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INTERNET AND AFRICA: FROM DIGITAL DIVIDE TO DIGITAL HOPE. NETWORKS, FREEDOM AND COMMUNICATION

INTERNET Y ÁFRICA: DE LA BRECHA A LA ESPERANZA DIGITAL. REDES, LIBERTADES Y COMUNICACIÓN

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Abstract: This is a critical and comparative look at the digital situation in Africa, taking into account regional differences. Descriptively, we are interested in issues such as Internet access conditions, infrastructure policies and existing regulations, the digital economy, the impact of new media, e-government initiatives and digital citizen participation, and some aspects of cultural colonisation that may occur as a result of a clearly westernised network. **Keywords:** Africa; Internet; digital divide; broadband; media, digital literacy; e-government.

Resumen: Con una mirada crítica y comparativa se esboza la realidad del universo digital en África, teniendo en cuenta las diferencias regionales existentes. De modo descriptivo, nos interesamos por cuestiones como la situación del acceso a Internet, las políticas de infraestructuras y regulatorias existentes, la economía digital, el impacto de los nuevos medios, las iniciativas de gobierno electrónico y participación ciudadana digital, y algunos aspectos de la colonización cultural que se puede producir a cuentas de una red claramente occidentalizada. **Palabras clave:** África, Internet; brecha digital; banda ancha; medios de comunicación; alfabetización digital; *e-gobierno*.

1. Introduction

In this both descriptive and critical work, the intent is to present the reality of the digital context in Africa, taking into account regional differences.

Primarily, we focus on the following aspects: the progress of the information society in Africa and the corresponding levels of digital literacy in the region. Below, we describe some of the policies, programmes and activities that have been implemented in order to enhance the technological base of developing states. Also, we are interested in the status and role of digital media and

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social networks on the continent. Similarly, we address the levels at which the public services employ the technologies that they have at their disposal, as well as the cultural contradictions that arise due to the general proliferation of the Internet. Finally, we outline some possible conclusions and recommendations for a multifaceted digital context.

2. Africa and the Information Society. Digital Literacy

Our first task is to present some indicators regarding the actual degree of establishment of the "information society" on the African continent. We are also interested in the different digital literacy programmes, both in the education sector as well as business, based on several related national and international projects.

The first aspect that needs to be highlighted is that access to the Internet is still low on the entire continent. Access is expensive and more widespread in urban areas, to the detriment of some rural areas that are in need of investment, essentially public, in order to create sufficient incentives to expand services to these areas.

Currently, the rate of digital penetration is much greater in the north of Africa (where 27% of the population has access to the Internet, on average) than in the south (13%), in Eastern Africa (12%), in West Africa (9.5%), and in Central Africa (4.5%). For example, the situation in Central Africa can be illustrated through Chad, where 80% of Internet users complain about the slow connection speeds and the high cost of bandwidth, which varies between USD 1,600 and 2,000 per month. This figure is much higher than the USD 600 rate in the USA or the 100-150 in Kenya (World Bank, 2013). At the end of 2011, there were more than 105 countries where the number of mobile subscriptions was greater than that of inhabitants, including African countries such as Botswana, Gabon, Namibia, Seychelles and South Africa. Similarly, in 2011 Mali is on the list of countries with the greatest growth of mobile use, globally, together with countries such as Brazil, Costa Rica and Kazakhstan (ITU, 2012). In any case, in Africa there are less than 5 mobile broadband subscriptions per 100 inhabitants, while the total in other regions is 10%.

However, progress is undeniable. According to statistics gathered by Fuchs and Horak (2008), before 2007, only 6 of the 57 African countries had more than 10% of the population connected (including Mauritius, Morocco, Santa Elena, Sao Tome and Principe, Seychelles). In fact, in 2006, the percentage of Internet penetration was 2.6% (23,649,000 million people), representing 2.3% of Internet users worldwide, although Africa accounts for 14.1% of the entire world population. After considerable growth in 2010, penetration reached 10.9% of the population (110,931,700 users). Still many countries in 2010 had less than 1% pene-

tration (Burundi, Central African Republic, Democratic Republic of the Congo, Equatorial Guinea, Ethiopia, Guinea, Liberia, Niger, and Sierra Leone).

