the consumers more choices for accessing the Internet’ (Telecom Regulatory Authority of India , 2016). One the solutions suggested was a model where consumers would have to download applications or engage in an activity to gain rewards. TRAI concludes that this model ‘recognizes there are certain benefits of the reward model when it is structured in a manner that is open and non-discriminatory’.

Commercial applications of the first type (where the users download an app and are rewarded with funds that can be used towards a variety of things including the purchase of non-discriminatory data) are already found in the Indian market. Variations of such apps are also found (where rewards are earned not just for downloading, but for getting friends to download).

This report looks to analyze the ways in which such reward schemes are used, and what impacts they had on consumption of the Internet – For example, whether or not they created other walled gardens, or if users consumed such rewards in a manner that relieve concerns of net neutrality. It also analyzes the barriers to use of the Internet to begin with, and attempts to understand the range of content accessed by users.

The structure of the rest of the report is as follows:

Section 2: Research methodology

Section 3: Content accessed by users

Section 4: Barriers to use

Section 5: Getting people online: knowledge and digital skills

Section 6: Cost optimization: Managing costs

Section 7: Earned reward applications

Section 8: Reliance Jio

Section 9: Implications

Section 10: Bibliography

2. Research methodology

A total of 83 respondents were interviewed through 14 focus group discussions (FGDs) and four in-depth interviews. Most FGDs had six to seven respondents, while two had only three respondents in each. Each FGD lasted approximately two hours.

Fieldwork took place in December 2016 in five locations in and around New Delhi, India - Srinivasipura, Rajouri Gardens, Chattarpur, Keshav Puram and Shakurpur (see Figure 1).

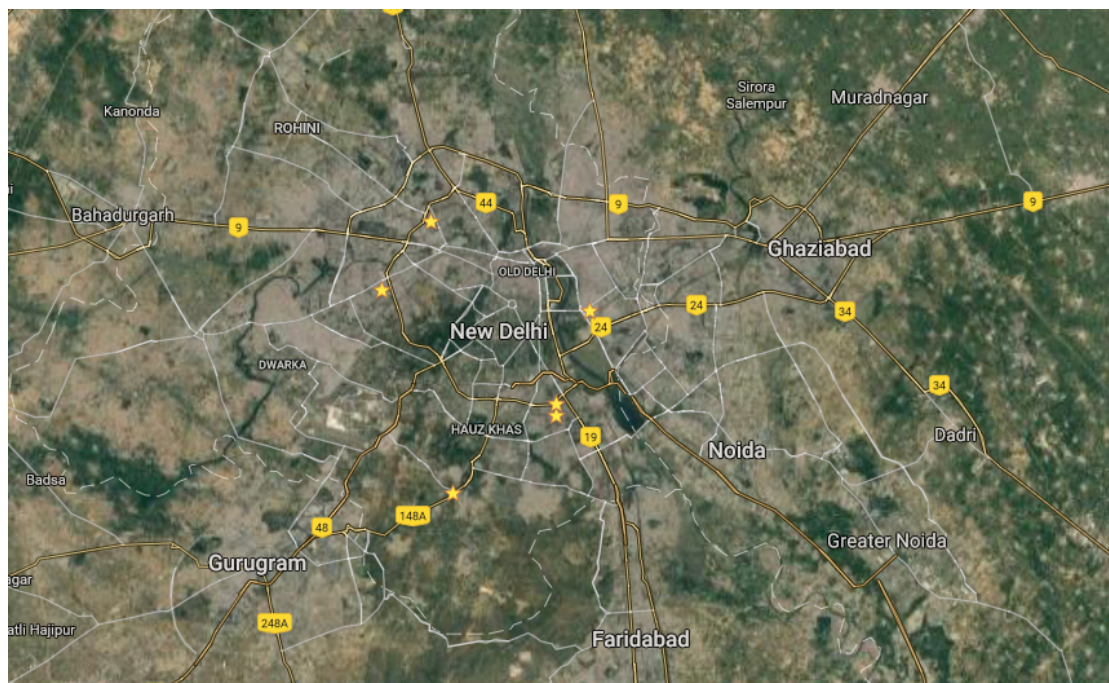


Figure 1: Protocol Locations

Source: Authors, using Google Maps

The sample included males and females of ages 16-40 from low and middle-income households, specifically those belonging to socio-economic classification (SEC) C, D and E were sought¹.

¹ Socioeconomic classification categorizes households into groups A-E based on household socio-economic characteristics. For this study, the household chief wage earner's education status and occupation were used to determine SEC.

Our respondents included mobile data users and non-users. Non-users included those who had never used mobile data and those who had formerly used mobile data (Non-user F). Those who used earned reward applications (User E) were specifically sought out. Among the mobile data users, we looked for a mix of “new” or short-term users (those that had used mobile data for less than a year) and long-term users (those that had used mobile data for longer than a year) because we hypothesized there would be differences in use based on how long a user had been online. See Figure 2 and Table 1 for sample details.

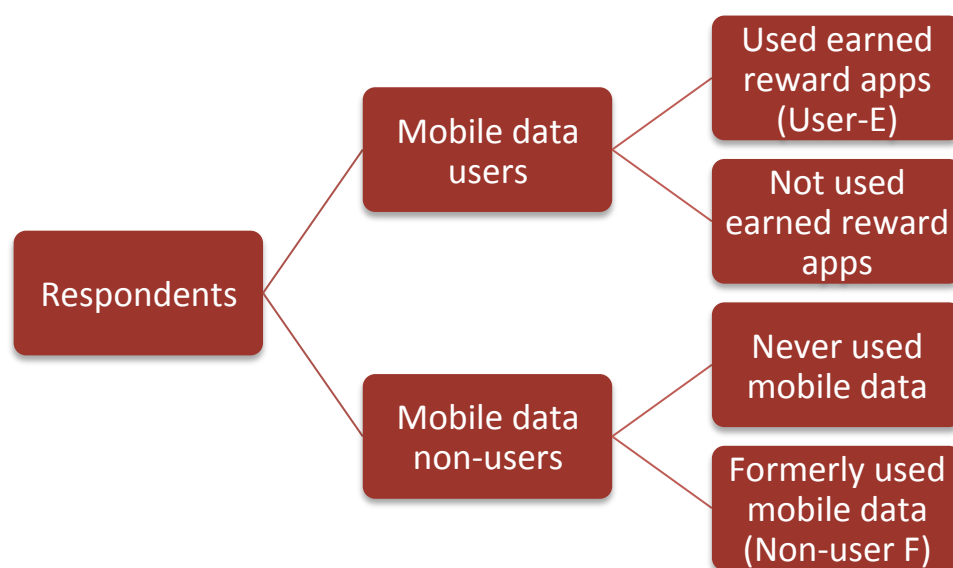


Figure 2: Classification of respondents - mobile data users

Source: Authors

Table 1: Sample selection table

	Age of respondent	Gender of respondent	Internet use of respondent	Period of mobile data use of respondent
FGD 1	16-40	Male	Non-user	N/A
FGD 2	16-40	Male	Non-user - F	N/A
FGD 3	16-40	Male	User - E	Short term, long term
FGD 4	16-20	Male	User	Short term, long term
FGD 5	20-30	Male	User	Long term
FGD 6	20-30	Male	User	Short term
FGD 7	30-40	Male	User	Long term
FGD 8	30-40	Male	User	Short term
FGD 9	16-40	Female	Non user	N/A
FGD 10	16-40	Female	User - E	Short term, long term
FGD 11	16-20	Female	User	Short term, long term
FGD 12	20-30	Female	User	Short term, long term
FGD 13	30-40	Female	User	Short term, long term

Source: Authors, CKS consulting

In addition to the focus group discussions, four in depth interviews (IDIs) were carried out. Two IDIs were with users of earned reward applications (User E), and two with owners of mobile recharge shops.

