

TELECOM REGULATION: IMPACT OF BIO-METRIC SIM VERIFICATION ON TELECOM ECONOMY AND USER GROWTH IN PAKISTAN

Shazia Abbasi¹, Faheem yar khuhawar², Khalil-ur-rehman Khumbhati¹,
and Quratulain Khuhawar¹

¹IICT, University of Sindh, Jamshoro, Pakistan

²Departments of Telecommunication, MUET, Jamshoro, Sindh, Pakistan

Corresponding author E-mail: shazia.abbasi@usindh.edu.pk

ABSTRACT: *The Telecommunication industry is one of the most growing and promising industry in Pakistan. The dramatic increase in the number of users from 0.27 million to 139.97 million in 15 years from 1999 to 2014 has shown rapid growth in Asian telecom market. Almost every 1 in 5 people own a cell phone across the country. One of the core reasons for such a quick adaptation being competitive prices and multitude of services being offered by diverse telecom service providers. Subscriber Identification Module (SIM) cards went inexpensive, and users started using multiple SIMs due to off-peak/promotion timings. In 2015, the biggest regulatory change like Biometric Verification heavily affected the telecom industry. As a result of this, more than 25.5 million SIMs were found unverified and then blocked. Hence, the telecom industry was badly affected due to the blockage of this huge number of SIMs. This paper aims to investigate and understand the impact of biometric verification system on telecom industry from various perspectives such as economical and user expansion of cellular industry in the last two decades. It also aims to evaluate the impact of the new policy on various other sectors (i.e. Foreign Direct Investment (FDI), Tele-density, Telecom Revenue, etc.) and various critical aspects associated to the future of the Telecommunication Industry.*

Keywords: Cellular, biometric, SIM, economy, Tele-density.

INTRODUCTION

The telecom regulation is being considered as a barrier to development, proper regulatory structure, capability, resource utilizing, economic impact and security (Guasch & Hahn, 1999). However, cellular subscription and penetration has exponentially raised due to easy and supportive regulations in Pakistan. Pakistan Telecommunication Authority (PTA) introduced some fundamental steps in collaboration with National Database and Registration Authority (NADRA) to regulate a secure and verified procedure for the registration of active and new SIMs in 2015. All pervious mobile connections were authenticated through biometric identification of subscriber, whereas new SIMs could be purchased or registered after comparison and verification of subscriber's fingerprint with the record of NADRA (Sultana, 2014). According to PTA, 114.7 million SIMs were biometrically verified out of 140 million registered SIMs and the rest of 25.5 million SIMs were blocked. Majority of blocked SIMs had Multi-SIM ownership. Averagely 1.8 SIM cards per subscriber are issued according to global economy report of Global System for Mobile Association (GSMA). This rate varies from region to region, and is rated high in developing countries. Multi-SIM ownership has been one of the reasons for the introduction for Bio-metric SIM verification process.

This work aims to investigate the reasons behind the use Biometric SIM Verification (BSV) and its impact on telecom economy. Moreover, the work focuses on the revenue generated by Foreign Development Investment (FDI), user density and user penetration in response to regulatory actions. In this paper, single case study approach is adopted for data collection. Whereas, the documentation technique is employed and through this, a variety of published material of Pakistan Telecommunication Authority (PTA) is analyzed. A significant data for the current study has been taken from the official site of telecom authority body of Pakistan (pta.gov.pk, 2016). The collected data being reviewed is from the year of 2004 to 2015.

The paper is organized as follows. Section 0 describes the evolution of cellular technologies in Pakistan. Discussion about cellular market and user growth rates in Pakistan are described in Section **Error! Reference source not found.** and **Error! Reference source not found.** Finally, the conclusion is drawn in Section **Error! Reference source not found.**

EVOLUTION OF CELLULAR TECHNOLOGIES IN PAKISTAN

According to global economy report of 2015 by Global System for Mobile Association (GSMA), almost 800 mobile operators in support of 250 companies are working worldwide. Five major cellular companies namely *Mobilink*, *Ufone*, *Warid*, and *Zong* provide cellular services in Pakistan. In 1990s, cellular services were introduced in Pakistan by *Paktel* and *Instaphone* (Alam & Naseem, 2015) with Advanced Mobile Phone Service (AMPS) technology. Later, *Mobilink* starts Global System for Mobile (GSM) services in 1992 with 2G (Jafri, 2012).