One of the countries with a greater degree of digital progress is South Africa, despite the limitations both in its economic and technological policy, as well as in its regulatory framework. The mobile telecommunications network has been properly deployed throughout the country, and the various levels of the public service and the business sector have adopted sophisticated ICT applications. In another article (Alberto and Garcia, 2012), we presented the following general ideas:

> **a**) Although the public and private ICT related sector is relevant, e-development still excludes a large proportion of the population and large areas of the country, where access is either limited or non-existent. In fact, a significant portion of the population is excluded from the benefits of development.
>
> **b**) The digital divide is mostly a result of racial and class divisions. Most of the black African population still lives in subsidised homes for low-income families who have limited access to the global communications infrastructure, while the minority population (white, etc.) has a more direct contact with ICT.
>
> **c**) Internet penetration is comparatively low, and so is the percentage of people who have access to broadband. Mobile is widely used. Statistics confirm that mobile connectivity is preferred due to the high price of landlines.

The reality of the Information Society in other regions of the continent is even less flattering. Ghana is another example of the digital divide that affects most of the countries. It is a country with 25 million people, where only 3.5 million people have an Internet connection[1], which means approximately 14.1% of the population, by June 2012. While, for example, in Morocco, Internet reaches 51% of the inhabitants.

In the Ghanaian telecommunications sector, major investments were made between 2009 and 2010. Operators invested their resources in network maintenance and improvement. It was one of the first countries in Africa to introduce the ADSL, although the relative level of penetration has always been low. One of the possible reasons is the high cost or the level of taxation, and this in spite of

[01] **http://www.internetworldstats.com/stats1.htm**

the fact that Ghana is one of the seven African countries that signed the WTO Telecommunications Agreement in 1997, together with South Africa, the Ivory Coast, Mauritania, Morocco, Senegal and Tunisia, thus enhancing the liberalisation of their respective telecommunications markets.

However, they have a strong mobile telephony sector and high growth in broadband. According to the International Telecommunication Union (ITU), it is the country with the greatest mobile broadband penetration in Africa, having grown from 7% in 2010 to 23% in 2011. In any case, the high price of Internet products and services excludes most of the population from the opportunities and benefits that ICTs offer in fields such as education, trade, government and research.

Definitely, most of the population remains outside the information society, which is a socio-technical space that acquires meaning through human activities and communication. In other words, the differences of a global society are reflected here.

3. Stimulus Policies for a Digital Society and Economy

It is now time to review some of the policies, programmes and actions put in place to strengthen the technology base for developing states. We are talking about policies for investment in network infrastructure, aiming to eradicate the different digital divides and to promote digital literacy. We shall focus on two: first, infrastructure improvements; second, sector regulation.

Although communication technologies have become one of the axes of economic growth in Africa, none of the countries in the region have reached connectivity levels like those in other developing regions such as Southeast Asia or Latin America. In fact, the best situated (the Republic of Mauritius) ranks 79th globally. Also, as noted, upon performing a regional analysis, we can find major differences: the north of Africa has acceptable connectivity levels, but the continent's landlocked countries and Sub-Saharan Africa, as a whole, have low levels of connectivity. This gap is prevalent in rural areas.

Therefore, policies aiming to make mobile services more accessible are required, expanding broadband penetration, and also ensuring a greater use of the Internet and other ICTs by companies and the government. In short, it can be concluded that the development of a network with an adequate infrastructure will improve productivity, reduce the costs of communication, and promote regional integration and financial inclusion.

In this regard, we highlight some of the projects that have been developed in the area, especially those supported by the African Development Bank. On the one hand, the project implementing the East African Submarine Cable

System (EASSy) installing fibre optic cables that connect Africa to the rest of the world and, on the other hand, the Africa Backbone Programme (a core system of fibre optic cables that interconnect the African countries). Both aim to expand and improve the quality of technological infrastructure networks, thus reducing the price of network communication, both terrestrial and mobile (Dalberg, 2013).

There are data that illustrate this progress: in 2011, there were 19 submarine cables linking Africa to the rest of the world, as opposed to the 3 that existed in 2005, with a cumulative capacity that increased from 2,900 gigabytes to 102 terabytes, over this period. An assessment of the impact of EASSY also suggests a reduction in the wholesale prices for bandwidth of at least 60% in Tanzania and up to 90% in Kenya. As well as a 150% to 200% increase in the use of bandwidth, coupled with increased penetration in rural and neglected areas.

