

SIM CARDS FUNCTIONS AND POSITIVE IMPACT ON NIGERIAN ECONOMY

by

¹ Olawuyi, Oluseye M.

² Olawuyi, Oluwasanjo J.

¹School of General Studies, AIFCE, Owerri

²School of Science and Industrial Technology, Abia State Polytechnic, Aba

Abstract

In this jet age, it is unfathomable to imagine modern life without mobile technologies. One of the most important components of these information communication technologies is the SIM subscriber identification module', an integrated circuit specially created for storing the international mobile subscriber identity – IMSI. SIM cards are used on various devices like mobile/satellite phones, cameras, computers, etc. Further miniaturization has been carried out on SIM cards over the years; it gathers and stores network specific information to identify a subscriber. Some of the blessings are in Job creation and employment, where many people are self-reliant. Some have also learnt the technical aspect of repairing and fixing mobile phones in their repair shops. Sales of GSM phones and its accessories are big business. Examination bodies, automotive, entertainment, educational institutions, media houses, and government agencies have also employed this technology. Socially, we have benefited in the corporate social responsibility of the service providers and phone companies. Relationships with friends, associates, relatives and loved ones are kept alive through phone calls, investors are showing interest in Nigeria because of the rapid increase and return on investments.

Keywords: Subscriber Identification Module (SIM), Nigeria & Economy

Meaning of SIM card:

It is impossible to imagine modern life without mobile technologies; one of the most important parts of these information communication technologies is the SIM.

The SIM stands for 'subscriber identification module'. It is an integrated circuit specially created for storing the international mobile subscriber identity

(IMSI), and is used to identify the owner/holder of a mobile device. SIM cards are used on various devices like mobile/satellite phones, cameras, computers, etc.



Figure 1: Sizes of different sim cards

The SIM card cannot work without a universal integrated circuit card (UICC). The first UICC physical smart cards were the size of a bank card which have changed and has become way smaller over time. Presently, every SIM card contains the following information on it: integrated circuit card identifier (ICCID); international mobile subscriber identity (IMSI); Ciphering information; Security authentication; Local network information; List of services for a user; Personal identification number (PIN); Personal unblocking code. The design of the SIM card has also been changed since its creation. There are currently three different operating voltages of SIM card: 5V; 3V; 1.8V. Majority of SIM cards had an operating voltage of 5V as at 1998 but as at today, the modern cards can support any voltage. All SIM cards allow applications to load even if a subscriber is using the SIM; this is made possible with the SIM application toolkit which is initially specified by 3GPP. The toolkit application helps the SIM to hold its specialization. The SIM toolkit application was written in a native code using the proprietary APIs. SIM cards have been made smaller over the years. The full-sized formats could be either Mini or Nano.

Full-Size SIM

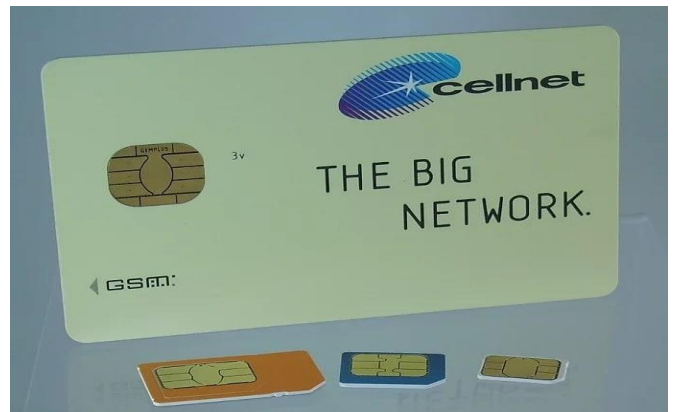


Figure 2: Full size sim

The first full-size SIM was in size of a standard credit card. It was a big challenge for the first mobile users to maintain this SIM card. Eventually, it was changed to much smaller SIM cards.

The Mini SIM was supplied with a full-size card carrier. This trick was made to enable the use of Mini SIMs in devices made to work with full SIM cards.