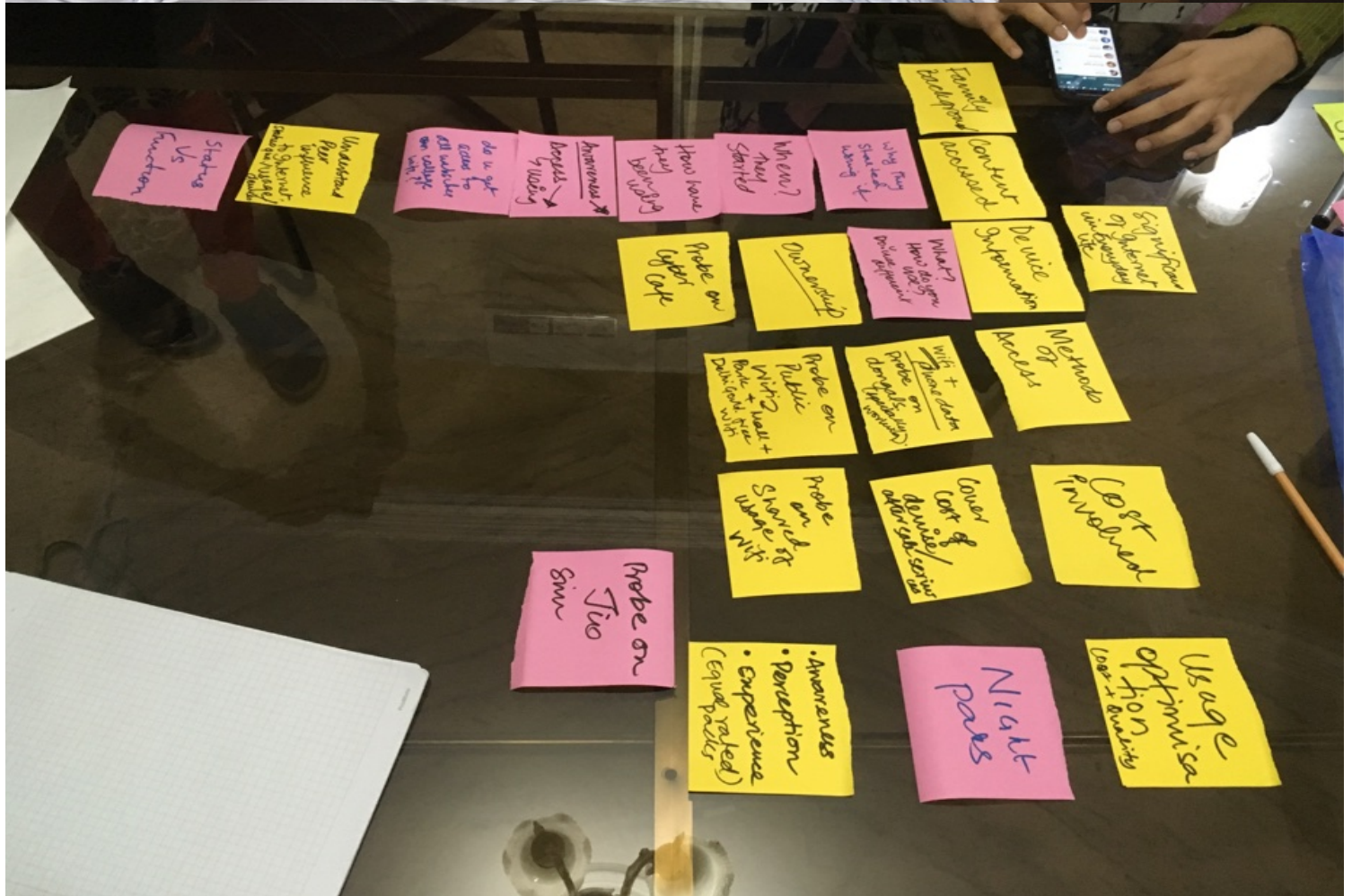
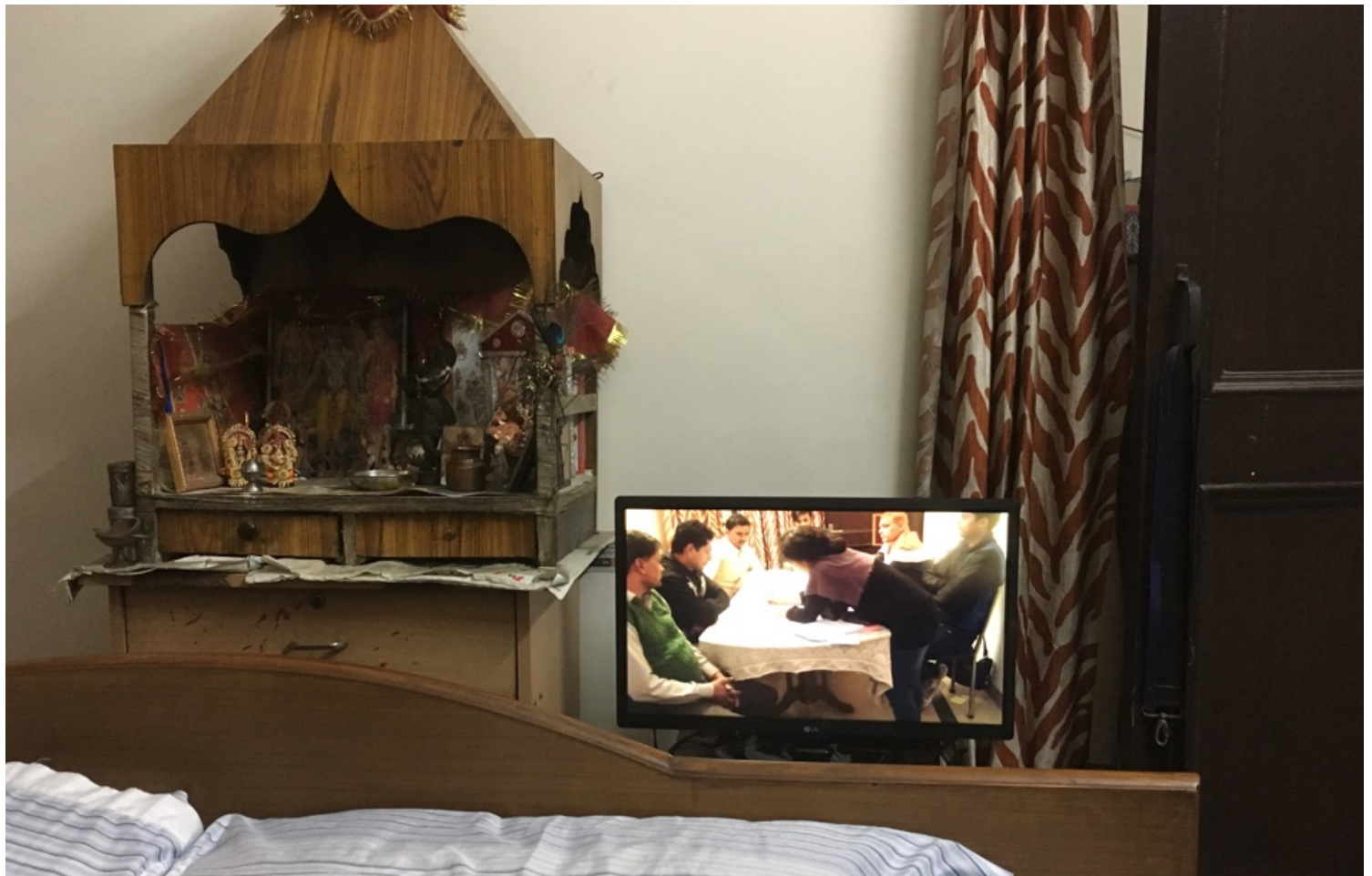
Informed consent for participation in protocols and taking of photos was obtained from all research subjects. The consent form provided anonymity (i.e. that personally identifiable information would not be published), unless the respondent gave explicit permission for photos to be taken. The consent form also allowed users to opt out of the protocol at any moment of their choosing.

All interviews were carried out in the local language (Hindi). Written consent was obtained for conducting and recording the interviews, and for taking photographs. All protocols were recorded, and later translated into English and transcribed. The research team then analyzed the English language transcripts using NVivo software for annotation. In reporting our research, throughout this report, we do not use the real names of any respondents.

Limitations and challenges

The key limitation in the research is the non-generalizability of the results. The selection of respondents was not random, but done purposively – i.e. we specified the characteristics such as age, income, Internet experience, gender and location of the respondents we wanted. For example, it is possible that respondents in other states or far from New Delhi (where our research was based) could exhibit very different behaviors. Even if we recruited another identical group of respondents who had the same characteristics in terms of age, income, internet use and so on, it is possible we would get completely different results. As such, throughout this report, we cannot make claims of generalizability of our findings to the rest of India, or even the rest of New Delhi.

As with many types of demand-side (user) research, disclosure bias and recall bias are possible – users not wanting to reveal certain behaviors (or revealing untrue behaviors), or users not remembering specific behaviors. We did attempt to minimize disclosure bias that at times occurs due to dynamics in FGDs, by having male-only and female-only discussions as well as attempting to group those of similar age cohorts.