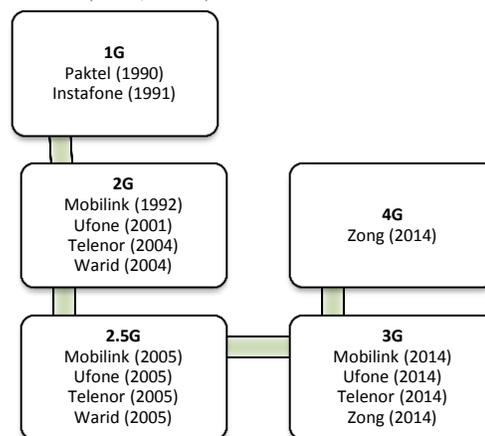


Figure 1. Evolution of Cellular Technology in Pakistan

In 2001, *Ufone* and then in 2004 the *Telenor* and *Warid* introduce same services in Pakistan. These service providers

upgraded their systems from 2G to 2.5G to add basic internet connectivity services such as General Packet Radio Service (GPRS) (Gu & Peng, 2010).

Almost after a gap of decade, cellular sector made the move to Next General Mobile Services (NGMS) in 2014. Licenses of 3G and 4G spectrum were issued to different cellular companies. As a result of this, Zong got licenses for both 3G and 4G. whereas, Mobilink, Ufone and Telenor got the licenses for 3G (Asmat & Ullah, 2015).

Rapid advancement of technology and growing number of subscribers in telecom sector play a vital role in the development of economy. Whereas, the liberation and regulation process by telecom authority opens the road to local and foreign investors in support of country's economy. According to PTA, telecom economy is basically driven by three parameters: revenue, investment and FDI

TELECOM REVENUE

Telecom sector has significant contribution towards country's revenue. Hence, growth of telecom economy proportionally contributes towards the development of telecom industry (Humborstad, 2015). **Figure 1** shows the telecom as well as cellular revenue of last 12 years. The results show an increasing trend in revenue and economy up to the year 2013-2014. However, the telecom revenue falls by 14 billion first time in history to reach 449.6 billion in 2014-2015. This year, the revenue has declined by 5 billion. The **Figure 1** highlights that every year cellular economy turns up to almost 50% of total revenue. Whereas in the year 2014-2015, it turns up to 35% of total revenue.

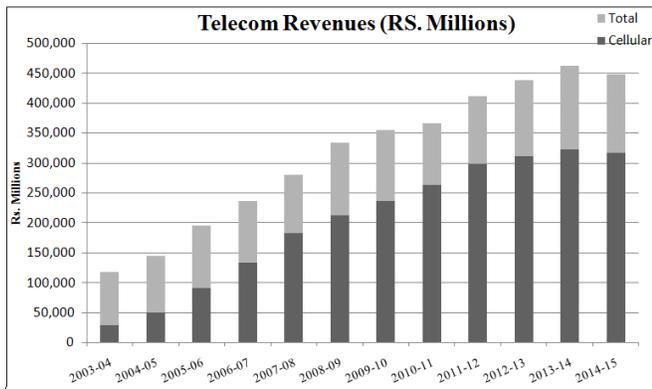


Figure 1. Distribution of Telecom Revenue of Pakistan

TELECOM INVESTMENT

Pakistan has fully liberalized investment policies for telecom sector (Shakeel, Khan, & Malik, 2012). Under these policies foreign investors are permitted to deal with all 100% shares in the telecom sector. **Figure 2** shows telecom as well as cellular investment for last 12 years. The year 2006-2007 was the golden year from the investment point of view, and after that year progressively, the cellular investment covers the major portion of total investment. The results of last four years show that the cellular investment is about 90% of total telecom investment.