In Africa, the focus is primarily on mobile technologies, as opposed to fixed networks. The mobile telephony subsector has been the most dynamic of all, with an increase (by a factor of 10) of the population that receives a telephone signal in five years. In some countries, such as Ghana and Nigeria, there has been even more expansion and with a clear move toward satellite communication.

One of the sectors that most uses communication technologies in Africa is banking. Especially remarkable is the case of Kenya, where there has been a significant increase in use. This assertion is supported by experiences such as the M-PESA mobile payments system. In short, the increase of mobile penetration rates has improved access to banking services for populations that did not have a bank account. This has also had a positive impact on other ICT applications, such as e-government, e-learning and e-health (World Bank, 2013).

Another aspect addressed in this work is ICTs regulations. Although this economic subsector has been the most dynamic, progress in some countries has been limited by governmental monopolies, resulting in excessive costs and, ultimately, it has undermined access to the Internet, also undermining the sufficient quality of services. In fact, in all regions of Africa, the price of broadband is excessive and the lack of competition has a negative impact on the income and productivity of public and private companies.

The main challenge to the countries that have not liberalised their ICT system is the introduction of competition through a modern institutional and regulatory framework. These markets could benefit from the licensing of additional mobile operators, which would accelerate the expansion of the global system for mobile communications (GSM). For example, while GSM coverage of Zambia is relatively low by regional standards, simulations suggest that more

than 95% of the population of Zambia could receive a signal via GSM, should measures be taken to encourage competition.

For those countries where the process of liberalisation has begun, there is a need to improve private participation in the development of core technologies infrastructure for information networks. In countries such as Uganda, technological development was a public initiative, while in others, such as in Zambia, policies that foster competition have been introduced and it has been possible to reduce prices and expand digital access. In addition, the establishment of a coherent policy framework should not be affected by potential political changes, as is common in the region. As can be noted in the Zambian example, the advances in the ICT sector have been undermined by the privatisation and subsequent renationalisation of telecommunications.

On the other hand, there are many experts who recommend implementing reforms to offset the impact of fragmented and overlapping regulatory authorities, who are also faced with current market challenges as a result of the convergence of technologies. The rapid technological advances in the sector require a single legal and regulatory framework that should be open, dynamic and sensitive (World Bank, 2013).

That is why some situations must be reviewed. For example, in Uganda, on the one hand there is a body called the National Authority of Information Technologies, which plays a dual role as the operator of the basic infrastructure network and as a regulator of the government information infrastructure (including e-government) and, on the other hand, the Uganda Communications Commission, which manages the telecommunications, broadcasting and postal services. Here, experts recommend a single authority to handle licenses as well as planning and management of ICT development (Dalberg, 2013).

In conclusion, the technological development of the region requires a regular review of the operations, provisions and policies that make up the legal and regulatory system, including industry convergence. However, up to now, increases in operations and in funds handled through the network have not been accompanied by the corresponding regulatory guidelines and monitoring. In fact, in several regions of Africa, especially in the east, economic transactions have risen exponentially: for example, in Kenya, in 2012, there were an estimated USD 8 billion in transactions and in Uganda USD 200 million (World Bank, 2013).

4. Media and the Internet

According to Paterson (2013), the development of communications in postcolonial Africa is due to three events: The first coincides with the transition from colonial to postcolonial media structures. A phase based on propaganda journalism,

radically linked to the elites, without diversity of content, with a slight democratisation compared to the previous phase.

The second wave begins with the advent of television in the 90s. Satellite television was introduced at first, combined with the increase of terrestrial broadcasts, more diverse content, and the presence of the cable in African cities. Given the international nature of much of the programming, we can ask ourselves whether it is really a rebirth of democratisation or a new colonisation through the media. At the same time, public broadcasting services disappeared to a large extent due to the emergence of large companies in both radio and television. Their audience was basically comprised of a small portion of the population, but it was growing fast, amongst Africans with purchasing power.

Also, and despite the greater importance of electronic media, the written press has survived and has maintained a degree of independence with respect to the various governments, although its potential for social contribution, as well as market forces, are still a key factor.

In Paterson's opinion, the third wave comes hand in hand with the promise of democracy. It stems from the union and connection between personal communications technologies. Indeed, digital conversations are increasing, often, outside the more loyalist discourse of the media. And this raises questions regarding the role of professional journalism, just as it does everywhere else on the planet. We may wonder whether participative or citizen journalism is a new and genuine type of journalism, or whether it emerges as a public way to fill the contents of commercial web pages, and as a means to subsidise a poorer sector of journalism.