3. Content accessed by users

This section will address the content accessed by Internet users. This is of relevance in the zero-rating debate in relation to the walled garden theory. The data is synthesized to assess the content most frequently accessed by users and the reasons behind their use. The underlying question behind this analysis is whether users restrict their use to a few websites/apps or move beyond this content.

Table 2 gives a snapshot of the content accessed by the respondents for various purposes. It does not attempt to comprehensively order the content by popularity or how much time the respondents spend consuming each/each type. It does, however, illustrate the diversity of content consumed by the sample.

Table 2: Content accessed by use

Social media	Facebook	Instagram	Twitter	LinkedIn	Snapchat			
Chatting	WhatsApp	Messenger	Hike	IMO	Instagram	Snapchat	We Chat	Jio Chat
Voice calling	WhatsApp	Messenger	Hike	Line				
Video calling	WhatsApp	IMO	Hike	Line	Tango	Skype		
Email	Gmail							
News	Facebook	UC Browser	Hike					
Browsers/ search engines	Google Chrome	Wikipedia	Yahoo					
Educational content	Google	YouTube	Merit Nation	Edunte	College.com			
Searching for jobs	Naukri.com	Google						
Online shopping	Amazon	Flipkart	Snapdeal	Shopclues	Jabong	Myntra	OLX	
Transport/navigation	Google Maps	Ola Cab	Uber	IRCTC	IXILGO	Make my trip		
Music/movies	YouTube	Hotstar	Vidmate	Sawaan	Pagalworld	Hungama	Wink	Book my show
Payments/recharges	PayTM	Freecharge	Mobikwik	Truebalance				
Watching sports	CricBuzz	Yahoo Cricket	Yahoo Sports	Hotstar				
Playing games	Google Play Store	Clash of Clans	Chess					
Rewards	mCent	Taskbucks	Databack	PayTM	Mango	Ladoo	Champcash	Earn talktime

Source: Authors

Despite the wide range of content mentioned by the group during the conversation, many respondents, when asked about their use of the Internet, many often began speaking of WhatsApp and Facebook. This was true across gender and age cohorts. WhatsApp and Facebook were large drivers in getting people online ([See Section 3](#)).

3.1 WhatsApp

WhatsApp, most commonly known as an instant messaging app, is extremely popular in India, recording 200 million active users in February 2017 (Business Standard , 2017). It was the most used application for many of our respondents. Some respondents even said WhatsApp was their only use of the Internet. In addition to the messaging feature, respondents frequently spoke of using WhatsApp's voice and video calling features. The calling feature was seen as an alternative to regular network calls by some.

WhatsApp was used widely for social purposes. While many used it for one on one communication, group chats were also popular. Meghna (R20), when inquired about whom she contacts through the application, said:

"Everybody—I mean those who are very close friends of mine... I have one college group. In fact, there are lots of groups. Those who are not college friends have a different group. Office friends have a different [group]."

Meghna, 23, F, Employed at a call center (R20)

Furthermore, WhatsApp was also used to engage in business. A number of respondents in the sample were engaged in garment retail; many of them used WhatsApp. Abhinav (R49), for instance, spoke of how he used two mobile phones; one for personal use, another for business. The mobile phone that was allocated for business purposes was left in the shop. WhatsApp would be used on that device to liaise with suppliers on the costs of fabric and take orders from customers.

A number of parents, particularly mothers, spoke of how they used it as a means to facilitate their children's education. It even prompted some respondents to get online ([See Section 5](#)).

3.2 Facebook

In December 2016, Facebook had over 166 million monthly active users in India, of which 85 million were daily active users. Over 95 percent accessed Facebook via mobile devices. (Pai, 2016)

Facebook, like WhatsApp, was used mainly for social purposes amongst respondents. Neelu (R40), said she used Facebook to keep track of where people were and the activities they were doing. In addition to social networking, Facebook was also used as an information source for many. Neelu (R40), when inquired about her use of Facebook, went on to talk about the ability to get curated information according to one's interests.

"Nowadays the best thing is that every newspaper has a page on Facebook. It depends on what you follow. If you follow any news channel, you get the feed about that."

Neelu, 38, F, Housewife (R40)

Manish (R60) spoke of specific pages he subscribes to (the Punjab Kesari and the Times of India), for updates on breaking news. This echoes with a statement made in Shah (2016) that people think of Facebook as an aggregator of other content.

While many used WhatsApp and Facebook, it is not to say that other platforms such as IMO, Hike, Snapchat and Instagram were not used. They were, just not to the extent of Facebook and WhatsApp.

Among our respondents, Facebook was the biggest influencer to get online ([See Section 5](#)).

Shift away from Facebook?

Studies show a global shift away from Facebook for younger cohorts (Duncan, 2016). This was also reflected in our research. Khushbu (R9) was apprehensive to use Facebook because her older relations were on the platform, leading to social pressures.

"Most of the time, [our] family members are also on Facebook. If [we] get stupid comments, then we are answerable."

Khushbu, 19, F, Student (R9)

There was evidence of people moving away from Facebook, while others preferred to stay on it. Network effects tended to be the biggest driver; Amar (IDI 3) preferred to use Facebook over Twitter and Instagram because these platforms were “not as famous as Facebook”.

Somya (R72), on the other hand, opted to move away from Facebook towards WhatsApp for similar reasons.

“I have switched from Facebook to Whatsapp... Yes, now Facebook is less, because everybody is online on Whatsapp... Be it our friend circles, or relatives, they all are active on Whatsapp.”

Somya, 30, F, Housewife (R72)

3.3 YouTube

Many respondents reported watching videos on YouTube. Videos were most commonly viewed for entertainment. The younger respondents spoke of how they watched funny videos; Shyam (R18) even spoke of enjoying funny, ‘double meaning’ videos.

Many of the respondents from our sample who spoke of watching YouTube videos were female. Parvati (R22) watched ‘dancing videos’ on YouTube before she attended weddings. Rupai (R24) watched cooking videos.

“I check cooking related [videos] on YouTube. You get tired of having the same thing on a daily basis, so you can at least make different dishes.”

Rupai, 28, F, Housewife (R24)

Some of the younger female respondents spoke of how they used YouTube to learn new hairstyles and “to put eyeliner correctly”. Anamika (R41) also used YouTube to learn new hairstyles, but tried the styles it on her clients, as she was a hairdresser.

“If there is some new hairstyle, it is [a] must to play it on YouTube, and learn quickly to try it out on client”

Anamika, 32, F, beautician (R41)

3.4 Google

A sizable portion of the respondents used Google to search for information.

Information-seeking via Google was dominant among students, who either needed it for their studies, or were seeking information for further learning without prompting by teachers.

For example, some students took their own initiative to seek information. Khushbu (R9) said she uses the Google browser and watches videos on YouTube for this purpose.

“In case you want to have a deep understanding, you use Internet.”

Khushbu, 19, F, Undergraduate (R9)

She also said she was learning a foreign language as she wanted a job at an embassy. She was attending classes, but also learning online. She said she “learns 50% from each... Online is much more interesting”. Some spoke of being given homework that necessitated them to search for information online.

3.5 E-commerce

The Confederation of Indian Industry (2016) reported that India had 39 million online shoppers in 2015; they projected that this number would increase to 140 million in 2018. The rise of middle-class consumers and changing shopping habits are adding to the online shopping demography, they said. In our sample, those from the middle-income group (SEC C) included a number of respondents that had engaged in e-commerce.

Amazon, Flipkart, Myantra, Snapdeal and Shopclues were among the sites favoured by our respondents. Some indicated their preferences when using these sites.

“I do shopping from Amazon and Flipkart... I ordered this Samsung phone from Flipkart. My husband keeps shopping from there, [he buys] shoes and all...”

Somya, 30, F, Housewife (R32)

Adarsh (ID11), a phone shop owner, spoke of how purchasing smartphones online was cheaper than buying it from brick and mortar stores.

The widespread use of online payment applications such as PayTM was observed across the sample. This was largely due to the wave of demonetization that took place in India in November 2016, a month prior to fieldwork.

“The current use of PayTM is greater because of the currency issue. There is such a long queue in the banks.”

Khushbu, 19, F, Student (R9)

Some were positive about PayTM, even going on to say that “you can do everything with the help of PayTM”. There were others however, who were reluctant to use PayTM, seemingly due to issue of trust. Aman (IDI3), for instance, said he only uses PayTM to transfer small amounts of money, for examples, to top up his mother’s mobile phone.

3.6 Music and movies

Respondents not only used YouTube, but also used numerous websites and applications to watch videos. These websites, however, were often tailored for this specific purpose, unlike the content discussed prior. Hotstar for instance was used solely for streaming videos for entertainment.