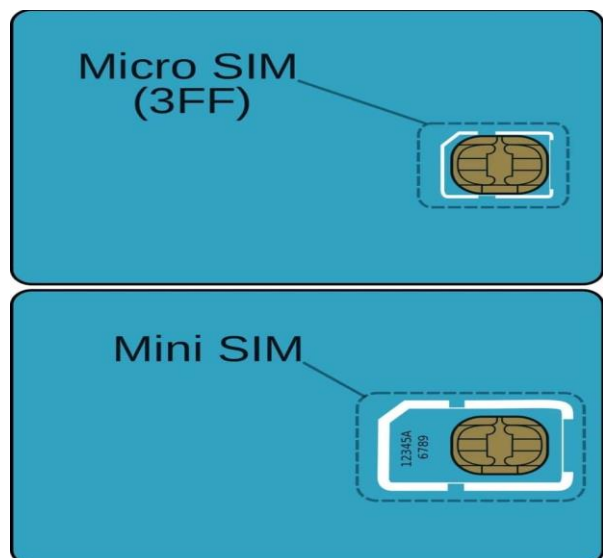


Figure 3: Micro and Mini Sims

Micro Sim

The next generation of SIM cards had the same thickness as the previous one, but it was reduced in length and width. It is now the most used SIM card all over the world. It was first introduced by the European Telecommunications Standards Institute. The size of the card was chosen to fit the devices that can't work with any other card. The micro-SIM was also designed for the backward compatibility which was a major issue with Mini SIM.



Figure 4: Sim Card Nano

This type of SIM card was introduced in October 2012, after which various mobile telecommunication companies started to make devices compatible with it. The Nano SIM are really small. The first mobile phone that could use a Nano SIM card was the iPhone 5. Multi-SIM Devices It is possible to use several SIM cards with one device. Developing countries are the biggest markets for the multiple SIM cards devices. Nevertheless, the competition is the source of progress! International SIM card as it was mentioned earlier, every SIM card is identified by the International Mobile Subscriber Identity or IMSI. Mobile operators use this information to communicate with each other. It is a very simple code that is used internationally. The format of every mobile phone number consists of these characteristics: The mobile country code always makes up the first three digits of every mobile number, the following two digits represent Mobile Network Code and however, it can also be a

three-digit code as obtained in the USA and Canada. The resulting digits are the mobile subscriber identification number or MSIN. It is usually an 11-digit number, but some countries allow up to 15 digits.

Data in SIM

Most SIM cards store SMS data and phone in book contacts. It usually stores the numbers in simple pairs – name and number. The SIM cards can usually store up to 250 numbers and it is not possible to store several numbers for one contact in a SIM, usually it breaks them into several contacts with the same name. Every SIM card gathers and stores network specific information to identify a subscriber. The most important information gathered are: Operator Specific Emergency Number; Local Area Identity; Authentication Key; IMSI; ICCID. Nevertheless, every SIM card also carries information, like: Value Added Service; Advice of Charge parameters; Service Dialling Number; Service Provider Name; Short Message Service Centre. SIM cards come in various data capacities. The minimum data storage for a SIM card is 8 KB while the maximum can be up to 256 KB, which is more than enough room for 250 contacts.

Gsm in Nigeria

The Global Systems for Mobile Communications (GSM) is approximately 20 years in Nigeria. The mobile system was introduced into the Nigerian market and society precisely on 6th August, 2001. That was in the third year of former President Olusegun Obasanjo's first term. The arrival of GSM in the country brought an abrupt or progressive end to the problematic and highly criticized services of the Nigerian Telecommunications Limited (NITEL), that then maintained monopoly over Nigeria's telecommunications and data services. Right from inception, it was apparent that the new wave of wireless communications held better services, opportunities and promises for Nigerians who were already soaked in

complaints of poor services typical of Nigeria's public utility, corruption and lack of functional modalities to reverse the situation. The introduction of GSM in Nigeria was therefore consequent upon the deregulation of the telecomm sector against all manner of controversies, bureaucratic bottle-necks, politics, fears and expectations.

Arguably, ECONET Wireless is said to be the first network provider that made the first live call using GSM in the country on June 8, 2001. It was shortly followed by MTN that came on May 16, 2001 but began operations in August of the same year. Only three companies were initially licensed by the Nigerian government, namely Econet Wireless, MTN, and MTEL. Lagos first enjoyed GSM services, followed by Abuja, then Port Harcourt. The new call-networks were launched under the 900 and 1800 MHz spectrum, which calls made at N50 per minute as there was no per second billing system until when Mike Adenuga's Globacom Nigeria Limited ventured into the market in 2003.

