

Cell-Phone-Enabled Empowerment of Women Earning Less than \$1/Day

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Cell phones are the fastest spreading information technology (IT) in the developing world, with a penetration rate of over 61% [4]. Hence, there is a growing interest among governments, investors, banking industries, and retail giants like Wal-Mart to exploit this emerging channel of communication for offering services and expanding businesses to more than 3 billion poor consumers earning less than \$2 per day. In response, a number of micro (individual), meso (community), and macro (regional/national)-level research inquiries and consumer surveys have investigated what makes cell phones a desirable and affordable technology for people earning less than \$2 per day. These multidisciplinary studies and market surveys have revealed links between access to

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cell phones and socio-economic opportunities for disadvantaged populations from developing nations [9]. However, very few of the studies [1], [5], [10] have answered “why this link exists,” and “how this link works.”

In order to understand details of the link between cell phones and some of the most disadvantaged users in the world, a micro-level study presented in this article focuses on female cell phone users from the lowest socio-economic stratum in a male-dominated, hierarchical society of rural India. In particular, this socio-technical inquiry sought answers to: “Why do disadvantaged women earning less than a dollar a day use cell phones?” and “Are there any barriers to women’s access to, and usage of cell phones in a rural Indian setting? If yes, what are the barriers? And how do women cell phone users overcome those barriers?”

The study [6] was conducted in Bhor, a remote, rural part of India, a developing nation with more than 35% of its population living under \$2 per day. One hundred and two female cell phone users earning less than a dollar per day at a domestic business setup, MGU, were surveyed, and twenty two of them were interviewed in Marathi, the native language of the researcher and interviewees. Despite being offered relatively lucrative compensation (\$0.50) for their participation, and despite mediation by a female manager working at MGU, a few potential interviewees succumbed to social and family resistance to participation and thus, stayed away from the study.

Source of Income for Women Cell Phone Users

MGU offers seasonal employment (from January to May of every year) allowing respondents to use their cooking skills in preparing traditional Indian snacks. According to the mediator, part-time employment at MGU serves as a

networking opportunity for employees. They exchange general information on current issues in the surrounding area, make new friends, meet old friends, and experience female friends’ community outside their own families.

Respondents also rely upon alternate sources of income. The primary source of income for respondents was either a family-run business, part-time employment, or a self-owned business. However, women’s multiple sources of income had no connection with any ongoing microfinance or microloan-related activity in Bhor. The most common family-run businesses in which participants were involved included: selling bread, kerosene, home-made flours and spices, vegetables, bangles, clothing, milk, ayurvedic medicines, or glass utensils. Still, despite drawing income from a variety of sources, no respondent earned daily wages more than a dollar a day, on average.

Fierce market competition for selling cell phones and a conducive policy environment in the Indian telecom sector has led to low-cost connectivity for cell phones. Therefore, these poor participants were able to afford their own cell phones. These cell phones were manufactured by Nokia and Reliance, and cell phone service was provided by Reliance, Airtel, Vodafone, and Tata. On average, a streamlined cell phone device costs \$15-20 in India. Free incoming calls and free text messaging also make owning and using a cell phone even cheaper. Indeed, it is a general practice to use cell phone rings and “missed calls” to exchange messages rather than actual voice conversation [2]; this practice keeps cell phone bills even lower.

Toward Cell Phone-Enabled Empowerment for All

Primarily, respondents own and use cell phones to pursue different types of needs: personal, social, economic, socio-economic,

emotional, and information and communication [7]. Cell phones directly and indirectly serve as a conduit to satisfy everyday life information needs of the respondents. Cell phones enable disadvantaged women to exploit socio-economic opportunities in Bhor and eventually empower some of these women. Tangible benefits for owning and using cell phones are as follows.

a) To earn income

Employment emerged as the most prominent driver for the use of cell phones among respondents (see Fig. 1). For instance, a physically challenged girl was allowed to work by her family only after owning a cell phone. In this case, the cell phone serves as the only bridge of communication between the girl and her family when she is at work. Interestingly, in another case, one respondent rents her cell phone to others for making and receiving calls.