3.7 Email

Email (or as some respondents stated, Gmail) was used by a few respondents who were engaged in business. It is possible that the traditional functions of email are being replaced to some extent by other apps. For example (and as noted previously), we found respondents using WhatsApp for business purposes, sending pictures of products via the medium, instead of email as they might do in many developed country contexts.



4. Barriers to use

This section scopes out the barriers cited by some of our respondents, all of who were owners and uses of mobile telephones (but not users of the Internet).

4.1 “I don’t know much about it”

One of the more basic barriers was the lack of knowledge about the Internet. Raj (R37), for instance, said he only got to know what the Internet was “once Modi came into consideration”, referring to India’s Prime Minister Narendra Modi who often spoke of a digital India during his campaign. Some others had not even heard of the Internet, even though all respondents were phone users. The lack of knowledge on the Internet and its potential uses is likely to be the first obstacle to overcome before getting people online.

4.2 “I don’t want it”

A segment of non-users had heard of the Internet but had made a conscious decision that they would not use it in the future.

Among this group were some who had heard of negative incidents that happened to others on the Internet, so, avoided the use of the Internet primarily due to a lack of trust.

For example, some had formed a bad opinion of e-Commerce based on the experience of others.

“There was some news that somebody [ordered] an iPhone for Diwali, and that person got soap bar [instead]...it becomes really difficult to trust.”

Sushma, 33, F, Housewife (R27)

Even in the wake of demonetization and a scarcity of cash, Sushma’s (R27) sentiments regarding the inability to trust vendors to deliver the correct goods led her to delay a purchase.

“I told [the seller], you keep your suit with you; I will buy it after a week. I will not do PayTM and all. I told him that I will bring the cash, and then I will buy it. Sometimes it is difficult to trust.”

Sushma, 33, F, Housewife (R27)

Gauri (R31) spoke of how two siblings known to her had a fight on WhatsApp. The disagreement occurred as the sister had received a joke that was unsavory to her brother. Hence, she thought it would be better that people refrained from using WhatsApp.

4.3 “I can’t afford it”

Affordability was an often-cited barrier to Internet use. Some female respondents in particular spoke of how they didn’t have sufficient a budget to spend on Internet access after spending on household expenses. One had thus resolved to be satisfied with only making network calls via her basic phone.

Respondents faced two levels of problems in gaining accessibility to the Internet. The first was the need to buy a device that would allow them to gain access, which would necessitate a larger, one-time, outflow of money. GSMA (2015) cited this as being the largest barrier to Internet use for both men and women in India (GSMA Connected Women, 2015). Even though lower cost smart phones (made in China) are available in the market for under USD 50, given income levels, this represents a significant investment for many. This was observed even in the case of Jio, where though data (on 4G) was available free to anyone for 6 months, the cost of obtaining a 4G-compatible smartphone was a barrier to use (See [Section 8](#)).

The second was the ability to afford a more consistent, though smaller, outflow of money to pay for mobile data. Many spoke of how mobile data was unaffordable. This sentiment was most often echoed amongst individuals who had previously used mobile data, but had stopped subsequently due to budgetary constraints. One of the key problems identified by this group was that the short validity period of the data packs available in the market resulted in wasted funds. Those who brought forth this issue were light users who also struggled to find time to use the Internet due to juggling full time jobs and seeing to their children.

“After 28 days I get the message that it’s time to recharge my data pack. That really pinches very badly. I mean, I have not used the previous one, and that has gone waste.”

Prakash, 36, M, Supervisor at a factory (R2)

4.4 “I don’t know how to use it “

“When I don’t know how to use [it], then what is the point?”

Nilesh, 27, M, Scrap dealer (R36)

This was the response given by Nilesh when inquired about her aspiration to get online. The lack of digital skills was one of the key factors affecting Internet use amongst the respondents, which led them to be dismissive of using the Internet.

We also encountered others like Raj (R37) who did not have sufficient skills but were eager to learn, provided that the first problem of affordability was solved.

“Without learning you cannot step ahead. First you have to change your mobile, then you learn how to operate, and then you do other things...Right now we don’t have money in our pocket. When we have money, we will come to know.”

Raj, 40, M, Electrician (R37)

5. Overcoming barriers and getting online

In this section, we turn from non-users to users and examine how they overcame the two barriers mentioned in [Section 4](#) - the lack of knowledge, both about the Internet and how to use the Internet.

More often than not, it was the same person(s) who nudged the respondents to get online that also helped them learn the necessary digital skills. For many respondents, it was their friends and family who asked them to come online—usually to join a social networking platform.

5.1 Peer influence leading to use of social networks

Peer influence for social purposes was a large factor for many of those interviewed. Some respondents felt a sense of curiosity and wanted to get online when they saw others online.

For Leena, it was her husband's use at home that nudged her to get online.

"My husband used to be online all day long, so I used to [wonder what he did]. I told him to [teach me] the same, and he said that he will in [his] free time."

Leena, 27, F, Saleswoman (R21)

Parveen (R61) for instance spoke of how many of his colleagues were online, chatting with their girlfriends, but he did not know how they were communicating. It turned out that they were using Facebook to communicate. Hence, he asked them to make an account for him.

Often however, the respondents' friends and family pushed them to get online. In all such instances, they were encouraged to get on social networking sites to keep in touch.

"Friends keep telling us to be connected with Facebook and WhatsApp."

Abhivav, 26, M, Shop owner (R49)

A number of female respondents spoke of their female cousins pushing them to come online.

Vijay's (R59) most frequent use of the Internet was WhatsApp. He spoke of how his children, aged 13 and 14 made his WhatsApp account for him.

"Children these days have more knowledge."

Vijay, 37, M, Works in a spare parts shop (R59)

In some cases, respondents' friends made social networking accounts for them. *"My friend had made [my Facebook account]. He had told me it's a good time pass. And I started using it and it became a habit. Now it is a part of life."*
Manish, 38, M, Supervisor (R60)

For others, their friends told them about getting online, but they had made the account themselves. This difference is likely indicative of the level of digital skills of the respondents.

5.2 Work need leading to Internet use

Some older cohorts spoke of how their jobs necessitated them to get online. Often respondents spoke of how their bosses taught them the necessary digital skills. This was the case for Neelima (R71). Her senior designer's workload had increased to a point that she could no longer complete all tasks herself. Hence, she taught Neelima how to send out company emails through outlook to manage the workload.

In some cases, it was external parties who nudged the respondents to get online. Anuj, an owner of a spare parts shop said his clients pushed him to get on WhatsApp so that they could communicate with more ease.

"I didn't have smartphone [before]. [My entire] friends circle had, but I was not so interested. Then clients used to say, "send on WhatsApp". Then I thought "what is WhatsApp? I don't know it". Then they told "buy a smartphone, then you will learn"."

Anuj, 27, M, Employed in a spare parts shop (R50)

5.3 Educational need leading to Internet use

The need to find information for educational purposes often pushed students to get online. A number of respondents spoke about how they learnt computer use at school, though not Internet. Many, however, spoke of how they had to go to cyber cafes to get information to complete assignments such as holiday homework.

"We used to go to a café... If we want to know any answers [about] studies, we can get it over there. Our teachers advised that you can go to this website and

over there you will get the answers.”

Anubhav, 35, M, Supervisor (R76)

In some cases, this push extended beyond the students, to the parents of the students. Some parents came online to join a network to enable rapid communication between parents and teachers.

“We also wanted to be on WhatsApp. We have a parents group also made on WhatsApp so if anyone gets any message they will immediately [inform] other members of the group. If we want to contact the teachers and ask them to meet us, we can do that also. If we are connected to them, we come to know whatever is happening in the school.”

Sunaina, 34, F, Does tailoring at a boutique (R38)

Was gender a barrier to Internet access?

Gender concerns often surround work on ICTs in India. GSMA Connected Women (2015) reports that men are 36% more likely to own a mobile phone, than women. Recent work from Kovacs (2017) indicates that women in segments of rural India are not allowed to own a mobile phone due to rules imposed by their village Khap panchayats.

There was some indication that women may face barriers to ICT access in our sample.

Leena (R21), who earlier spoke of how her husband's use of the computer drove her to come online, said he was reluctant to teach her the necessary skills to engage in e-commerce in his absence. He attempted to restrict her use fearing that she would continue to purchase items frequently. It is of course possible that this wasn't purely due to her gender, and had also to do with general affordability of things, given the family income.

Sobha (R73), on the other hand, spoke of how her husband was not interested in buying her a smartphone although she wanted one. Her husband had raised concerns on issues pertaining to privacy and security.

