

**Impact of Mobile Communication on Society**Prof. Shaifali Bhatia¹, Prof. Nilesh Parghi², Prof. Kailash Naghera³^{1,2,3}Noble Group of Institutions – Junagadh

Abstract- The adoption of the mobile communication by the society has been a global phenomenon in recent years. It is now an integral part of our daily live. Mobile communications have become a staple of our society, with everyone from elementary school kids to senior citizen owing at least one. In fact, the mobile phone has turned from a technological tool to a social tool. Increased levels of mobile communication subscriptions are linked with improvements in education, gender equality and political participation, particularly in developing countries. They are also associated with higher economic growth. People use the mobile communications in positive ways to organize and maintain their social networks. However, there are also negative impacts of it too. From the researchers and academicians point of view such a study will explore the positive and negative impact of mobile communication on society

I. INTRODUCTION

A wireless form of communication in which voice and data information is emitted, transmitted and received via microwaves. This type of communication allows individuals to converse with one another and transmit and receive data while moving from place to place.

Wireless communication involves transmitting signals through air and space using radio waves. Wireless spectrum is allocated by governments and international organizations. For example, in the United States, the 800-MHz frequency range is allocated for cellular voice communications. The higher the radio frequency, the greater the bandwidth and data carrying capacity of the wireless system. However, as frequency is increased in a system, its characteristics become more directional (line of site) and the signals are more susceptible to atmospheric conditions such as rain and fog.

The number of wireless mobile devices is increasing globally. Users equipped with portable computers, PDAs (personal digital assistants), and a variety of small wireless communication devices increasingly need to connect to corporate networks, perform database queries, exchange messages, transfer files, and even participate in collaborative computing. At the same time, wireless systems are achieving higher data rates to support Internet and other data-related applications. The newest mobile communication systems are targeting data rates as high as 2 MB.

II. . CELLULAR SYSTEMS AND TOPOLOGY

A cell in a cellular system is a roughly circular area with a central transmitter/receiver base station as shown in Figure W-6 (although the base station may be located off-center to conform to local topology). The station is raised up on a tower or placed on top of a building. Some are located on church steeples. The station has a 360-degree unidirectional antenna (except when directional transmissions are required) that is tuned to create a cellular area of a specific size. Cells are usually pictured as hexagonal in shape and arranged in a honeycomb pattern. Cell size varies depending on the area. In a city, there are many small cells, while rural area may have very large cells.

Cellular topology provides a way to maintain an adequate number of call channels even though the actual number of channels available to the *entire* service area is small. This is possible through *frequency reuse*. Each cell is assigned a set of channel frequencies, and no *adjoining* cells may use those frequencies. However, cells further away may use those frequencies because the distance between cells provides a buffer zone that prevents frequency interference.

The system is scalable, even though it has a finite number of channels. If channel demand increases in a specific area (such as a metro area), the service provider can divide cells into a number of smaller cells. Transmitter power is turned down to fit the new smaller cell size and channel frequencies are allocated so that no adjoining cells use the same channels. However, channel reuse is possible in cells that are at least one cell apart. Thus, frequency reuse and smaller cell size allow the system to scale. Metro areas may have many small cells while rural area may have large cells. The cell size is designed to accommodate the number of people in the area.

When a user turns a phone on, its phone number and serial number are broadcast within the local cell. The base station picks up these signals and informs the switching office that the particular device is located within its area. This information is recorded by the switching office for future reference. An actual call takes place when the user enters a phone number and hits the Send button. The cellular system selects a channel for the user to use during the duration of the call.

As users travel, they may move from one cell to another, necessitating a handoff and the selection of a new channel. While in the vicinity of a cell, mobile phone users are under the control of the transmitter/receiver in that cell. A handoff takes place when the base station in one cell transfers control for a user's call to a base station in another cell. When a base station begins to lose a user's signal, it notifies base stations in all the surrounding cells that the user may be moving into their cells. As the user moves into a new cell, the base station in that cell takes over the call. The frequency of the call is changed to a frequency used in the new cell during the transition. This is because adjoining cells cannot use the same frequencies.

III. FROM ANALOG TO DIGITAL SYSTEMS

Mobile wireless analog communication systems have been around since the 1950s. The early systems were single channel "over-and-out" systems. Instead of a cellular configuration, a single radio tower serviced a metropolitan area, which severely limited the scalability of the systems. Service quality varied depending on the location of the caller. Later systems added multiple two-way channels but still had limited capacity.