For women who are part of family-run businesses, cell phones are used heavily for earning income by actively searching information. Priya, a housewife who helps her in-laws in running a mom-and-pop shop said:

On one call, I can get market rate for goods in different areas. I did not have any other tool to do that earlier. Hence, we decided to buy this phone. When we are doing business, we should buy everything that is required for business. Isn’t it? In Bhor, goods are available as that of Pune’s rate. So now I buy goods in Pune on the phone. Due to mobile, it becomes easy to contact wholesale shopkeepers in Pune. I order goods over the mobile.

b) To save money

In Bhor, fixed-line telephone service is expensive compared to cell phone service. In order to save

money required for communication with the outside world, many women shifted from fixed-line telephone service to cell phone service. Lata, a married woman living alone in Bhor, perceived cell phones as a luxury until her children left her to work in a nearby city. She never thought that a cell phone would be a necessary investment for her. However, due to the cost-effective nature of cell phones compared to a fixed-line telephone system, she bought a cell phone to communicate with her children at any time of the day.

Even I also did not like using cell phone in the beginning. Children also do not need mobiles. But now, my son and daughter are in Pune, and we can carry mobile anywhere we wish. So we can contact each other anytime. . . . It is best to use mobile only to take care of our needs.

Expensive landline communication triggered Savita to use a cell phone; she had been against using it initially. Affordability of her cell phone brought down her communication expenses.

Initially, I was against using mobile. We had a landline, but after being employed, my children started using mobile. They used to make calls on our landline, which increased our bill extraordinarily. Finally, I also decided to use a mobile. I switched from landline to mobile. . . . My children used to ask, “Why don’t you call us on our mobiles?” So, making (long-distance) calls from my ext landline to their mobiles had hiked my bill.

c) To be in touch with family, friends, and others
 Women use cell phones for personal, family-related, and finan-

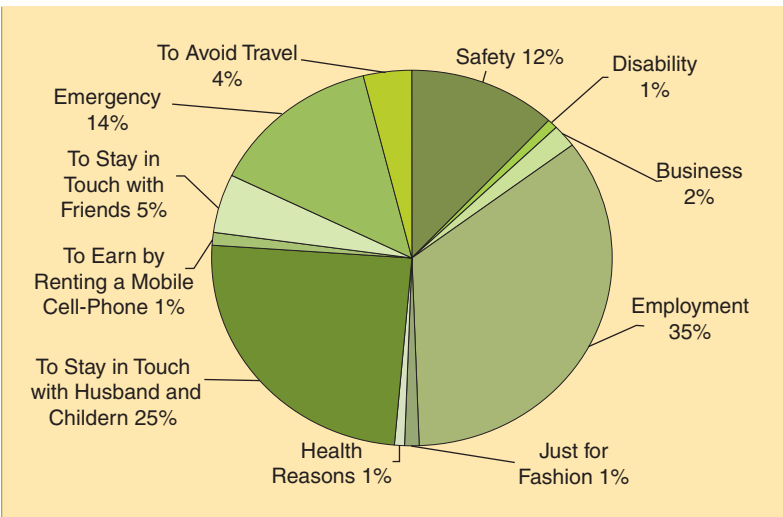


Fig. 1. Why women use cell phones [6].

cial reasons. Staying in touch with their husbands, children, family members, and friends formed a significant portion of reasons for owning and using cell phones. Prabhvati, an illiterate, married woman interviewee uses her cell phone mainly to be in touch with her husband, who is a chauffeur by profession.

I am an illiterate woman. I don’t understand anything about phone. Only thing I know is to receive calls and make ones. My husband is just a driver. Phone is useful to me in finding out about when he would come back home, where is his vehicle, etc.

Sushila, a nurse working in a local clinic, and a widow, allows patients to contact her anytime they wish.

I live in a rural, remote locality near Bhor. I work for a hospital in Bhor. I can get any help I need using mobile. I set out at seven in the morning and return back at around six in the evening. So, I have been benefited a lot by mobile. Patients from the hospital can contact me anytime and I can help them. When I am not in a position to help

them, I could at least guide them. Plus, I could tell other nurse that I am coming, let us take this particular preparation, etc. Earlier I never felt that mobile was of any use, but recently in the last year I started experiencing its value.

Swati realized the need of using a cell phone when her husband and son met with an accident. The role played by the cell phone in that emergency made her realize that the cell phone can be an effective tool for communication.

My husband and son had gone to Shirwal (a nearby town) for some work, where they had an accident. My son had a mobile and we had a landline at home, so they could communicate us urgently. We were informed about the accident and hence, we could reach on the spot. After that I bought mobile for myself.

Priya who has two school-going children observed:

Using my mobile, I can reach teachers of my children who attend school regularly. During the exam period, I can talk to my children by calling

on their teachers' cell, and ask them, how long is it going to take them for returning back from the school?