One of the most relevant phenomena related to social networks, whose consequences are still unknown, is the so-called "Arab Spring". A set of collective and popular "revolutions" that took place in the Middle East, as well as in North African countries with a predominantly Muslim population. First, in Tunisia, then in Egypt and then in other states, such as Morocco, Algeria and Libya, the population reacted against undemocratic, repressive and corrupt regimes in the region.

The new social media like Twitter and Facebook, sites such as YouTube, the blogosphere and even the mobile phone have played a key role in this citizen outburst, often outranking the official media, which were often controlled by the State in the countries of northern Africa.

According to Cottle (2011), there are several reasons for this. On the one hand, public media have historically performed the basic task of legitimising these political regimes. For political and economic reasons, they did not play a

critical role standing up to the establishment. The same can be said for the lengthy silence of Western media.

On the other hand, it has to be considered that the events are related to the globalising consumerist culture that Western media has been disseminating alongside the notion of democracy. In fact, the entertainment conglomerates and their news channels have created a kind of backdrop that fuels the globalisation of values such as economic individualism and liberal democracy.

Also, in the Arab world, social media have been progressively becoming a very important part of people's daily lives. Although not noted in the area high politics, this popularisation helps us to understand a growing spirit of democratisation.

In addition, new social media have acted as a traditional media watchdog, especially with regards to media controlled by public authorities. They are especially suited to alerting the international media to events such as the growing public opposition to these regimes or the citizens' actions, in many cases with live images. At the same time, the international media such as Al Jazeera distributed news and images easily accessed via YouTube, even reaching the affected countries themselves. Similarly, the most important written and audio-visual media provided links in their digital versions to social media where images, such as those of protests, could be accessed. In short, we are faced with a complex set of interconnected communication flows.

At this point, and according to Cottle (2011), it is also important to emphasise that the international media recognition and legitimisation of the different protests occurred very quickly. This is an acknowledgement that ruling elites would rather avoid, especially when thinking strategically. This may also raise questions regarding some theoretical models that explain the relationship between the western ruling classes and the behaviour of important mainstream media. In this case, the media adopted, in general, a more independent and critical viewpoint.

The legitimisation of the revolt by the media in the west, doubtlessly, also contributed to the political changes at the time. The importance of human rights and the relevance of compliance monitoring in this regard was possibly another significant factor. Another fact that Cottle points out is the so-called contagion effect. Although from a theoretical point of view, it may be questionable, there is sufficient evidence that the treatment and representation of the first revolts seeped beyond the borders of each of the affected countries and contributed to the existing social unrest.

In any case, we should not forget that technology has also been used to censor and constrict the flow of information: sometimes by cutting Internet

connections, other times by monitoring telecommunications. Foreign journalists were also prevented from doing their jobs through personal intimidation, or the launch of cyber-attacks against activists and dissidents, among others. In fact, Colonel Gaddafi, in Libya, used the mass sending of SMS as a means of disinformation.

As we already know, this process continues in a variety of ways. In countries such as Tunisia or Egypt, the reconstruction of civil society, peace and democratisation requires media regulation, among many other aspects, as well as the modification of the institutional role of leaders, in addition to changes in professional practices and cultural transformations. New radios, new televisions, along with new policies.

In this regard, according to Banda (2010, 77),

> "it is clear that citizen journalism operates in contexts that differ from country to country, and from region to region. The Maghreb is radically different from many other parts of Africa, exhibiting less free and democratic media environments. However, the uptake of new technologies seems higher in such countries than in other parts of Africa, demonstrating that governmental policies have everything to do with the extent of technological penetration in Africa. What needs to be underscored, however, is the need for freedom and technology to go hand in hand. High levels of technological penetration without attendant high levels of freedom do not guarantee high levels of citizen journalism".

5. E-government and Digital Public Services

As we have stated above, the data progressively show how the Internet is becoming a substantial force that generates changes on the African continent, which, today, is one of the regions of the world with the greatest increase in ICT investment as a percentage of GDP. As we have already pointed out, the boom is due especially to mobile broadband connections, currently with 93 million subscribers and a growth rate of 82% over 2010-2013, according to the ITU, coupled with the strong increase in Internet users from 10 million in 2003 to 160 million at the end of 2012 (ITU 2013 Facts and Figures).