Analog cellular services were introduced by AT&T in the 1970s and became widespread in the 1980s. The primary analog service in the United States is called AMPS (Advanced Mobile Phone Service).

There are similar systems around the world that go by different names. The equivalent system in England is called TACS (Total Access Communications System).

The AMPS system is a circuit-oriented communication system that operates in the 824-MHz to 894-MHz frequency range. This range is divided into a pool of 832 full-duplex channel pairs (1 send, 1 receive). Any one of these channels may be assigned to a user. A channel is like physical circuit, except that it occupies a specific radiofrequency range and has a bandwidth of 30 kHz. The circuit remains dedicated to a subscriber call until it is disconnected, even if voice or data is not being transmitted.

Cellular systems are described in multiple generations, with third- and fourth-generation (3G and 4G) systems just emerging:

- **1G systems** These are the *analog* systems such as AMPS that grew rapidly in the 1980s and are still available today. Many metropolitan areas have a mix of 1G and 2G systems, as well as emerging 3G systems. The systems use frequency division multiplexing to divide the bandwidth into specific frequencies that are assigned to individual calls.
- **2G systems** These second-generation systems are *digital*, and use either TDMA (Time Division Multiple Access) or CDMA (Code Division Multiple Access) access methods. The European GSM (Global System for Mobile communications) is a 2G digital system with its own TDMA access methods. The 2G digital services began appearing in the late 1980s, providing expanded capacity and unique services such as caller ID, call forwarding, and short messaging. A critical feature was seamless roaming, which lets subscribers move across provider boundaries.
- **3G systems** 3G has become an umbrella term to describe cellular data communications with a target data rate of 2 Mbits/sec. The ITU originally attempted to define 3G in its IMT-2000 (International Mobile Communications-2000) specification, which specified global wireless frequency ranges, data rates, and availability dates. However, a global

standard was difficult to implement due to different frequency allocations around the world and conflicting input. So, three operating modes were specified. According to Nokia, a 3G device will be a personal, mobile, multimedia communications device that supports speech, color pictures, and video, and various kinds of information content. Nokia's Web site (provides interesting information about 3G systems. There is some doubt that 3G systems will ever be able to deliver the bandwidth to support these features because bandwidth is shared. However, 3G systems will certainly support more phone calls per cell.

- **4G Systems** On the horizon are 4G systems that may become available even before 3G matures (3G is a confusing mix of standards). While 3G is important in boosting the number of wireless calls, 4G will offer true high-speed data services. 4G data rates will be in the 2-Mbit/sec to 156-Mbit/sec range, and possibly higher. 4G will also fully support IP. High data rates are due to advances in signal processors, new modulation techniques, and smart antennas that can focus signals directly at users. OFDM (orthogonal frequency division multiplexing) is one scheme that can provide very high wireless data rates. OFDM is described under its own heading.

The move to digital technologies opened up the wireless world. It improved capacity, reduced equipment costs, and allowed for the addition of new features. Reduced handset costs meant more people were vying for services and taxing systems. 3G systems add more capacity.

In addition, packet technologies were developed that use bandwidth more efficiently. The primary 1G and 2G digital systems are listed here.

- **Analog cellular** - These are the traditional analog systems such as AMPS and TACS that use frequency division multiplexing. An AMP operates in the 800-MHz range, while TACS operates in the 900-MHz frequency range.
- **Hybrid analog/digital cellular(usually called digital cellular)** - These systems are analog AMPS systems in which digitized voice and digital data is modulated onto the analog sine wave of the channel being used. They operate in the same 800-MHz range as analog AMPS and even use the same topology and equipment configuration (cells, towers, etc.). The access method may be either TDMA or CDMA, as discussed in the next section.
- **GSM (Global System for Mobile Communications)** - This is a second-generation mobile system designed from the ground up without trying to be backward compatible with older analog systems. GSM is popular in Europe and Asia, where it provides superior roaming ability among countries. It uses TDMA, but Europe is moving from this system into 3G systems based on a wideband form of CDMA. e-Marketer study putting U.S. retail sales through mobile devices at \$24.66 billion in 2012. In addition, mobile marketing through cell phones allows businesses to engage with their audiences in new ways. This can be especially effective for small businesses, giving them a cost-effective way to reach potential customers.

IV. POSITIVE IMPACT OF MOBILE COMMUNICATION ON SOCIETY

- **Relationships:**

Mobile communications have altered our relationships with family, spouses and close friends. But while they seem to promise a wider social network, more than half of the average person's calls and texts go to only four to six different people.

