

Survey of growth of Mobile Technology in computing sector

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Abstract: This paper presents the advantages and importance of mobile technology. Mobile Technology (MT) is very powerful in today's world and can become the backbone of the Indian economy. A rapid growth in mobile technology has satisfied the customer needs to a great extent but it is still developing to a great height which makes the people's life easier. The widespread adoption of mobile devices coupled with the powerful computational and communication capacity of compact and convenient mobile devices promises a fundamental shift in learning and knowledge work. Mobile learning requires an understanding of what mobile technology is and can be for learning.

Keywords: Wireless networks, mobile technology, learning, advantages, importance.

I. INTRODUCTION

The impact in technology in our lives, today, is immeasurable. We use technology every day, in different ways and we do it to harming up our lives or the society we live in. But what we are used to call modern technology, technically it is not as new as we think.

For instance, if we have a great Smartphone today we can figure out that it is just an advancement of an ordinary mobile phone that we had years ago. Or look at a train today – we used to use steam powered trains and now we have electronic trains – just to get faster to some place. The technology evolves, but it finds old ways and old technologies to evolve. We use technology every day, in order to fulfil specific tasks or specific interests. We have specific needs and we want to have faster technologies.

Also, Information Communication Technology (ICT) is a general expression for a variety of different computer, information and communication devices, applications, network and services. Communication Technology has become important in our daily lives. Both individuals and business use communication technology to get what they need. However, it also has its downsides. Communication technology in an organization involves things like Voice mail, Email, Teleconferences and Compressed video, GDSS (computer assisted decision making and Virtual reality. Technology is applied to the roles each individual fulfils during life. We use technology on a daily basis to accomplish specific tasks or interests. Modern Technology increases human capabilities and this technology has evolved with years. What used to work before, might not be working now, it must have got old or got replaced by modern technology. Let's look at a simple example in Transportation technology, this technology has evolved with years, we used to use steam powered trains now those have been replaced by electronic trains which move faster than steam trains.

Modern technology simplifies life in so many ways and everyone defines technology in their own way. To some people, it means complicated electronic devices. To others, it means the source of the radical changes that are happening in all phases of life. Others define technology as science applied to practical purposes. Some people fear to use technology while others see it as the source of longer and more complete lives.

Modern technology is simply an advancement of old technology, the impact of technology in modern life is immeasurable, we use technology in different ways and sometimes the way we implement various technologies ends up harming our lives or the society we leave in. What we call modern technology is technically not so new in most cases. For example, mobile phone technology has evolved with years, nowadays we use smart phones which have been an advancement of an ordinary mobile phone.

Mobile technology is the technology used for cellular communication. Mobile code division multiple access (CDMA) technology has evolved rapidly over the past few years. Since the start of this millennium, a standard mobile device has gone from being no more than a simple two-way pager to being a mobile phone, GPS navigation device, an embedded web browser and instant messaging client, and a handheld game console. Many experts argue that the future of computer technology rests in mobile computing with wireless networking. Mobile computing by way of tablet computers is becoming more popular. The most popular tablet at the moment is the iPad, by Apple. Since the mid 1990's the cellular communication industry has witnessed explosive growth.

Mobile technologies have transformed the way we live, work, learn, travel, shop, and stay connected. Not even the industrial revolution created such a swift and radical explosion in technological innovation and economic growth worldwide. Nearly all fundamental human pursuits have been touched, if not revolutionized, by mobile. In less than 15 years, 3G and 4G technologies have reached 3 billion subscriptions, according to Ericsson, making mobile the most rapidly adopted consumer technology in history.

Just as the rise of the Internet in the late 1990s was marked by explosive growth and aggressive innovation, the shift toward mobile is reshaping the economic landscape once again. Mobile is not just an industry in and of itself. It is also the foundation upon which an impressive array of industries—new and old—have taken root and flourished.

II. MOBILE TECHNOLOGY HIERARCHY

The transformative effect of mobile has been made possible by an enormous investment from a myriad of players within the digital space: innovators for the core communications technologies, component designers and manufacturers, original equipment manufacturers (OEMs), infrastructure suppliers, mobile network operators, content providers, mobile app developers, and device retailers. The mobile value chain spans continents, binding together key players in a manner that is at once deeply collaborative and fiercely competitive. And the value chain for mobile technologies is only becoming more international as countries such as India, China, and Brazil begin to take broader roles in technology innovation, device manufacturing and application development.