This critical mass has caused a change in public opinion in the most populous countries and in those with the most opportunities for progress. In Ghana, Kenya, Nigeria and Senegal, about 70% of the adult population recognises that Internet progress is a key factor for the prosperity and modernisation of their respective countries and only one in every twenty companies does not yet consider the use of ICTs to be fundamental in the development of their business and

productivity. (ITU 2013 Facts and Figures & World Bank African Development Indicators 2012). Nevertheless, there are very many small and medium sized African companies that still use the Internet for simple operations and routine communications. In this context, governments are beginning to undertake great modernisation efforts through digital platforms. Their policies seek not only to lower high connection costs borne by the population, but also to pursue more complex public governance strengthening the effectiveness of essential public services that are limited because of a lack of resources, particularly education and health. They also focus on promoting e-government initiatives that will reduce government costs through the convergence of regulatory efforts and powers, and facilitate the management of user, employer and worker requirements and obligations, thus introducing a culture of transparency in the management of public resources that will serve to reduce corruption, and result in heightened citizen commitment and confidence building more modern and equitable societies.

In Kenya, since 2013, one of the best valued initiatives has been the opening of a one-stop site for the digital registry of business economic activity, thus consolidating a reliable and complete database that allows searching for companies, facilitates the tax collection process and, eventually, speeds up the authorisation time, after registration, when creating new businesses to a maximum of 6 days[2].

In Nigeria and Senegal for the first time the laws are accessible on digital portals[3] so that any citizen may become literate and understand the regulation. For its part, the Government of Kenya has partnered with Google to digitise all the historical legal news in the country since 1905, making it available through the site managed by The National Council of Law Reporting, so that all case law and judgments become public domain.

Another trend within the Open Government initiatives is related to interactive parliamentary platforms, which enable voters to directly and quickly dialog with their representatives in order to convey problems, doubts and request reliable information regarding ongoing projects and policy initiatives. Nigeria has opened a digital messaging system compatible with mobile connections so that each user may send messages to their current local government representatives, and the latter must answer all queries within a reasonable period of time. For its part, Kenya has opened a public service data portal with more than 400 management categories, making it available to young researchers who may interpret

[02] **http://www.doingbusiness.org/data/exploreeconomies/Kenya**

[03] **www.nigeria-law.org** and **www.demarches.gouv.sn**

such data with the aim of generating new digital applications based on statistical and demographic analysis. This type of tool could, in turn, generate governmental innovation to guide the design of new industrial and social cohesion policies, and to attract more economic investment in order to implement them.

Another e-government development benefit occurs by bridging the social and technological interaction gaps separating populations in rural areas, which are usually the poorest and completely isolated from the progress that takes place in urban centres. In Ghana, approximately 100 digital information community centres have been opened to the public offering free access to the Internet, as well as training courses teaching literacy to people in the area. In the past three years, in Kenya, about 30 "Pashas" have been opened. These centres are geared to transform small settlements into digital towns spurring interest in ICTs and the business opportunities that they offer, aiming to foster business initiatives in order to invigorate the local economy. A similar initiative has been implemented in Senegal, with 27 rural community centres, and in Nigeria, with another 224 centres of this type, where in addition, up to 900 schools have been connected to the network, 74 of which have electronic library funds.

With regards to health, digital development is beginning and it may result in changing trends on the continent. Health in Africa is the worst in the world. The area south of the Sahara is one of the poorest globally. Thus, with 11% of the world's population, it has 24% of all diseases and 44% of those that are epidemic. With this stark image, private sector development has become a key engine for change. In 2010, the last issue of the IFC, *The Business of Health in Africa* report, projected that investment in health would increase to USD 30 billion in the next ten years, with a 60% private sector share. Hopes for digital progress arise due to the possibility to curtail costs and offset the impact of an obvious health crisis that cannot be easily surmounted.

Although positive examples in this field are still scarce, Sproxil stands out. It is a company with its headquarters in Ghana that offers a medication verification service via SMS, aiding as much as it can to combat drug trafficking, given that 30% of the drugs marketed on the continent are fake. Proving its market value in 2013, Sproxil was recognised as one of the most innovative companies in the world according to Fast Company, a US magazine, ranking seventh[4].