The Impact of GSM Mobile Phones on Nigerians

Looking back to what life used to be for all of us before the GSM evolution in Nigeria; it gives one a clear understanding of the positive impact GSM has on Nigerians. The way we used to communicate and do businesses have changed tremendously, the life of the common people has also been touched in different ways, it cuts across every facet of life, which is why we feel delighted to talk about some of the gains of the industry though it is not yet complaint free.



Figure 6: Picture of prospective customer at MTN Boot

Some of the blessings of mobile communication in Nigeria have been directly or indirectly on the populace, the corporate world, business world, and the society at large. Job creation and employment is one of the good things that GSM brought to us, the sector is the highest sector that has employed both skilled and unskilled manpower in recent times. A great number of people especially the young graduates have been given employment in the GSM companies where they make a living and are useful to their families.

Apart from this direct employment, jobs have been created where many people are self-reliant doing their own GSM businesses. One of such business is making of calls and the sale of recharge cards to GSM users. This business is popularly known as business centres or call centres.

Looking around the cities, towns and even villages, one will hardly walk about two poles without seeing a business centre mainly characterized by the use of umbrellas, kiosks and even shops painted with the colours of the mobile service providers. It is easy to start because it requires little start-up capital, in fact all you need is your umbrella as a shade, a stool, a

table and your handset loaded with calling credit of any amount say ₦1000, and you have started. This has provided a means of livelihood for many people who would have been unemployed; some have also learnt the technical aspect of the business by repairing and fixing of mobile phones in their repair shops.

Sales of GSM phones and its accessories are big business, it is also very profitable here in Nigeria, and we consider it the biggest gain of this revolution. It has really provided affluence for many who are in the business big time. The return on investment is superb. Having the statistics that over 16 million handsets have been sold so far, 32.2 million mobile lines in Nigeria now, with the number of mobile lines increasing to 43 million within the first part of the year and a projection of about 76 million mobile lines come 2011 (Chindo, 2003). All these are indicators of how the market is and where it is going. Many people have actually tapped into this boom. This business is very lucrative. If you have ever visited the Computer Village, Ikeja Lagos, You will understand the veracity of the statistics and research given above, the market is said to be the largest phone market in Africa.

The impact is also felt in the way businesses are being done these days, it has reduced the risk and cost of traveling long distances, since one can be in his house and actually attain to the business using his mobile phone. It has made all of us ubiquitous. Businesses are being done nowadays at the speed of thought like Bill Gates envisaged.

Cooperate Organizations like the banks for example; have integrated GSM technology into banking operations known as Mobile banking where a customer has full access to his or her account using the mobile phone or device. Examination bodies and educational institutions have also employed this technology too where candidates check their

results on their mobile phones, the internet can also be accessed from the mobile phone and other value added services like picture messaging, music downloads etc., giving the users a beautiful experience.

Socially, we have benefited in the corporate social responsibility of the service providers and phone companies. Some have provided educational facilities, AIDS campaign awareness, ICT labs, Hospitals and sponsorship of several events, one of such events is the Globacom (one of the service providers in Nigeria) Premiership League where huge amount of money is set aside for the development of Nigeria football. Many individuals have also benefited from these companies by being their ambassadors.

Our social life has also been impacted on, relationships with friends, relatives and loved ones are kept alive through phones calls, we have personally benefited from the mid night free calls being offered by MTN, we have good time to talk to my friends and loved ones. We know you have actually benefited too, feel free to share your experiences on here.

More investors are showing interest in Nigeria because of the rapid increase and return on investments, with the recent issuing of 3G licenses to four telecoms companies, more benefits are on the way for GSM users in Nigeria.

Having pointed out some of the successes being recorded in the lives of the people, it is also pertinent to say that we expect quality service at a more reduced cost, good regulation in the sector and healthy competition that will bring the needed benefits for Nigeria and Nigerians, we do hope this happens soon.

Battling new challenges of expansion: 19 years after GSM revolution

Telecommunications revolution is daily transforming the Nigerian society in diverse ways since the dawn of the new millennium. A breakthrough in telephone infrastructure emerged in January 2001 when the sector was totally liberalised with the licencing of MTN and ECONET, now Airtel. Both operators injected over a million lines within a year before Globacom came into existence two years later.