"My husband used to say that you don't put your identity there. People misuse that."

Sobha, 32, F, Playschool teacher (R73)

Our small sample hints at gender differences in the opportunities women are given (or not given) to acquire the requisite knowledge and experience to get online.



6. Constrained optimization: managing costs

“[The] need is there, and Modi too is talking about Digital India. I too want that; to learn new things, and go with the trend. [But the] pocket does not allow...”

Prakash, 36, M, Supervisor (R2)

Although individuals were motivated to get online, affordability was a barrier to entry as seen by the above comment by Prakash (R2), a non-user of the Internet.

Users too faced budgetary constraints. While the high costs resulted in some ceasing to use the Internet, others found workarounds. Some found methods of consuming without incurring costs, while others had to adjust their usage patterns to maximize utility within their given budget.

6.1 Data sharing at no cost

Social capital was the base of many Internet sharing arrangements. Internet was shared informally without cost, often on goodwill. Many respondents used their own devices to connect to the Internet, but using personal mobile hotspots that were run off devices/data packages belonging to their husbands, parents, or friends.

A small number of respondents even used their neighbour's Wi-Fi facilities on goodwill. Puri (R69), an 18-year-old student, stated that her neighbours gave her their Wi-Fi password after she bought a phone. Additionally, it was observed that data was often shared when it was perceived to be unlimited. This was noticeable after Reliance Jio started their offer that allowed unlimited use of 4G data for free. Many women spoke of how their husbands shared data from their Jio SIMs with them (See [Section 8](#)). This was also seen in the case of people who had postpaid connections. On more than one occasion, some young respondents spoke of how they used their parents' data if it was a postpaid connection.

“My personal SIM is prepaid... I use my father's postpaid SIM in my phone [sometimes]. That is the billing one, so you can use as much data as you can.”

Meena, 18, F, Undergraduate (R11)

Radha (R70) speaks of what she perceives to be a common occurrence.

“There is a joke “aajkal paani mat pooch, wi-fi password pooch” (Nowadays [when visiting others’ homes] people don’t ask for water, they ask for the Wi-Fi password).”

Radha, 17, F, Student (R70)

6.2 Switching to forms of offline communication

Some respondents opted to use alternatives to over the top (OTT) applications for the purpose of messaging and sharing content. The alternatives used included Wi-Fi direct² or Bluetooth technologies that permitted for content to be shared between two devices over short distances.

“That [Internet] is not needed less than 100 meters but if it is more than that, Internet is needed at that time.”

Prem, 20, M, Undergraduate (R6)

Many of those who used such applications however, were also Internet users. Some spoke of how they used ShareIt to communicate in college in the absence of mobile data. The application, which transfers data using Wi-Fi direct technology was used both for messaging and for sharing notes.

“Suppose we don’t have data, then while sitting in the class we turn on Share It, and we can send message[s].”

Soniya, 20, F, Undergraduate (R8)

One respondent spoke of how Bluetooth was used to transfer data in close quarters even in the presence of mobile data.

Another respondent however, spoke of the diminishing use of Bluetooth.

“Now no one use[s] Bluetooth, everything is done through WhatsApp.”

Parveen, 37, M, Salesmen (R61)

² Wi-Fi Direct is a wireless technology that enables devices to connect directly to one another, without access to the Internet. Applications like ShareIt allow users to transfer files between devices in a room without utilizing mobile data.

6.3 Using Public Wi-Fi

Wi-Fi networks were set up by in certain public areas such as parks, malls and cafes, as a means of providing Internet access. Some respondents had used it in the past. Soham (R15) spoke of how the Wi-Fi network could be accessed.

“You have [to go] to certain government parks, plus [a] sign is there. You click, double click, and then this Wi-Fi connects... you can use it anytime...”

Soham, 15, M, Student (R15)

However, he went on to say that there was a limit on the amount of data that could be used within a specified period of time – once the limit was exceeded, they were no longer able to access the network.

6.4 Utilizing own free data

A number of respondents used mechanisms of obtaining free data to manage costs. Others used earned reward applications. Some obtained a Reliance Jio connection, where 4G Internet was being provided free of cost at the time of fieldwork. Both will be examined further in Sections [7](#) and [8](#) respectively.

6.5 Using cyber cafes

Cyber cafes were a popular means of gaining Internet access. Some respondents, who had used mobile data earlier, but stopped using it subsequently, switched to using cyber cafes which they claimed was cheaper.

“I mean we get the data pack recharge done for 150 bucks [Rupees], so it is better that we get the things done from cyber café for [the] kids. I mean we just have to pay 40-50 rupees only [at the Cyber Café], and here 150 bucks really pinches a lot.”

Prakash, 36, M, Supervisor (R2)

(See [Annex 1: Respondent profiles](#) to see how Prakash used the Internet prior to discontinuing mobile data use)

6.6 Shared Internet at a cost

Some shared Internet without cost, as highlighted earlier, on the basis of goodwill. But others shared the cost of Internet access. Splitting the total cost across a group of users was seen amongst various social groups, sometimes

amongst family members, and sometimes amongst neighbors. Costs were often shared when making payments for a Wi-Fi connection.

Suraj (R18) does not have a Wi-Fi connection in his house; but his neighbors do. Suraj asks his father for INR 350 and pays his neighbor so that he can access the Internet via their Wi-Fi connection.

Parvati (R22), a 22-year-old postgraduate student, shares the cost of Wi-Fi at home with her two brothers. Their monthly package costs INR 700. She pays INR 300, as she is on a scholarship. Her brothers pay INR 200 each, from the pocket money they receive from their father. The use of the Wi-Fi connection is subject to their contribution.

“Whoever pays for Wi-Fi- only those [people] can use it.”

Parvati, 22, F, Postgraduate (R22)

Despite this formal arrangement with her brothers on the costs of Wi-Fi, Parvati does not own a smartphone. This is primarily because she did not want the distraction of getting a barrage of messages when she is online. Hence, she saved her contacts on her cousin sister’s phone, and used this device to WhatsApp her friends.

(See [Annex 1: Respondent profiles](#) to see how Parvati accessed the Internet via other devices)

6.7 Close and constant monitoring of amount of data used

Some respondents spoke of how they used alerts from their telecom service provider or TSP³ to monitor how much data they had used.

“Most of the time, I forget to switch my data [off]. When I get some alert, I realize that this much Internet is used.”

Radha, 17, F, Student (R70)

Some respondents spoke of getting alerts when they switched off their data. They also get alerts at different levels of use. Those who used a package for INR 147 that allowed use of 1 GB of data for four weeks spoke of how they got an alert when 50 percent of their data pack was utilized. A user who bought a 1GB pack for INR 169 spoke of how she got an alert when 10% of data was remaining.

³ The mobile operators are referred to as TSPs in India. And as we have already seen, TSPs are the dominant Internet Service Providers (ISP) in India

User's reliance on monitoring consumption was seen in some (e.g. Meena (R11)) complaining that alerts weren't sent frequently enough to track usage efficiently. She spoke of not getting alerts when what she perceived as a large amount of data was used.

"[We don't get to know] when we use 100 MB...that gets over too soon."

Meena, 18, F, Undergraduate (R11)

This raises the question of what the optimal alert system is for users to track their data usage. Since the preferences of users may vary according to a number of factors, it is worth exploring the possibility of giving consumers the option of customizing their alerts.

6.8 Using applications to track data usage

There were some respondents who did not rely on the alert system of the TSP, but tracked use of data themselves, using other applications or features available on the phone.

Applications were also downloaded to monitor use – Truebalance was such an application. It allowed users to monitor the use of both their talk time and data use.

Anubhav (R76) spoke of how he used Internet Speed Meter to monitor his data usage. Though the app was intended for checking Internet speeds, it was used by the respondent for a different reason:

"[I use] Internet Speed Meter. In this, you have information only daily, weekly and monthly use. Like this, they have separate columns. It's only for data. I think you can also check the speed of the Internet."

Anubhav, 35, M, Supervisor (R76)

Sidarth (R78) had a preloaded feature on his/her Samsung (Android) phone to track data usage. Soham (R15) spoke of how he got a message when 90% of his data was used and went on to say that this feature was available in the Lollipop version, but not the older KitKat version.