Another young and leading company in Ghana is Claimsync. It offers software solutions applied to health management that allow one to digitally send and document medical records, diagnoses, and prescriptions for patients. For

[04] **http://www.ghanabusinessnews.com/2013/02/12/ghanaian-sproxil-ranks-worlds-7th-most-innovative-company-beating-apple-google-microsoft**

rural medical centres and temporary or travelling posts, whose mission is to carry out vaccination and prevention campaigns, as well as monitoring of patients with chronic diseases, this becomes an absolute advantage given their normal working conditions[5]. It is very possible that some of the upcoming medical digital innovations at global level, especially in primary care, may arise from the African base of operations.

6. The Digital Orientalism and the Cultural Contradictions of Freedom on the Internet

In 1978, Edward Said published *Orientalism*, a term he used to designate the ideology that since the end of the 18th century contributed to constructing an imaginary uniqueness, whereby the West is one thing and the East is Other, something different. This is a multidisciplinary approach that allowed Europe as a culture to manipulate and even manage the East up until the present, from the political, sociological, military, scientific and imaginary points of view. Said's prism has been used critically to capture the way in which the East continues to be represented not only in the contemporary films produced by Hollywood but also in video games for PCs and consoles, such as the violent and militaristic *Medal of Honour*. We also consider it suitable for the critique of many of the phenomena and contradictions that the Western public opinion is learning via the Internet and social networks as published by some social groups across the African continent, and especially the Middle East.

In our opinion, Western optimism regarding the Internet and technology as transformers and accelerators of progress and economic well-being often ignores extremely important historical social issues. Therefore, we must not fool ourselves into believing that the East can become *overly western* simply through digitisation, nor should we attribute exotic or standout characteristics to our culture because of the unique way in which citizens use mobile access to Internet for convening meetings, strikes or protests.

In addition, the *Digital Orientalism* we refer to could become a political justification for Western powers to implement hegemonic control and monitoring of the participation in public debate and democracy that young educated and informed Africans are initiating through social networks.

We start by analysing some elements related to the notion of equality. The question here is whether Africa' digital future will break taboos such as, for example, the segregation and inequality of women. According to *Women and*

[05] **http://www.healthtechzone.com/topics/healthcare/articles/2013/05/31/340190-ghanas-claim-sync-reduces-need-paper-based-medical-claims.htm**

ICTs in Africa report (Carolyn Humbaba. FEMNET 2012), the gender gap in terms of access to the Internet in the sub-Saharan region starts at 44%. This means we are far from promoting a levelling effect between men and women through an Internet revolution. African women are still quite far from having the privilege of sending an SMS. From a minority of educated women in urban centres, only a few work for software development companies such as Futuresoft Nigeria, but they represent a minority. Here a key factor comes into play, namely the completion of studies, and less than 50% of women have the opportunity to complete primary education.

In the WEF's *Global Information Technology Report 2013*, it is highlighted that mobile Internet access through smartphones will be the most prominent engine for innovation and consumption in the next 5 years. This call to investors is complemented by the recognition of the importance of incorporating women as leading players in this new phase of economic development. They should acquire both technical skills to use advanced applications, thus becoming bigger consumers, but also participate as creators of applications and content they consider relevant. This bias may be a means to produce "affrinovation" and include women in it.

From the social and political perspectives in Africa, we must pay heed to the spread of Facebook (see the e-marketer May 2013 report, with a prognosis up to 2020[6]. At the beginning of 2013, there were more than 20 million African users registered on this social network. It is expected that 2014 will start with more than 30 million registered. In Tanzania there are already 300,000 users and the number is expected to triple this year, which would result in this country having more Facebook users than high school graduates. In Tunisia, the numbers show an average of 140,000 new registrations monthly. This social network was of great importance to the Arab revolutions, including the events in Egypt. But SMS, cafe meetings and traditional television also had a huge role, overall, much greater than Facebook and Twitter. However, in countries such as Nigeria and Tanzania, both social networks are widely used by the political parties and by young aspiring candidates who open profiles not only to attract supporters but also for fundraising purposes.

In this regard, it is important to note that in developed countries, the so-called *slacktivist effect* has been noted for many years; in other words, users support humanitarian causes through virtual or digital actions (collection of signatures, awareness raising, protest campaigns, project micro-financing). All is

[06] Available at: **http://www.emarketer.com/Article/Emerging-Markets-Drive-Facebook-User-Growth/1009875**

done from a computer with only a mouse and over social networks. Africa is still more passive than active in this trend. But, in our opinion, it is vital to consider the risks of taking this path in the future. Potential *slacktivist* campaigns are those that arise from the belief that enormous quantities of support signatures for a project through a Twitter account will be sufficient to transform reality. The social fact that is being ignored is action or, to put it another way, it is the implementation of the conclusions stemming from awareness raising. Africa needs action, the implementation of a vision rather than the construction of cyber-utopian arguments or romantic thoughts.