Each generation of mobile technologies takes years of fundamental research to develop in international standards-setting bodies, with the complexity of requirements increasing monumentally for each new generation. These enormous investments have been fuelled by policies and frameworks that incentivize innovation—including strong patent protection, licensing models that provide wide access to core technologies, and industry-driven standards. The development of technology standards, in particular, has driven the mobile industry forward. Companies across the mobile value chain need a solid foundation upon which they can implement new or upgraded products and solutions, whether they are designing compatible components, rolling out expensive infrastructure, or developing new content, apps, or services. By defining an industry standard and making it widely available through licensing, mobile players can develop infrastructure, products, and services with confidence that the core technologies are stable and universally accessible. This reduces risks associated with capital investments, so mobile companies can scale up faster, which in turn boosts consumer adoption and usage.

- 4G technologies have enabled a 12,000-time improvement in capacity relative to 2G, with maximum download speeds of 250 megabits per second (Mbps), as opposed to 20 kilobits per second (Kbps) for 2G.
- The cost of network infrastructure per megabyte fell 95 percent from 2G to 3G, and 67 percent from 3G to 4G.
- The global average cost of mobile subscriptions relative to maximum data speed has decreased 99 percent or about 40 percent annually between 2005 and 2013.

Smartphones have become much more affordable. Approximately 30 percent of all units sold cost less than \$100, and some sell for as little as \$40, according to International Data Corporation (IDC). These falling prices have encouraged usage to shift from a limited pool of luxury consumers to billions of mainstream users. This robust growth in bandwidth, combined with falling costs, has spurred extensive follow-on innovations, resulting in the tremendous variety of new entrants and applications that exist today.

Mobile technology undoubtedly has a transformational role in today's economy, and indeed in my short-term memory span. With innovators like these making it easier than ever to help each other, I'm more than happy to take part in this mobile-powered economic revolution. Consumer cost of data per Mb relative to data consumption versus data speed has been shown in figure 1.

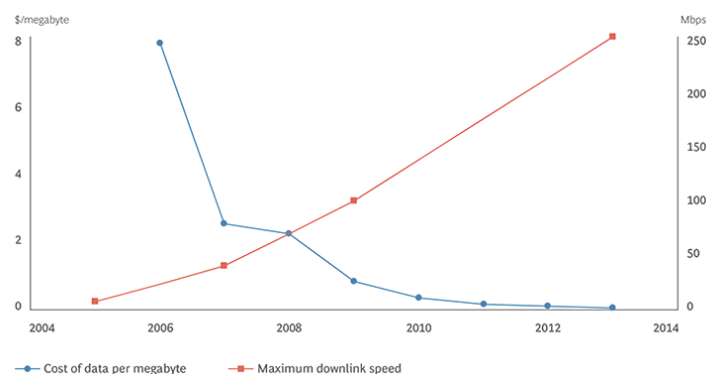


Figure 1: Consumer cost of data per Mb relative to data consumption versus data speed

First Generation Technology

The first commercially automated cellular network (the 1G generations) was launched in Japan by NTT (Nippon Telegraph and Telephone) in 1979, initially in the metropolitan area of Tokyo. Within five years, the NTT network had been expanded to cover the whole population of Japan and became the first nationwide 1G network. In 1981, this was followed by the simultaneous launch of the Nordic Mobile Telephone (NMT) system in Denmark, Finland, Norway and Sweden. NMT was the first mobile phone network featuring international roaming. The first 1G network launched in the USA was Chicago-based Ameritech in 1983 using the Motorola DynaTAC mobile phone. Several countries then followed in the early-to-midby 2G digital telecommunications. The main difference between two succeeding mobile telephone systems, 1G and 2G, is that the radio signals that 1G networks use are analog, while 2G networks are digital. Although both systems use digital signalling to connect the radio towers (which listen to the handsets) to the rest of the telephone system, the voice itself during a call is encoded to digital signals in 2G whereas 1G is only modulated to higher frequency, typically 150 MHz and up.

2G Technology

2G (or 2-G) is short for second-generation wireless telephone technology. Second generation 2G cellular telecom networks were commercially launched on the GSM standard in 1991. Three primary benefits of 2G networks over their predecessors were that phone conversations were digitally encrypted; 2G systems were significantly more efficient on the spectrum allowing for far greater mobile phone penetration levels; and 2G introduced data services for mobile, starting with SMS text messages. After 2G was launched, the previous mobile telephone systems were retrospectively dubbed 1G. While radio signals on 1G networks are analog, radio signals on 2G networks are digital. Both systems use digital signalling to connect the radio towers (which listen to the handsets) to the rest of the telephone system.