6.9 Consuming different content at different locations

Many respondents were aware that certain content required more data than others. A number of the younger respondents said that YouTube was a principal reason for excess data use. Snapchat and Google were among the others identified by respondents as high bandwidth consuming. Such claims

were made as a result of personal observations, rather than through the analysis of backend data. After making these observations, some adjusted their behavior to optimize data use and minimize cost. Some respondents spoke of how they had observed that downloading pictures and videos shared on WhatsApp required a large amount of data. Hence, they checked the size of the file before downloading it – in some cases they refrained from downloading the file because the data requirement was too large. Akim (R16), for instance, avoided using mobile data to access data heavy content such as YouTube. Instead, he waited until he had access to Wi-Fi before accessing such content. As shown in Figure 4, the modes of connectivity can change many times during the day, and users will select the least/most bandwidth consuming data to consume at a given time based on cost.

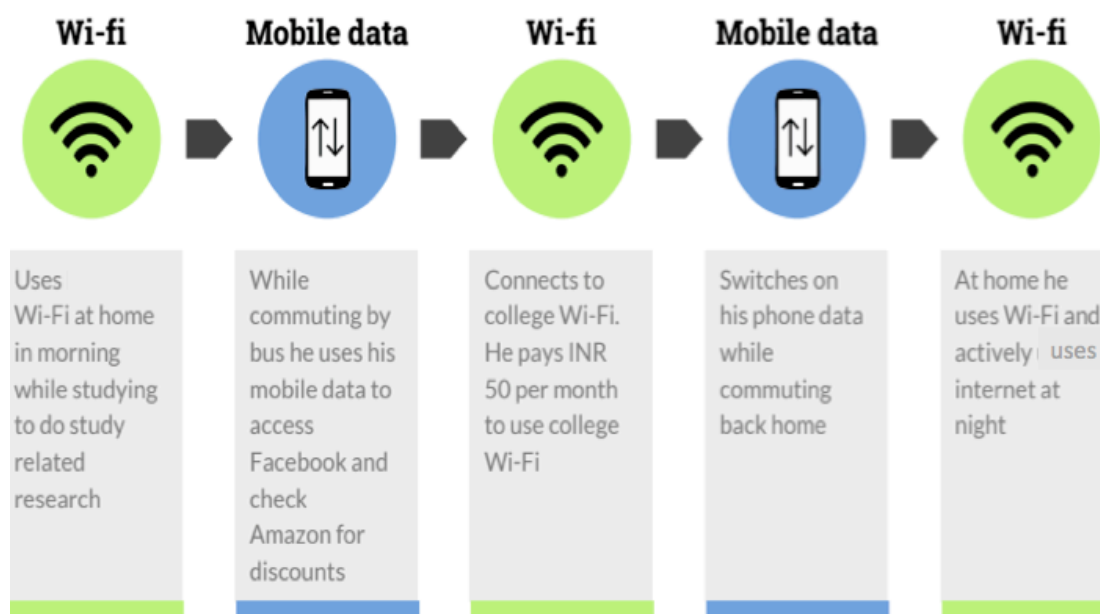


Figure 3: Amar (IDI 3)'s usage pattern differed based on the availability of Wi-Fi

"If you know that you will make a call for a longer period, then you make WhatsApp call."

Meghna, 23, F, Employed at a call center (R20)

For many of those who had access to Wi-Fi, it was their preferred method of accessing the Internet. This tendency to prefer using Wi-Fi over mobile data was observed, regardless of the location in which the Wi-Fi was used.

Clear cost savings would be experienced where Wi-Fi would be accessed at work and public places, when the cost was not a private one. This was seen in

cases like that of Neeraj (R77), who had Wi-Fi access at his shop, but not elsewhere.

“At home I use mobile data and at shop I use Wi-Fi.”

Neeraj, 26, M, Shop owner (R77)

Cost savings could also be observed at a personal level in cases where there was a shared Wi-Fi connection at home. Here, the costs would be borne by others such as parents; mobile data could then be saved for use when Wi-Fi access was not a possibility. Khushbu (R9) for instance, spoke of how she used the Wi-Fi at her college or at home to download music and movies, and then listened to/watched them during her commute to and from college.

This was also observed for respondents who personally incurred the cost pertaining to their Wi-Fi connection. Anubhav (R76), a 35-year-old supervisor at a factory, said he used Wi-Fi while at home, and only began using mobile data once he left the house.

6.10 Switching to lower speeds

“In case I am left with less data, then I switch it on 2G.”

Meena, 18, F, Undergraduate (R11)

Meena (R11) bought a 3G data pack, which she intended to use for a month. She began using data at 3G speeds, but subsequently switched to a lower speed to preserve the pack for a full month.

Amar (IDI3) too had made this decision, but on a more case-by-case basis as opposed to towards the end of the month when data was finishing.

“We have [a] setting [on] our phone; if we have 3G, we can switch to 2G. If videos are too long I switch to 2G where I do not need more speed.”

Amar, 19, M, Undergraduate (IDI 3)

7. Earned reward applications

Provision of free and subsidized data has become a key talking point in the Internet policy arena. Earned reward applications belong to a specific model suggested by the TRAI when looking for alternative means of providing free data without intervention from the TSPs.

mCent, Ladoo, Taskbucks, Champcash and Databack are examples of a workaround which we call “earned reward applications”. The basic premise is that users will first download the app, and then engage in a series of micro-tasks through the application (app) to earn rewards.

Earned reward apps are varied and have different incentive structures – characteristics of a few are shown in Table 3

Table 3: Incentive structures of various earned reward applications

Name of app	Micro-tasks to earn rewards		Type of reward			
	Downloading /using sub-apps	Referring app to friends through messaging services	Funds to mobile wallet	Mobile recharge		
				Main balance (talk-time/SMS/data)	Talk-time only	Data only
Databack	✓	✓				✓
Freecharge		✓	✓			
Hike		✓				✓
Ladoo	✓	✓			✓	
Mango	✓	✓		✓		✓
mCent	✓	✓			✓	✓
PayTM		✓	✓			
Taskbucks	✓	✓	✓	✓		✓

Source: Authors, based on this research and Google Play Store (2017)

The micro-tasks that need to be undertaken can be broadly classified into two. Some require downloading or using sub-apps, while others are for referring the app.

7.1 Micro-tasks to earn rewards

Installing/using applications

Applications such as mCent and Ladoo required users to download other applications via/through their earned reward application. The potential credit to be earned varied according to the applications downloaded.

"If you download Saavn, then you get 15 rupees, and on Flipkart you get 50."
Radha, 17, F, Student (R70)

Variations in conditions can be seen depending on the sub application downloaded. Variations in the type of rewards are explained through the example below.

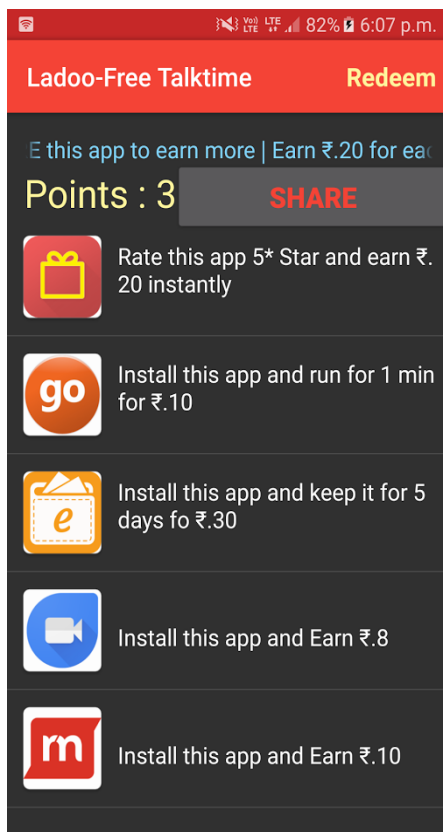


Figure 4: Screenshot of the Ladoo app

Install this app and earn INR 8: Rewards can be earned by simply downloading the sub-application via the earned credit application.

Rate this app 5* and earn INR 20 immediately: Once the application is downloaded, rewards can be earned by rating the application on the Google Play Store.

Install this app and run it for 1 minute for INR 10: Rewards can be earned by downloading an application and then using it for a set period of time. In some cases, the reward is earned once the sub-application that was downloaded is opened.

Install this app and keep it for 5 days for INR 30: Rewards can only be earned in the relatively long term, once the installed application is run for a set period of time. A respondent spoke of how some earned credit applications and sub applications had to be kept for 10 days before the rewards were earned.

While many of the earned reward applications examined required users to install the sub-app at least, others allowed rewards for data used on existing (original) applications. Databack is an example of where a certain quota of data is available for the use of Facebook, Whatsapp and Flipkart, amongst others. As

they use the application, they get a rebate of a certain percentage of data used within the session.

Sending referrals to friends

Many earned reward applications provide compensation for spreading the word about the application. A respondent referred to this as a referral bonus. These messages are often sent via messaging services, both online (Whatsapp and Hike) and offline (ShareIt).