Most of the time, married respondents used their cell phones to talk with their husbands and children. For all respondents, female friends at work and female relatives emerged as the second largest group with whom respondents communicate over their cell phone. Female friends at work encourage most of the respondents to own and use cell phones.

d) To acquire and/or offer emotional support

For many respondents, a cell phone acts as a powerful medium to reach someone, to seek and offer emotional support anytime they wish, thereby overcoming the barrier of distance and time. Anuja, an unmarried girl, uses her cell phone to strengthen emotional bonds within her social circle. In her own words:

At times, mobile has definitely great utility value. If something goes wrong with any of friend and if I cannot visit that friend, then at least I can call him to console. Many a times, people just need our supportive words. Even if we are not able to be with our people physically, our words could support them at times. Mobile can be of great help.

e) To increase productivity

Respondents use cell phones to pursue social and economic needs. For instance, socio-economic opportunities for Archana and her husband encourage them to use cell phones.

I own a small business of papad[traditional Indian snack]. Five years ago, when I did not have mobile, I used to visit each and every home

in Bhore to sell papads. Soon we realized that I had to get a mobile. Now I can get things done very efficiently. Customers call me on my mobile and could pick up their order from my home. I can make urgent calls using my mobile. My husband works for grampanchayat*[government's unit in a village]. I can contact him anytime, if required. He conducts classes every Sunday, so his students can contact him even on my mobile, if his mobile is busy or not working.

Madhavi, an unmarried girl, works at a place that is located far away from her home. Sometimes, when she forgets something important at home or when she needs something to be brought from her home to office, she can simply seek help from family members. Thus, she can save time and effort in long-distance travel.

If I go out to some other village, I could contact my parents. I do some jobs here, so if there is anything important to share, then from my workplace, I can contact my family anytime. After giving them a message, they can bring things that I need from home.

Archana, an unmarried fortune-teller, offers her consultation to clients from nearby areas. She said:

People call me to ask about their horoscopes. For seeking appointments or asking personal questions my clients call me in afternoons and evenings. For some people, if personal visits are not possible, then we communicate and I consult over my cell phone. People consult me on my phone, if there are any problems in their horoscopes, or if they need to carry out any rituals.

Thus, due to cell phones, Archana could expand her business and reach more clients who live far away from her home. In general, respondents could use their resources smartly and brought flexibility in jobs, by incorporating cell phones into their daily lives.

f) To assure safety and security

Respondents started feeling safer and more secure in a male-dominated, remote, rural part of India. With cell phone in hand, a woman could go out more often even at night, using her cell phone as a torch as well as a communication device. Jija, a married interviewee, used her cell phone to communicate about her safety and security to her family, while working at a distant place.

I used to do a job at Pune. I had bought a mobile then. I used to get late while returning from my job, so my family members used to worry about me all the time. I used to commute everyday between Bhore and Pune. It takes one and a half hour between Bhore and Pune.

For respondents like Jija, options to work outside Bhore broadened due to their cell phone-enhanced ability to reach families even when they are travelling alone or returning late from jobs.

g) To share and/or seek information/knowledge

When information needs can be satisfied exclusively by experts or knowledgeable people, women do not hesitate to use cell phones to seek knowledge. A special piece of information such as a password is also communicated over cell phones, particularly when the need for a password could be realized at workplaces. For instance, Anuja, a skilled worker said:

When I need some information and I think that a particular

person might be more knowledgeable, then I call that person to seek more information. Once, my friend had called me for a “password” to open my “desk”. Sometimes my colleagues call me, when they don’t understand the ways in which I have completed some assignment.

Moreover, Anuja’s colleagues call her on the cell phone to resolve work-related queries. This really helps her when she does not go to work due to ailments.

h) To experience recreation with others

A cell phone is widely used as a socializing tool by many unmarried respondents. For example, the teen-aged Prachi and her friends enjoy playing pranks with each other on their cell phones.

My “best friends” keep teasing me from different numbers. We enjoy that! Friends call me just to ask my whereabouts or when we plan to go out. Nowadays I don’t get to see my friends, so we keep in touch through cell phone. . . I have good relations with many people, which are maintained through my mobile.