3G Technology

3G technology is the result of ground-breaking research and development work carried out by the International Telecommunication Union (ITU) in the early 1980s. 3G specifications and standards were developed after fifteen years of persistence and hard work. The technical specifications were made available to the public under the name IMT-2000. The communication spectrum between 400 MHz to 3 GHz was allocated for 3G. Both the government and communication companies unanimously approved the 3G standard. The first pre-commercial 3G network was launched by NTT DoCoMo in Japan in 1998, branded as FOMA. It was first available in May 2001 as a pre-release (test) of W-CDMA technology. The first commercial launch of 3G was also by NTT DoCoMo in Japan on 1 October 2001, although it was initially somewhat limited in scope; broader availability of the system was delayed by apparent concerns over its reliability. 3G, short for 3rd Generation, is a term used to represent the 3rd generation of mobile telecommunications technology. This is a set of standards used for mobile devices and mobile telecommunication services and networks that comply with the International Mobile Telecommunications-2000 (IMT-2000) specifications by the International Telecommunication Union. 3G finds application in wireless voice telephony, mobile Internet access, fixed wireless Internet access, video calls and mobile TV.

4G Technology

The 4G (fourth generation) of mobile phone mobile communications is a successor of the third generation (3G) standards. A 4G system provides mobile ultra-broadband Internet access, for example to laptops with USB wireless modems, to smart phones, and to other mobile devices. Conceivable applications include amended mobile web access, IP telephony, gaming services, high-definition mobile TV, video conferencing and 3D television. Recently, Android and Windows-enabled cellular devices have fallen in the 4G category. One base advantage of 4G is that it can at any point of travelling time provide an internet data transfer rate higher than any existing cellular services (excluding broadband and Wi-Fi connections). Two 4G candidate systems are commercially deployed: the Mobile WiMAX+ standard (at first in South Korea in 2006), and the first-release Long Term Evolution (LTE) standard (in Scandinavia since 2009). It has however been debated if these first-release versions should be considered as 4G or not.

III. ADVANTAGES OF MOBILE TECHNOLOGY

Generally, utilities find the use of mobile technology and a data collection application solves the problems presented by

paper forms and manual data entry. Mobile technology programs are simple and easy to learn, and due to the time and money they save through increased efficiencies, the initial startup costs quickly pay for themselves.

We have found that where mobile technology is employed, less time is spent collecting and entering data and more time is focused on process efficiencies. Some of the advantages are discussed here:

IT has not only brought the world closer together, but it has allowed the world's economy to become a single interdependentsystem. This means that we can not only share information quickly and efficiently, but we can also bring down barriers of linguistic and geographic boundaries. The world has developed into a global village due to the help of information technology allowing countries like Chile and Japan who are not only separated by distance but also by language to sharesideas and information with each other.

With the help of information technology, communication has also become cheaper, quicker, and more efficient. We can now communicate with anyone around the globe by simply text messaging them or sending them an email for an almost instantaneous response. The internet has also opened up face to face direct communication from different parts of the world thanks to the helps of video conferencing.

IT has made it possible for businesses to be open 24 x7 all over the globe. This means that a business can be open anytime anywhere, making purchases from different countries easier and more convenient. It also means that you can have your goods delivered right to your doorstep with having to move a single muscle.

Probably the best advantage of information technology is the creation of new and interesting jobs. Computer programmers, Systems analyzers, Hardware and Software developers and Web designers are just some of the many new employment opportunities created with the help of IT.

Information technology has helped to computerize the business process thus streamlining businesses to make them extremely cost effective money making machines. This in turn increases productivity which ultimately gives rise to profits that means better pay and less strenuous working conditions.

Information technology has helped to bridge the cultural gap by helping people from different cultures to communicate with one another, and allow for the exchange of views and ideas, thus increasing awareness and reducing prejudice.

Used in the business environment, mobile phones, if used to their full potential, are a valuable tool offering significant business benefits. Nearly all business people today use their business mobiles to stay in touch with their offices, customers, staff, partners and suppliers. However, the potential of mobile phone usage extends beyond the ability to make and receive calls anywhere at any time.

With a mobile application, data can be immediately validated in the field with notifications if or when an entry falls outside the normal or expected range. In addition, since real-time data is instantly uploaded, managers can be alerted when new information is available or action needs to be taken. Notifications can also be set to send text messages and emails alerting staff when, for example, chemical supplies are low or a permit violation has occurred.

CONCLUSION

The growth of cloud computing has impacted positively on the mobile technology, supporting more flexible working practices by providing services over the internet. Many business requirements are going to vary enormously. Whereas for some, mobile technology will be central to their working life and essential to allow them to work as normal whilst away from the office, having access to the internet, email and business documents. More specifically, mobile technologies may give some employees increased autonomy, which can result in their feeling more trusted and valued within the organization. This validation can be just as powerful as productivity gains.

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