While some applications provided instant rewards for sharing the message about the application, others required the recipient to download the application for the sender to receive the benefits. Others had more complex referral systems where benefits could be accrued across a chain of users, akin to a pyramid scheme. Champcash and Mango were two applications that had such multi-level marketing schemes –Champcash offers rewards to those within seven levels of the network.

In addition, users of selected earned reward application such as Champcash require users to watch videos to earn credit. PayTM can be considered another, as it offers discounts on the utility bills of those who pay via PayTM.

7.2 Type of reward

Providing mechanisms to earn rewards was the principal use of a number of apps. Many apps in turn allow users to download other apps through it, to earn rewards. Apps like PayTM transfer rewards to mobile wallets. Some others provide mobile recharges; some apps will only provide data or talk-time recharges, while others recharge the “main balance” which can be used towards talk time, data and SMS.

7.3 Merits

A segment of the users spoke positively of the earned reward applications. Aarav (IDI4) spoke of how he got 100MB for every 500MB he used via Databack.

The use of mobile apps to engage in e-commerce was commonplace among respondents. In our sample, the use of PayTM was triggered largely by demonetization that occurred a month prior to fieldwork. Some respondents used the referral system of PayTM and Freecharge to earn rewards; some used

these apps to pay monthly utility bills, for which they received a rebate of INR 100 (USD 2).

7.4 Grievances

A number of respondents had heard of earned reward apps but were reluctant to use them. Somya (R72) spoke of how distinguishing between those which were authentic and those that were not would take too much time. Others were weary of the constant notifications they could receive once they signed up with the app.

Some said the data requirement to first download the app was too high. The information asymmetry caused by users not knowing the data allowance required to download the app caused them to hypothesize as to whether the potential reward would exceed the cost. A respondent noted, however, that it would be worthwhile if the app could be downloaded via a public Wi-Fi connection. This would allow him to download the app without incurring additional costs and then earn rewards, which could be used towards purchasing data in the future.

Sidharth (R78) who likened his early experiences with an app to a lottery, spoke of how the returns from using the app had diminished over time and he was thus disillusioned.

“If someone clicked that link, it was a lottery for him... So the person who shared the link will be getting cash back or some other offer... Like if you referred it to 5 of your friends, then you [would have got] 120 rupees, but now you will only get 5-10 rupees if you do this.”

Sidharth, 19, M, Student (R78)

(See [Annex 1: Respondent profiles](#) for a look at Sidharth’s experiences with earned reward apps)

Some respondents had little success in obtaining the rewards promised. Such experiences could have been due to a number of factors ranging from a faulty app to the users’ skills being insufficient to retrieve the reward.

Rupesh (R75) spoke of how the lack of sufficient sub-applications to download prevented him from using the earned reward app for a sustained period of time. He had used it a year prior to talking to us, but had stopped subsequently as he had earned all the rewards. Sustainability in the use of applications may

arise, particularly where users are rewarded for downloading sub-apps rather than for using them. Also, limitations may arise as users have to refer friends in order to earn rewards, since most “pyramid-like” reference systems have a limited shelf-life before collapsing.

Others complained about needing to keep a downloaded app for a certain period of time on the phone before rewards could be earned – a difficult thing to do for those who had phones with very limited memory.

7.5 Are earned reward apps creating a walled garden?

The respondents who used the applications tended to focus on earning the rewards, and using that reward for what they want.

Sobha (R73) for instance, had engaged with a number of earned reward applications to maximize the rewards earned.

“I downloaded from Mango, so I got 50 rupees – I got that in my wallet. Then I also used Champ Cash where you have to make chain of users. My cousins told me to download [on an earned reward app - unable to recall the name]. I got Flipkart. 9 [other] apps were also there, so I installed those also .

Sobha, 32, F, Playschool teacher (R73)

Once the rewards were earned in as many ways as possible, they channeled the earnings towards buying top-ups for their phones. Their Internet consumption habits were not different to those not using such earned-rewards apps.

For example, Aarav (ID14) once earned INR 100 through the use of an earned reward app. He used these funds to buy a top up that went towards his main balance, indicating that the funds could be used towards any service offered by his operator. Sometimes, he not only used this balance to browse the Internet by using mobile data, but even made network calls.

In other words, while it is possible that the earned reward apps could channel users to stay “inside” those apps, and consume the content of these apps at the expense of other content, this was not a pattern seen amongst our respondents. For this group, the concerns of a new type of walled garden emerging appears to be premature.

8. Reliance Jio

Reliance Jio, which had over 100 million subscribers in February 2017 (Times of India, 2017), offered free network calls and free 4G mobile data until end

March 2017, using a price cutting strategy to penetrate the market. A revolutionary step in the market, its effects were worth examining in this report.

8.1 Data is free but the phone is a barrier to adoption

Jio is an unusual case in this debate, as users gain access to the free Internet for free. Despite obtaining free data, users spoke of problems in affordability – not of data but of the 4G-enabled phone.

“Firstly, you spend 8-9k, and then you use free data.”

Sikha, 27, F, Housewife (R30)

“We will buy Jio SIM, and then for that we will buy a phone worth rupees 6000, then why shall we spend even that much. Is it important that we use a smart phone only, and not the basic one.”

Rakesh, 39, M, Supervisor (R1)

Another respondent spoke of how the process to obtain the SIM was difficult.

“They even take the thumb print,” she said.

Despite this barrier, over a quarter of mobile data users in our sample (from SECs C and D) used Jio.

8.2 Content accessed

Respondents like Meena (R11) spoke positively of being able to access any content as they wished.

“I bought that three months back... You get free data, so you can do whatever you want to... [I use it for] chatting and video calling. I check You Tube as well.

Meena, 18, F, Undergraduate (R11)

(See [Annex 1: Respondent profiles](#) for a snapshot of the variety of content accessed by Meena)

Some tended to use it for data-heavy content. For instance video calls were popular. Somesh (R54) spoke of using his newly acquired Jio SIM to download movies at night.

There were others who continued to use Jio for the same purpose that they had used other (non-Jio) SIMs before. Neelima (R71) for instance, spoke of how she brought a Jio SIM because her son had got used to downloading a number of games on her phone. The data pack that she used previously would finish within a short period of time as a result.

“1GB gets over so soon...For that reason, we have purchased a Jio sim. It hardly matters how many games you download now.”

Neelima, 31, F, Supervisor (R71)

8.3 User experience

Jio's price cutting strategy was used as an attempt to gain market share. Many responded and bought Jio SIMs.

“I am using Jio only... I used to take packs before, but now I have forgotten the packs.”

Loveleen, 28, F, Housewife (R25)

Despite Jio also offering free network calls, more respondents used it to obtain free data. In fact, many users spoke positively of the data services, but poorly of the network calling services.

“Internet is very good in Jio. But when you [make a] call, it will get disconnected.”

Parveen, 37, M, Salesman (R61)

Despite the variable quality of service, respondents continued to use the Jio SIM. This SIM was used in conjunction with SIMs from different operators to deal with the inconstancy in service.

Loveleen (R25), for instance, used her Reliance SIM to make voice calls and to access the Internet via mobile data. She continued to use her Reliance SIM to make voice calls, but used Jio for mobile data. On the other hand, some, albeit a smaller sample, spoke about poor 4G network coverage. These respondents used Jio for calling, and their other SIM for mobile data.

This optimizing strategy using multiple SIMs was also observed in the case of those who did not use Jio's, but had other SIMs.

Many spoke of how they were able to access the Internet quickly because of Jio. A few outliers existed however. Puri for instance, spoke of how the actual speed was very different to the advertised speed.

"In my phone [Jio] works on 2G speed, so it is better that you recharge on your own..."

Puri, 19, F, Undergraduate (R69)

9. Implications

India's use of ICTs is booming. Yet, many are left unconnected. Despite being the second largest number of Internet users, only 22% of the population was online. Given that 21% of India's population lives under the international poverty line, one would assume that the costs needed to purchase a mobile phone and use data would be a key constraint. The respondents in our sample confirmed this. Even amongst those who use mobile data, a variety of cost saving techniques were seen, such as the use of offline sharing methods and downloading applications to track the use of data.

In the wake of the ban of zero-rated content, the TRAI has been exploring other models of giving out free data.