Bharati, a mother of three children complained about “too much” use of cell phones by her children for “doing nonsense” with friends. Due to free talk-time provided by cell phone service providers at night, children seem to be extensively using cell phones of their family members for chit-chatting and recreation.

i) To show off

The study also identified one respondent who uses her cell phone just because others use them. Surprisingly, in Bhor, a cell phone is also considered a status symbol. From the narratives it is clear that respondents

attach all kinds of meanings to owning and using cell phones. Meanings associated with owning and using cell phones range from a technology essential to earn bread and butter for the family, to a prestige issue in the community.

Although there is a wide range of benefits to owning and using cell phones, it has never been easy to do so for many disadvantaged women.

Overcoming Barriers to Owning and Using Cell Phones

Despite paying bills and taking care of all the expenses related to cell phones, disadvantaged women face a number of barriers in owning and using cell phones. These barriers can be broadly categorized as human and technical. Human barriers are generally family members, society, and telemarketers, whereas technical barriers are posed by inconvenient cell phone devices, poor infrastructure set-ups by cell phone service providers, and an insufficient supply of electricity.

Human Barriers

Almost all interviewees expressed their concerns about people’s tendency to discourage and create hurdles for them to own cell phones, and to process and to use information acquired over those phones. Sushila, a widow, reported:

I cannot tell exactly how many times I receive *bad* calls in a month, but they do come. They make fun of me by calling anytime. I am a widow. I am financially independent despite adverse circumstances. Many people do not approve it. They trouble me. I use bicycle for commute (it is not very common in Bhor to have women bicycling on streets). Somehow people get my mobile num-

ber and try to discourage me from what I am doing. I tell them that I don’t want to talk to strangers and hang up their calls; or I tell them that I am busy and I don’t wish to talk to them then. But still they trouble me in different ways. They create hurdles for me. . . Trouble-makers try to bring me ill-fame at places where I work; they call me and talk dirty things and gossip about my character.

Unwanted calls from telemarketing advertisers create a different kind of human barrier. Gouri, an unmarried girl, complained:

I receive a lot of “unwanted calls”. Nowadays, “marketing” through mobile is in boom, which is very annoying. Nowadays, these people market “insurance” and “investment policies” through mobile. Those companies keep on calling you all the time; and they call from different numbers. So I am unable to decide whether to pick up calls from any specific number, or not. Usually when I am in rush, by mistake I pick up their calls. And sure enough, that call is of an unwanted advertisement. Except this problem, mobile is very useful.

In Bhor, there were many rumors regarding the usage of cell phones. These rumors spread confusion, doubts, and created fear among cell phone users, including respondents. Shalan, a widow said:

In the past, people scared me for using mobile. They told me that weird sounds could come from the mobile, or it could burst anytime, so I was afraid of using my mobile. Some people also used to say, never pick up your phone when red light is on. I used to be tensed while

picking up calls on my mobile. All kids used to say that never pick up calls when red light is on. So I used to be scared and in dilemma about whether to attend a phone call or not.

For a long time, Archana's mother-in-law opposed her owning and using a cell phone.

We live in a joint family. In the beginning, they did not give consent for it. I have a mother-in-law living with me. For a variety of reasons, she always resisted me from buying a mobile. She opposed me a lot. She used to ask me—What is the need? It would be a great trouble. People would keep coming to you for using your mobile for free. My husband and I thought a lot about it. But we did not rush at all. . . Almost a year or year and a half passed away. . . Afterwards, my mother-in-law was convinced that I could make a good use of mobile. Mobile has proven to be of great use to us.

With the help of husbands and children, respondents could overcome similar oppositions by in-laws for owning and using cell phones.

Technical Barriers

Technical difficulties faced by respondents were either due to cell phones or due to a lack of infrastructure required to use cell phones in a remote part of India.

Language Creating Barrier to Text Communication

More than three quarters of surveyed participants have English as a language of instruction and communication on their cell phones. The remaining participants have Hindi, a national language, and Marathi, the native language for instruction and communication. However, English acts as a barrier

for all married and elder respondents, since most of them cannot read and understand it; hence they cannot use the SMS service offered in English. Therefore, English inhibits their efforts in using cell phones to actively search and seek information. This fact is mainly responsible for keeping disadvantaged women from the digital economy. Extra charges for receiving service in Marathi inhibit interviewees from using text messages, although they prefer text communication in Marathi over English. In contrast, all unmarried, young interviewees rely upon SMS as a text mode of communication.

Unfriendly Cell Phone Interfaces

Designs and interfaces of cell phones also create technical problems for its users. Keypads are typically designed for English, and thus, they are unfriendly to many other languages. For instance, Gouri cannot use the Marathi SMS feature, despite wanting to use this feature.