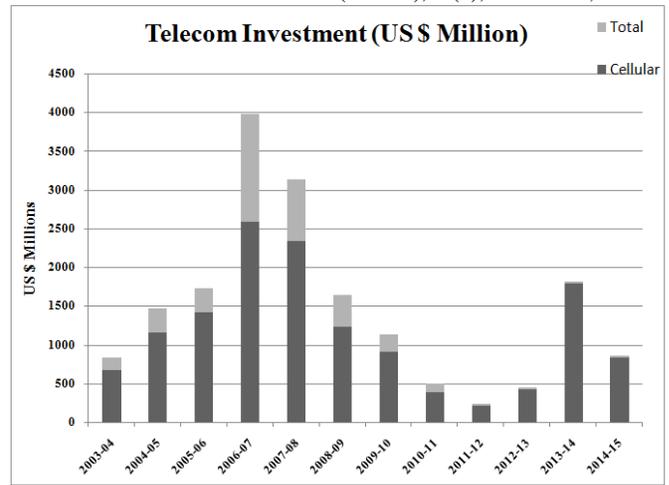


Figure 2. Distribution of Telecom Investment in Pakistan

FDI IN TELECOM SECTOR

In 2014, government investment policies were relaxed and allowed for foreign investors in the field of telecommunication. These actions as well as the liberalization and privatization of telecom sector enhanced the Foreign Direct Investment (FDI) of the country. The statistics of FDI in Pakistan are shown in **Figure 3**. According to statistics, FDI in Pakistan showed increasing trend from the year 2002 to the year 2008. However, there was sudden decline in the following years. One of the reasons being no any sort of progressive work was done during those years. The sudden noticeable increase ($\approx 40\%$) of FDI during year 2013-2015 was due to bidding and allotment of 3G and 4G licenses

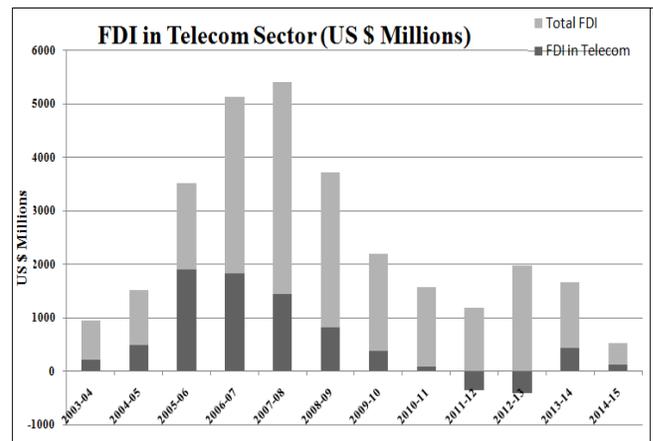


Figure 3. Distribution of FDI in Telecom Sector of Pakistan (Courtesy State Bank of Pakistan)

CELLULAR USER GROWTH

Cellular users are mainly identified in the terms Tele-density (*penetration rate*) and subscriber numbers.

TELE-DENSITY

Tele-density or sometimes known as penetration rate is identified by number of connections of service for every hundred customers or people in an area. Cellular sector has almost 90% contribution in total telecom Tele-density in Pakistan (Shahid, Shou-lian, & Liu, 2007). Looking at the statistics shown in Figure 4, the most booming year for cellular sector was 2005-2006 as the cellular Tele-density reached record high of 22.21%, nearly thrice as compared to its previous year's Tele-density of 8.3%. Interestingly, it is observed that the introduction of 3G and 4G spectrum has not produced a strong impact on the growth of cellular Tele-density. Moreover, a decline of 2.9% is observed during the year 2013 to 2015, which is the year of Biometric SIM verification. Analyzing further, we observe that the penetration rate was 60.7 during the year 2014-2015, which means around 61 people out of 100 have cellular connection. Comparing this rate with the previous year, we observe a reduction of 15.8%, which means around 16 SIMs were blocked from every 100 SIMs.

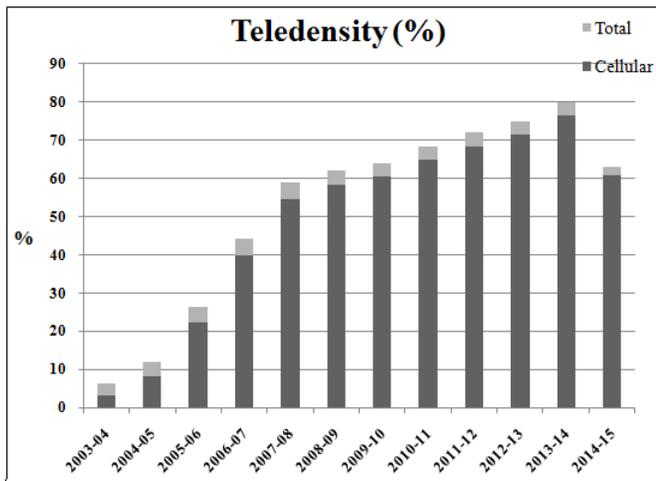


Figure 4. Distribution of Tele-density in Pakistan

SUBSCRIBERS NUMBERS

Cellular subscription is the number of total subscribers or SIMs registered in Pakistan. According to statistics shown in Figure 5, there is almost exponential increase in the growth rate of cellular subscribers between the year 2003 and 2007. Thereafter, the growth rate of subscribers gradually decreases year by year. In the year 2014-2015, after biometric verification, there were around 114.7 million subscribers registered in Pakistan.