The journey to GSM spread begun in earnest in a fashion never anticipated from state to state and city to city. The introduction of ubiquitous mobile phones for chatting and messaging further ignited the revolution. The new era was all that was needed to end the monopoly of the Nigerian Telecommunication Limited (NITEL), which was the lord of the Manor for decades on the fixed line turf. Mobile phones became the veritable tools to bridge the existing digital divide.

From 450,000 telephone lines to over 150 million active connections

August 8, 2001 marked the commercial launch of GSM operations in Nigeria. Though the journey actually started in January of the same year with the Digital Mobile Licence (DML) auctions, conducted by the then Dr. Ernest Ndukwe-led Nigerian Communications Commission (NCC) during the regime of President Olusegun Obasanjo. The auction produced Econet, now Airtel and MTN, after they successfully paid \$285 million each to procure the facility.

Prior to the era, Nigeria had 450,000 telephone lines, with government owning about 50 per cent of it. But today, investment in the industry is in the region of \$70 billion with more operators, including Etisalat that joined the fray in 2009. Etisalat has since metamorphosed into 9Mobile.

Nigeria has no doubt grown phenomenally ever since. It is in this light that the chairman of the Association of Licensed Telecommunication Operators of Nigeria (ALTON), Gbenga Adebayo, tagged the industry as the only surviving sector of the country's economy. The Executive Vice Chairman of the NCC, Prof. Umar Danbatta, at an event in Abuja in 2016, revealed that the sector contributed N500 billion into the national economy in 2014 only, adding that it created about 2.5 million direct jobs in 10 years and multiple indirect employments. The industry has contributed almost 10 per cent to the GDP with a target of 25 per cent by 2025. The last GDP rebasing of 2014 rated the telecommunications sector highest, describing it as the most performing sector in the country's economic development.

Some players that are enabling this phenomenal growth include the quartet of MTN, Globacom, Airtel and Etisalat, now 9Mobile. Others are Main One, Phase3 Telecoms, Rack Centre, VDT, Ntel, CWG, ipnx, Microsoft, Google, Cyberspace, Zinox Technologies, Jumia, Konga among several others.

Subscribers are not satisfied with current service offerings:

While these achievements speak volumes, subscribers, who pay the bills running into trillions of naira through call cards and others, are, however, still craving for improved services and lower tariffs as a favourable regulatory environment devoid of recurring rancour between the regulator and operators. A number of subscribers ventilated their misgivings to The Guardian. First was Joke Jolaosho, a subscriber and banker. According to her, issues of drop calls, unsolicited SMS, airtime deductions were disturbing.

Borno-based Zarkariyau Biu called on operators to increase investments in the North East, stressing that relative peace had

returned to the region. In an email message from his United Kingdom base, Kehinde Aluko commended the operators for their foray but urged the four major GSM operators to improve service delivery by undertaking more investments.

Slow investment drive:

So far, about \$70 billion has been invested in the sector in almost two decades, with a bulk coming from Foreign Direct Investments (FDIs). While it hopes to wind down next year, the repayment of a previously syndicated loan of N329 billion taken in 2013 for capital and recurrent expenditure, MTN Nigeria last week secured another ₦200 billion facility from 12 local banks structured with a two-year moratorium and a repayment plan of five years.

Its Chief Executive Officer, Ferdie Moolman, at the MoU signing, said the loan was a major landmark in the firm's expansion programme. At a post-event interview, the Chief Financial Officer of the firm, Kunle Awobodu, disclosed that for this year, the South African firm is committing N180 billion on network expansion, stressing that in the previous two years, MTN committed ₦192 billion and ₦252 billion on roll-out and service obligations.

Earlier in April, Otunba Mike Adenuga Jr's Globacom announced the commencement of the construction of Glo 2 submarine cable system. Globacom signed a MoU with Huawei for the construction of the submarine optic fibre cable. The facility, which comprises three fibre pairs, is to offer solutions to the protracted issue of non-availability of telecommunications service on off shore platforms. Prior to MTN's ₦200 billion facility, The Guardian had last month reported a 35 per cent dip in rural telephony investments in some 205 communities in the country, which housed some 33 million Nigerians, Danbatta

(2016), said the commission has been able to reduce them to about 190.