In any case, the fact that Facebook and Twitter are the backbones of the African digital identity makes these data accessible to governments and international bodies; in other words, control of legally protected private data and information and spying on users becomes easier when national and international security interests so require. This global digital legitimising backbone is consolidated with the continental expansion of Google. The company is committed to investing in technological infrastructures that reduce connectivity costs for Africans, as well as in a project to develop an online translator capable of handling for the first time more than 100 languages spoken in Africa by at least one million inhabitants. This advanced translator, automatically integrated with smartphones, will streamline trade relations between different African countries and tribes, given that English is not a familiar enough language or one that generates great trust in a large portion of the population. Google's cyber-utopianism will automatically translate messages into Swahili, Amharic, Wolof, Hausa, Zulu, Afrikaans and Somali.

Finally, we must emphasise that the main threats to the rate of Internet penetration and its effects on economic growth and the strengthening of civil liberties are cybercrime and cyber-terrorism. In countries such as Nigeria, Kenya, South Africa, Tanzania and Uganda, the number and intensity of attacks on governmental digital databases, private company servers and user emails have skyrocketed since 2010, evidencing the lack of electronic security resources in order to contain these digital assaults.

Overall, Africa needs to implement a comprehensive computing security policy programme at a continental scale in order to protect access to data, including the prevention of government unauthorised access to private information. At the same time, the program should emphasise the implementation of dissemination and education campaigns to raise awareness amongst users, training them to take preventive measures against the standard techniques used in these types of crimes, as well as the use of specialised software to protect their communications.

7. Final Thoughts

The rate of digital penetration in Africa is low and, in addition, it presents relevant regional differences, as noted when comparing urban and rural areas. It is an outcome and increasingly a cause of the continent's social, political and economic realities. Africa is a diverse and turbulent continent, where aspects that will define development in the coming decades are at play. It is also a place with remarkable use of mobile technologies and social networks, which are radically changing the media landscape and public opinion.

Varied modernisation attempts are being carried out, both as private and public initiatives, trying to mitigate the shortcomings outlined above. They are largely focused on improving infrastructure and, ultimately, on providing better and subsequently less expensive access.

As we mentioned in this paper, EASSY emerged in the Indian Ocean in 2011 to provide 3.84 terabits per second to 18 countries, which is not an exaggerated transmission capacity given the demographic potential of the future, but it is sufficient to allow a significant reduction in costs, and thus incorporate millions of additional users to the Net.

This type of infrastructure progress fosters the weak industrial ecosystem, allowing very ambitious projects to spring up, for example, the so called *Silicon Savannah* in Kenya, a cluster of multinational companies like Intel, Google, Microsoft, Nokia, IBM and Vodafone. It is designed to be a replica of Silicon Valley with a public aid budget estimated at USD 7 billion for the remainder of this decade. This business hub aims to become not only one of most advanced innovation centres in all of Africa, but also a generator of new products that can be exported to other areas of the world. This is one of the positive trends that must be observed, to see its true impact and evolution.

Another of the key elements that we envisage for ensuring progress depends on the development of open data and open government initiatives that are emerging as measures to fight against political corruption and waste or inefficient economic investment. We agree that the way to counteract the chaos and lack of investor trust is through regulation and the stability of official institutions.

The challenges that African Governments face ahead are very similar to those faced by many Western countries and other developing economies, meaning that they should design and implement effective policy measures that facilitate the implementation of new technological companies, with sufficient tax incentives and the necessary legal assurances, as well as get rid of bureaucratic overregulation.

On the other hand, they have a key opportunity to encourage more young people to go to schools and universities in order to attend programmes that are

fundamentally related to technology, mathematics and engineering. There should be an effort to create a workforce qualified enough to allow multinational companies to implement long-term projects, and also allow the creation of new small and medium sized local companies aiming to become the wave of *African digital start-ups*. Therefore, an increased number of technological companies may be an opportunity to change the lives of many people.

In terms of security, the different countries in the region must provide training and investment programmes, assuming the necessary cost of implementing a preventive technical culture based on data encryption. Along these lines, the users and company employees themselves should learn and incorporate into their habits simple forms of encryption when sending emails, thus reducing cybercrime.

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