This quantity was 140 million in the year 2013-2014. About 25.5 million subscribers were made inactive due to regulatory act.

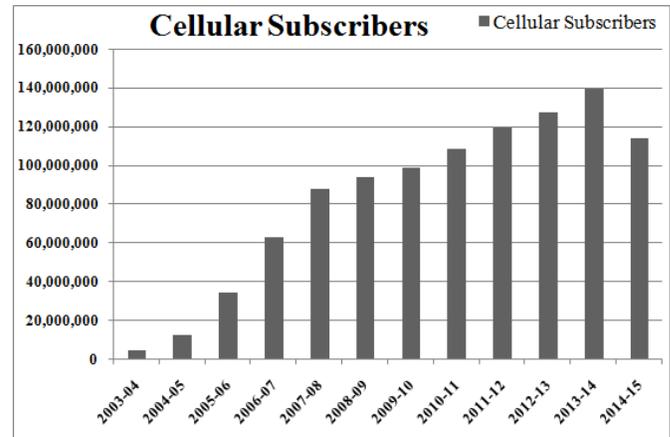


Figure 5. Distribution of Cellular Subscribers in Pakistan

CONCLUSION

After a blooming year of 2013-2014, the telecom sector was expected to expand its market in forth coming future as 3G and 4G spectrums were in market. However, the biometric SIM verification process made it hard for the cellular sector to develop in Pakistan. Not only the country faced the additional expenditures to implement biometric verification process but a loss of 25.5 million subscriber's SIMs. As a result, the cellular economy and subscriber penetration went down in 2014-15. The statistical analysis show that the telecom economy and user growth were highly affected due to blocked SIMs as they were part of multi-SIM ownership per user. However, deterioration of telecom economy is also due to infrastructure development for the technology migration. In upcoming year, it is expected to see increase in telecom economy due to the adaptation of new technologies.

REFERENCES

- [1] Guasch, J. Luis, and Robert W. Hahn. "The costs and benefits of regulation: implications for developing countries." *The World Bank Research Observer* 14(1), pp: 137-158.1999
- [2] Sultana, Rasheda. "Mobile Financial Services (MFS) Business and Regulations: Evolution in South Asian Markets." *Available at SSRN 2524220*(2014).
- [3] Information and Verification system. Pakistan Telecommunication Authority: <http://www.pta.gov.pk/668/index.html>
- [4] Alam, Naveed, and Adil Naseem. "A technological survey of Telecommunication services in Pakistan", *Science International Journal, Lahore*. 27(1), pp. 181-184, 2015
- [5] Jafri, Sabina Khurram. "3G Mobile Spectrum-Issues & Prospects." *SBP Research Bulletin* (1), pp: 53-62, 2012.

- [6] Gu, G., & Peng, G. "The survey of GSM wireless communication system", In *Computer and Information Application*, (ICCIA), IEEE International Conference, pp:121-124, 2010
- [7] Asmat Hamid, and Sultan Ullah. "The Impact of Existing and Future Mobile Technologies on Pakistan: A Survey." *International Journal of Future Computer and Communication* 4(4), pp. 254-257, 2015.
- [8] Humborstad, Kim Kristian. "How governments are creating the business case for biometrics." *Biometric Technology Today*, vol 7 pp: 9-11, 2015.
- [9] Shakeel, M., Khan, R.A.G. and Haniya Rehman Malik, D., "Telecommunications Role in Economic Growth with Respect to Pakistan" .*Global Journal of Management And Business Research*, 12(19), 2012.
- [10] Shahid, Muhammad Khalil, Tang Shou-lian, and Chunmei Liu. "Competition and liberalization policies and regulations for telecommunications industries in China and Pakistan: A comparative analysis." *International Journal of Management Science and Engineering Management*. 2(4), pp: 268-277, 2007.