- **Health:**

Mobile communications significantly help to maintain physical and psychological health when family members move away from home. And they enable women to maintain three roles within the household, simultaneously being wives, mothers and wage earners.

- **Political participation:**

More mobile communications subscriptions are correlated with more democratic participation, less gender inequality and longer time spent in education. In all three areas, the impact of mobiles on social development indicators is stronger in developing countries.

- **Economic growth:**

Mobile technologies contribute significantly to GDP growth, with a forecast range of between 1.8% in the UK and 24.9% in Egypt over the years 2010-2020, compared with today's GDP. Again, the effects will be larger in developing countries. The effects of increasing mobile phone subscriptions on GDP growth across 10 countries are all positive for the years 2010 to 2020, forecast to grow continuously in this period.

Mobile phones enable new services and applications that provide opportunities to generate income. Furthermore, the access to information and increased communication through mobile communication facilitates coordination resulting in productivity gains. Mobiles also enable immediate responses to crises and shocks that without them may lead to destruction of crops or machinery.

V. EFFECTS OF MOBILE PHONE SUBSCRIPTION ON GROWTH

- **Mobile Commerce**

Cell Phones have become vital tools for consumers, allowing users to obtain information, search for discounts and purchase products directly from their devices. M-commerce is growing rapidly, with an e-Marketer study putting U.S. retail sales through mobile devices at \$24.66 billion in 2012. In addition, mobile marketing through cell phones allows businesses to engage with their audiences in new ways. This can be especially effective for small businesses, giving them a cost-effective way to reach potential customers.

- **Helps Speech Difficulties :** The text and instant messaging functions of cell phones can be used to help those who suffer from vocal communication problems. Some conditions, such as certain forms of autism or diseases of the vocal cords, leave individuals able to understand words but unable to vocalize them. Cell phones offer a portable and unobtrusive way to type what they want to say instead of having to say it aloud, with some phones also offering text-to-speech capabilities.
- **Keeping in Touch:** Cell phones make it easier than ever before to contact family and friends, especially for users who do a lot of traveling. No less than 65 percent of American adults believe that their cell phone makes it a lot easier to stay in touch with the people they care about, according to Pew Internet's 2012 survey. Cell phone-based services like SMS and instant messaging encourage communication between individuals through their convenience alone, allowing users to stay in more or less constant contact.
- **Emergency Use:** Keeping a cell phone on you allows you to make 911 calls immediately, with no need to waste time finding a phone to call from. The Federal Communications Commission estimates that 70 percent of 911 calls are made from mobile devices, and recognizes them as an important public safety tool. It has also developed a text-to-911 function, allowing users to request emergency assistance through text in certain circumstances.

VI. NEGATIVE IMPACT OF MOBILE COMMUNICATION ON SOCIETY

We are a culture distracted. I want to share a few examples of how communication technology is reshaping our culture, reshaping media, and reshaping productivity and identity.

1. Wastage of Time and Money

People are wasting lot of their time in sending unnecessary SMS (messages) to one another through their mobile phones. This is totally wastage of time and money.

2. Negative Effects On Students

Students do not give proper time to their studies and waste their time in playing games, listening music, watching videos and reading messages on their mobile phones.

3. Negative Effects On Teenagers

Parents are not aware about the activities of their children. Teenagers' boys and girls communicate each other through their mobile phones and do negative kind of activities. This is very dangerous and major negative impact of mobile phone on your society. Our new generation is totally destroyed by this negative aspect of mobile phones.

4. A Communication Tool For Criminal Purposes

Mobile phones now becoming a major communication tool for criminal's activities. People are using this fastest communication for terrorism and other kind of criminal activities. We must overcome these negative impacts of mobile phone use on our society otherwise our society and new generations will completely destroy.

5. Negative Effects of Mobile Phone Use On Our Health

Mobile phones especially poor quality mobile phones have great negative effects on our health. The radiations emerged from these mobile phones cause many serious health issues. According to a new research mobile phones are greatly contaminated with different types of microorganisms especially bacteria which cause a lot of diseases.

6. Negative Effects of Mobile Phone Use On Our Environment

Mobile phones use has dangerous effects on our environment including birds, mammals and pet animals. I observe these changes every day, and am beginning to see connections. Here are just a few examples of mobile phone use in everyday situations.