I would like to have Marathi on my mobile rather than English, because Marathi is my mother-tongue. But texting in Marathi is problematic. We are used to English typing for "daily routine". Marathi typing is difficult, so mostly English is used.

Infrastructure-Related Problems

In Bhor, poor infrastructure for electricity and the cell phone signal network make it difficult to use cell phones seamlessly. Due to the intermittent supply of electricity, Sushila cannot charge her cell phone anytime she wants.

Every day, we have electricity for only 6 to 7 hours. I charge my mobile during

that period. If the electricity is unavailable in the mornings, it comes back in the evenings, and vice-a versa. So during that short period, I charge my mobile.

Range and signals act as technical barriers for Sushila, who lives at the bottom of hills.

Many a times it happens that relatives call me and the range does not reach here.

In order to make a call, she climbs up on a ladder vertically inclined toward the roof of her house, and then after punching numbers on the cell phone, she raises her other hand up in the air. Once the call is connected, she comes down and usually, the signal is not lost.

So why do Sushila and many others take risks, struggle against many odds, and overcome barriers to talk over cell phones? Are women's ownership and usage of cell phone only about opportunities and empowerment, or something more?

Value of Cell Phones Beyond Empowerment

Rich narratives of disadvantaged cell phone users demonstrate that cell phones introduce them to a number of socio-economic opportunities even in a remote, rural part of a developing nation. Unfortunately, in most situations, unmarried girls reported that male family members often deny women's right to access cell phones. In contrast, some married women reported that their mothers-in-law were against the idea of using cell phones; however due to the firm support provided by respondents' husbands or children, they could overcome this human barrier. Nonetheless, human barriers faced by disadvantaged women in owning and using cell phones—especially when they can afford it—imply that the benefits of using cell phones are beyond just socio-economic opportunities.

The respondents' social struggle is related to the power of information, and to the use of cell phones as information channels. This access to information can potentially empower illiterate, less-educated women as equally as men. Access to cell phones challenges the power equilibrium in a remote, rural part of India because it increases the likelihood of empowerment for disadvantaged women.

Numerous direct and indirect benefits of using cell phones clearly empowered some respondents. For instance, for the first time in their lives, two physically challenged and three unmarried female respondents became financially independent. This independence was the result of their ability to reach their families over the cell phone. In some cases, women feel that they have gained higher status in their families, because cell phones enable them to earn equally with their husbands and other male relatives. In addition, many unmarried girls reported feeling safer due to their ability to reach anybody anytime over their cell phones. In the context of weak signal network, some respondents climb up on ladders to catch cell phone signals; their habit of going to such extremes emphasizes the value of cell phones beyond the pursuit of socio-economic opportunities.

In some cases where an interviewee did not even have a fixed-landline phone for communication, she decided to pursue information needs through a cell phone. For example Kavita, an unmarried girl said:

At our home, we did not have phone, even a "landline". We always used to rely on our neighbors for calls, either for making or receiving. It does not feel right to bother neighbors all the time, isn't it? So it was decided to buy a mobile.

This is a perfect example of development achieved through technological *leapfrogging*, in which citizens from developing nations bypass technologies used by developed nations, and adopt innovative, inexpensive technologies [3]. Although, conclusions based on experiences of owning and using cell phones by a small sample of respondents cannot be generalized, cell phones seem to be instrumental in advancing disadvantaged women through opportunities, empowerment, and development stages in a rural part of India.

Opportunities, Empowerment, and Development

Respondents' access to cell phones offers not just opportunities to all and empowerment to some, but it also propels some disadvantaged women further toward development. Noble laureate Dr. Amartya Sen defines development as freedom—freedom to make decisions about earning, living, culture, politics, etc.—which empowers people [8]. In the context of inferred cell-phone-enabled linking of opportunities, empowerment, and development, further in-depth research is required to study the impact of cell phones on the development of disadvantaged populations from developing nations.

In the meantime, findings from this current study could inform various governments and businesses that are exploring the possibility of piggybacking on rapidly expanding cell phone networks among the poor consumers in the developing world. For example, barriers to owning and using cell phones revealed in this study could guide ways that mobile banking, mobile governance, mobile Commerce, etc., serve disadvantaged populations, offering them opportunities, empowering their lives, and ultimately involving them in cell-phone-driven development for all.

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