The model of earned reward apps is one that takes power away from the TSPs and shifts power to the platforms and content providers. While the data earned can be used freely to access the open Internet, the question arises whether the process of earning rewards can “nudge” users towards certain applications/content, thus violating net neutrality. Our research suggests “no”. At first glance, it seems a new set of non-TSP gatekeepers have emerged – the earned rewards apps “nudge” users towards using and promoting certain apps, at least in theory. Yet our research showed that at least as of now, none of the users limited their Internet experience to the promoted (and downloaded) apps that were on their phone purely for the purpose of earning a reward. In fact, many were savvy users, who “play the game” (i.e. download the promoted apps, referred friends) purely in order to earn monetary rewards, which they then converted to talk time/data/e-commerce transactions. In fact, their “regular” use heavily skewed towards social media and appeared to not have changed due to these earned-rewards apps and the relevant rewards. So far, fears of a “tunneling effect” on users seem premature.

Reliance Jio at the time of fieldwork was allowing its subscribers to use 4G data free of charge, in an attempt to gain a larger market share. Although its motivations may be less altruistic than those proposed by TRAI, it provided a useful counterfactual where users were able to gain access to the free and open Internet, free of charge. Though some spoke of their grievances, many continued to use Jio. Many were willing to use multiple SIMs to deal with network difficulties, so as to make the best of Jio's free services.

The two methods of providing free data come with their relative merits and pitfalls. On one hand, the earned reward apps are, in theory, more supplementary in nature but should be more sustainable than Jio's attempts to give free data. However, the sustainability of the reward apps can also be questioned given respondents' complaints on the lack of content (i.e. apps) and the need to constantly be promoting apps to new users in order to earn rewards. Jio is now charging consumers, and its low prices have caused other operators to slash prices in order to compete. The long term impacts of this move – the extent to which dropping charges impacts people's use of the Internet – are yet to be determined.

Provision of free or subsidized data alone, though, may not be the magic bullet. The research showed that some respondents' knowledge on the Internet was very sparse. On the other hand, it must be mentioned that Prime Minister Modi's Digital India campaign seems to be doing an effective job at introducing respondents to the Internet.

Digital skills are also a perceived barrier to some. Others see it as an obstacle they can overcome once the problems of affordability are solved. Many had got online due to the influence of their peers, usually for social purposes, sometimes for business. It is thus possible that skills could spread organically as more people get online.

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Annex 1: Respondent profiles

Profile 1: Prakash (R2)- Former user of mobile data



Name: Prakash |
Age: 36 years
Education: 12th pass
Occupation: Supervisor in Metal works industry
SEC: C
Family Structure: He lives with his wife and has three children (one daughter and two sons).

Prakash has Samsung J2 smartphone and uses Vodafone connection. He had accessed internet on his phone for various purposes like sharing product pictures with his clients through WhatsApp, doing online research for his son's school assignments and navigation.



1.5 years back he stopped using internet as he finds data packs to be too expensive to afford. He also feels that due to internet, he won't be able to spend quality time with his children.

Currently he goes to cyber cafe to download information for his son's school assignments. He finds it economical than to spend money on getting data every month.

Profile 2: Sidharth (R78)- Mobile data user (used earned reward apps)



Name: Sidharth

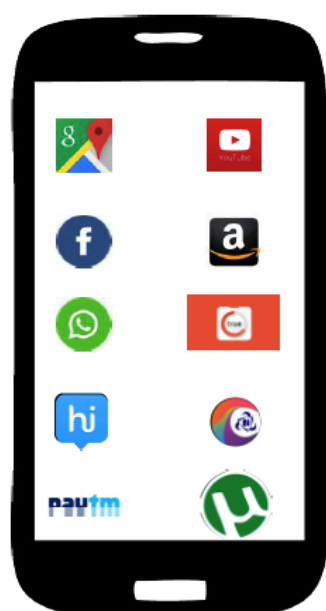
Age: 19 years

Education: Pursuing graduation

Occupation: Student

SEC: C

Family Structure: He has his parents and a younger brother who studies in class 12th. His father owns a general store and takes care of family needs.



Navigation



Instant messaging



Voice, video call & instant messaging



Watches videos



Instant messaging



Downloads movies



Buys clothes & gadgets



Buys clothes & gadgets



Books train tickets



Phone recharge & earns cashback



He's earned INR 120 from downloading applications through taskbaucks. Now he does not use it frequently and checks it once in a week for any new applications.



Recharges his phone and keeps a check on his data balance. Also earns INR 10 for one reference and another INR 10 upon downloading through his reference

Profile 3: Meena (R11)- Mobile data user (used earned reward apps)



Name: Meena

Age: 21 years

Education: 12th Pass

Occupation: Home-tutor

SEC: D

Family Structure: Lives with her parents, elder brother, sister in law, a 4 year old niece and 2 year old nephew



Instant messaging,



Looks for job



Instant messaging with friends



Takes and edits selfies



Chats with friends and relatives using JIO chat app



Checks out new products



Watch new recipe videos, bollywood songs and movies



Bought her smartphone



Reads news and jokes on UC browser



Checks train information



She downloaded Freecharge and shared the link with friends on WhatsApp and Facebook and earned INR 50



She used Mcent and earned INR 50 by sending referral to friends. She recharged her phone with it. She downloaded 9apps through Mcent and was suppose to get INR 200 but she did not get any reward



She downloaded Paytm and invited friends on WhatsApp to use the app and earned INR 40

Mobile phone



She has Lyf 4G phone and uses JIO SIM. Besides JIO, she keeps a Vodafone voucher of INR 35 that gives her 150 MB data for 3 days in case of emergency

Laptop

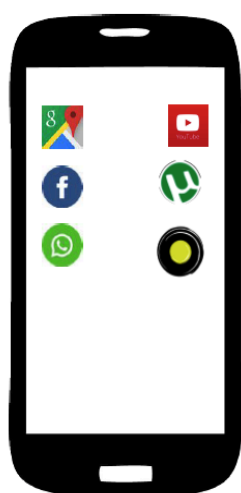


She uses her brother's Laptop to watch movies. She takes the laptop to her friend's place and uses her Wi-Fi to download movies.

Profile 4: Sonu Mehra (R76)- Mobile data user



Name: Sonu
Age: 31 years
Education: 9th Pass
Occupation: Ola cab driver
SEC: D
Family Structure: lives in a joint family with his mother, brother and sister-in-law



Download movies



To stay in touch with his friends



Voice, video call & instant messaging



Watches movies and music videos



He is always online on Ola cabs to know details of the passengers and their pick-up location



Navigation to drive passengers to their destination

Mobile phone



He uses Micromax q336 phone and has Vodafone prepaid connection. Every month he gets a data pack for INR 450 in which he gets 4GB 4G internet.

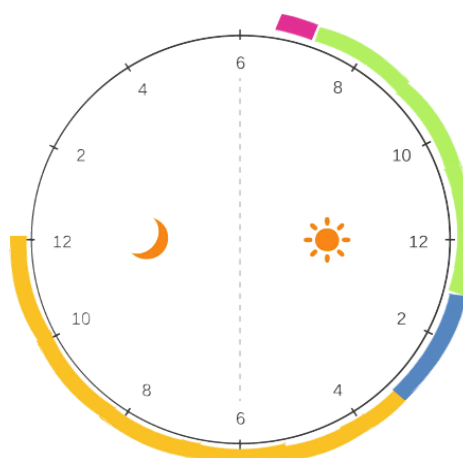
Gets up at 6.30 am and leaves for work by 7 am.

Moment he starts his work, he switches on his mobile data to get details of his clients and to track their location for pick-up.

In the afternoon, he comes back home, takes his lunch and rests for 2 hours. During this time, he keeps his internet off.

He has to work for 11 hours and sometimes returns home by 12 or 12.30 at night. Since his work is dependent on internet, so his data is always on except the times he is at home and taking rest.

Internet usage around the clock



Profile 5: Parvati (R22)- Mobile data user (used earned reward apps)



Name: Parvati

Age: 22 years

Education: Pursuing Post graduation

Occupation: Student

SEC: C

Family Structure: She lives with her parents and 2 younger brothers

Laptop



She uses her brother's Laptop to access Facebook

She started using internet 3 years back in school library. Her friends made her Facebook account on library computer and taught her internet browsing

Smart TV



Connects her smart TV with Wi-Fi to access Youtube and Amazon. watches dance videos, missed episodes of her favorite serials and bollywood songs on YouTube. She looks for skin products on Amazon website and google search for study related information. She also plays online games.

She uses internet through Wi-Fi on smart TV and accesses google, YouTube and play online games

Mobile phone



She uses her cousin's smartphone, in which she has saved her friends numbers, to access WhatsApp. She also uses her brother's phone to make video calls through IMO app

She uses her cousin's phone on her Wi-Fi to access WhatsApp on it