VII. EXAMPLES SHOWING NEGATIVE IMPACT

- 1) Employees texting or receiving phone calls while serving customers



- 2) Mail carriers making their way through Neighborhoods, while chatting on the phone:



- 3) Employees focusing on personal communications, not the environment around them::



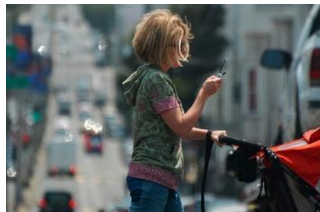
- 4) People on public transit occupied on mobile devices instead of reading newspapers, or even glancing at those around them:



- 5) Friends at a cafe focused on communicating with those who aren't at the table:



- 6) Walking and texting while crossing the street with a baby stroller:



- 7) Personal connections interrupted and reprioritized:



VII. IMPACT OF CELLULAR SYSTEMS ON BUSINESSES AND COMMUNITIES

1. Customer Service

Why worry about customers and strangers if you can be talking to your friend? Even when I go to my local food store, the person ringing me up may sneak text messages, and the guy collecting carts in the parking lot may be on his cell phone. As

this behavior becomes more normal, workers ask themselves: why ever be disconnected? Why put yourself in an unfamiliar situation? Why talk to a stranger (eg: customer) when you can talk to a friend? Why invest yourself in your job or anything where rewards come slowly?

This has a profound effect on customer service. Employees become less aware of needs of customers, less available and willing to help, more likely to make mistakes, and less likely to go the extra mile. A moment of downtime is no longer an opportunity to do extra work that benefits the company and their career – it becomes a moment to check in with friends and interests.

2. Your Company's Productivity

Moving outside of the retail environment, these same effects translate to the business environment. Employees are inundated with streams of information and communication. What's interesting is that some of them can even be considered business-related or quasi-business related.

Meetings that are supposed to be focused and quick with clear goals, might turn into a room of people sneaking a glance at their Blackberries, and diverting their focus to keeping up with other streams of information. Even if a company wanted to take a hard line with this issue, banning Facebook, Twitter or Blackberries isn't the solution. Employees might be connected to customers on Facebook, and use it as a loose customer relationship management tool. Twitter streams could be filled with information that shapes the goals and priorities of your brand. Twitter can also be a 24/7 marketing tool that becomes useless when relegated to specific times of use.

3. The Attention of Your Industry, Customers, and Potential Customers

What's more, companies have to realize that this is not just an internal struggle – these same behaviors are occurring with business partners and customers. A fragmentation of attention that affects not just productivity, but their awareness of messages you are targeting them with. You are just another of many streams of information in their life. Your products and services that they are using might see less attention, and over time, experience less appreciation. It may become a commodity in an increasingly busy life.

4.Events

Perhaps you host events for your industry, or are an active participant in those that exist already. While little else can replace an in-person connection, I am constantly seeing this benefit be re-prioritized by attendees. People can feel social and in-touch through their mobile device, giving an excuse to avoid those awkward social moments that remind us of the first day of school.

Why introduce yourself to the strangers sitting next to you at a lunch break, when you can reinforce your identity and comfort level by checking communication streams on your mobile device? Audiences watching speakers or panels are lit up like a Christmas tree, with people active on laptops and mobile devices. Absolutely, some are Twittering, taking notes, reporting and looking up associated information. But at less engaging sessions, you see people wander off to check other communication streams, do other work, and even play games.

From a speaker's perspective, they can be staring out at a sea of people looking down at their laptops and phones, never making eye contact, and rarely reacting. How can they clap if they are always typing?

5.Interpersonal Relationships

As companies work to develop teams and talent, it can be difficult to truly bring a group together that feels a sense of identity and a level of focus on the corporate goals exclusively. Clearly, people are focused on their jobs and the company they work for, but many companies operate in little silos, and now employees have the option to follow suit.

Networking opportunities can be easily found on their mobile device, not exclusively through company-sponsored programs, that include company-sponsored goals.

6. Information Overload

In May I talked about information streams and the stress that it can have on our lives. It is now possible to go into a store and find a stressed out sales person because he just got a text from his friend, his wife called twice, he's trying to keep up on baseball scores, and oh yeah, he has to deal with customers.

7. Loyalty

It could be argued that an employee who is connected to so many worlds never has to fully embrace a particular job or business. It's not that people will treat their careers flippantly, but you could find that there are fewer barriers that kept people aligned to one company.

It is easiest to see this with a group of teenage trainees at a fast food restaurant, each preferring to be doing other activities. But as these communication devices become more powerful, people's "other" lives follow them everywhere, making it easier and easier to never fully commit.

VIII. CONCLUSION

As we concludes that mobile communication is now social tool rather than technological tool instead of this there are negative impacts of it on society. But now a days it has become basic necessity for all of us.

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