Lukewarm attitudes surround broadband drive

While the UK and other countries including Rwanda, Kenya, South Africa, and Mauritius are fast deepening broadband, connecting cities to the hinterlands, general attitudes towards Nigeria's broadband drive had been lukewarm. Only the NCC has shown commitment to the 30 per cent broadband target as enshrined in the National Broadband Plan (NBP) 2013 to 2018.

Infrastructure deficits puts hole in 4G connections

Infrastructure deficit in the telecoms sector and the country as a whole is still a major issue that requires urgent attention. As at July 2018, Nigeria's Internet speed ranked 108 at 9.97Mbps, according to Ookla's Speedtest Global Index. This is against global average speed of 22.81Mbps.

For market watchers, there are enough bandwidths in the country, even in excess of 10 Terabytes, lying at the seashores without adequate infrastructure to help in the spread. These bandwidth capacities have resulted from the efforts of players including Main One, Globacom, MTN, among others.

The ATCON president noted that enthroning a broadband regime requires some critical infrastructure, including base stations, fibre optic cables, stable power supply, enabling environment, security, among others.

On the Critical National Infrastructure (CNI) bill, for the past seven years, it has been back and forth exercise on the passage of the bill into law. Adebayo, ALTON chairman, said classification of telecom as critical national security and economic infrastructure and granting the industry the highest level of protection by the Federal Government was critical to the next wave of

development in the sector. He noted that there was need to insulate the industry from all forms of interference by government agencies.

State governments and agencies as greatest threat to the next revolution

Having missed hugely the opportunities that came with first, second and third industrial revolutions, it will be a disaster for Nigeria and other Sub-Saharan African (SSA) countries to miss the fourth. This alarm was raised by experts at the recently held GSMA Mobile 360 Conference in Kigali, Rwanda. The experts noted that developed countries have fast left Africa behind in terms of innovation and development.

To leverage on this, Wotjan (2018), called for massive investments in infrastructure and upgrade of the existing ones across the country, as well as across Africa. He advised Nigeria and other Sub-Sahara Africa (SSA) countries to among others introduce policy and regulatory framework for improved ecosystem; come up with digital inclusion strategy that would aid connections to the rural areas.

In Nigeria, the challenge for rural telephony expansion, apart from slow investments, has been attacks from states governments and their agencies. Activities of majority of states in the country and some agencies are currently in cross-purposes with the move by the Federal Government to enthrone 30 per cent broadband penetration in Nigeria before end of year 2018.

The Guardian gathered that due to the exorbitant Right of Way (RoW) fees charged by states as against the agreed levy signed by regulator, operators and the Governors forum at a meeting, some operators have stopped expansion drive, especially the deployment of fibre optic cables across the country. This challenge is seen as a major impediment to the attainment of 30 per cent broadband

penetration and 80 per cent Internet coverage of the country by the end of 2018.

Conclusion

A SIM card is a universal device that can help you stay connected to the world. In a lot of countries, people use phones with multiple SIM cards. This situation is dictated by the realities of the market, where mobile service providers try to compete with each other! This competition in the market provides new opportunities for subscribers. Moreover, it helps to open new varieties of progress for the markets in the developing countries.

References

- Adebayo, G. (2018). Chairman, Association of Licensed Telecommunication Operators of Nigeria (ALTON), Abuja, Nigeria
- Adeyemi, A. (2018). Commentator on GSM Operation in Nigeria, Guardian Newspaper
- Chindo, S. (2013). Assessing the Impact of GSM Sub-Telecommunication Sector on the Tele-density Rate and Economic Growth in Nigeria. 4(3)
- Danbatta, U. (2016). Nigerian Communication Commission (NCC), Executive Vice Chairman, <http://www.ncc.gov.ng>
- Kyriazakos, A.S. (2002). Capacity Utilization in cellular networks of present and future generations. McGraw-Hill Publishers, U.S.
- Motlhabi, M.B. (2007). Mobile Computing Assignment: How do cellular networks work.
- Ndukwe, E. (2008). Nigerian Communication Commission (NCC), Vice Chairman, interview with TELL Magazine, <http://www.ncc.gov.ng>

Nigeria Communication Commission.
Visited 28th December, 2018,
<http://www.ncc.gov.ng>

Smith, C., Collings, D. (2002). 3G Wireless Networks, McGraw-Hill Publishers, U.S.

Wotjan, B. (2018). Director of Privacy, GSMA Mobile 360 Conference, Rwanda