

Digital revolution in African cities: Exploring governance mechanisms to mitigate the societal impacts

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Abstract: In an increasingly connected and digital African city it is crucial to identify the opportunities and challenges related to new technologies in cities to ensure that they do not create new inequalities and exclusions but contribute to the well-being of all. Governance is at the heart of this endeavour and local governments should put in place regulatory frameworks to ensure that one is left behind in African smart cities. Universal access to urban services driven by emerging technologies, the digital divide, digital inclusion, and digital rights, are all issues that emerge from the digital transformation of territories. As part of the African Cities Lab Summit 2023, young researchers met for a workshop lasting for an hour and a half on the impact of digital technology deployment in African cities. The aim was to analyze the impacts and societal challenges posed by the deployment of digital technologies in African cities in a local and global context and then to formulate recommendations for local governments. This paper summarizes the results of the discussions.

Introduction

More and more revolutionary technologies are emerging and disrupting urban dynamics in African cities. Indeed, the increasingly important deployment of digital technologies in rapidly growing African cities is bringing major changes to the urban fabric and the provision of urban services, while reshaping interactions between the various urban players [1]. What is considered the fourth industrial revolution is bringing out profound and rapid changes in urban systems and people [2]. The recent advances in digital technologies from the internet of things (IoT), artificial intelligence (AI) big data and 5G are rapidly transforming cities societies in Africa and advancing the capabilities of local governments to deliver services in the digital world [3].

However, the deployment of digital technologies in African cities raises major issues that it is important to address so that digital technology does not become a vector for increasing inequalities and excluding the most vulnerable. Indeed, the negative effects of digital technologies in cities are very little studied, especially with regard to inequalities and the new forms of exclusion and marginalization that they generate, and which need to be the subject of more research[4], [5].

This paper summarizes the discussions held by young researchers at the African Cities Lab Summit 2023 (ACL 2023). As part of this summit, young researchers met for a workshop lasting for an hour and half on the impact of digital technologies deployment in African cities. Led by the author, the workshop audience was made up of 20 participants of various profiles (researchers in technology and human sciences, students, engineers, urban planners, architects, etc.).

Emerging technologies in African cities: issues and policy recommendations

The first part of the workshop (60 min) was dedicated to an interactive presentation where the participants were encouraged to interact and contribute to the discussions via their smartphone through the ahaslide platform.

These discussions highlighted that the advent of digital technology is accelerating the transformation of spaces and societies and the interactions between them. What is considered the fourth industrial revolution is bringing out profound and rapid changes in urban systems and people.

Indeed, the recent advances in digital technologies from the Internet of Things (IoT) and artificial intelligence (AI) to digital platforms for service delivery and 5G for autonomous mobility for instance are rapidly transforming societies and advancing the capabilities of local governments to deliver services in the digital world.

This digital revolution is irrevocably underway in Africa and the deployment of digital in the cities is gaining more and more momentum with the emergence of numerous platforms for the provision of services in various sectors ranging from mobility, access to housing, education, health, etc. All this is strongly propelled by the mobile banking revolution.

The participants pointed out however that, the deployment of technologies in African cities raises major issues that it is important to address so that digital technology does not become a vector for increasing inequalities and excluding the most vulnerable. Indeed, the negative effects of digital technologies in cities are very little studied, especially with regard to inequalities and the new forms of exclusion and marginalization that it generates, and which need to be the subject of more research [4], [5].

The issues of the digital divide, digital rights, inequality and exclusion of the most vulnerable are therefore becoming more acute in cities, with digital technology becoming increasingly present. The ever-increasing role of technology in cities generates new social issues that are difficult to understand [6], deepens some of the existing inequalities, creates new ones and benefits the most fortunate while punishing the poor O'Neil (2016).

For example, during the discussion, the participants raised the case of digital service platforms like Airbnb, Uber etc. that have given a new shape to service provision in many cities around the world but have also highlighted the exclusionary power that new technologies can have on the most vulnerable by concentrating power in the hands of digital giants. Indeed, the case of urban mobility services like Uber are a perfect example. Although these services are booming in Western cities, they are nevertheless highly contested and even rejected in southern cities where the activity of cab driver is practiced by the middle and poor social strata. In Casablanca, Morocco, for example, the Uber service withdrew in 2017 in the face of strong protest from cab drivers who saw themselves losing their livelihoods to this giant. This is also the case in Cameroon with the Russian platform Yango, which was suspended in February 2023 following discontent among cab drivers. Other countries, such as Côte d'Ivoire, although accepting these platforms, have tightened the regulations concerning them.

In these different examples, the pattern of exclusion of sensitive groups easily emerges and explains the revolts. Indeed, the sensitive groups here, which are the cab drivers and from which several families depend, are the main ones sidelined by these digital giants who are increasingly deploying in the cities, monopolizing the powers. All the more so as, due to their social group, they have difficulty in carrying out other activities.

Through the discussion, the participant also emphasized the emergence of Artificial intelligence (AI) with multiple applications and many opportunities for cities. Its applications cover many aspects of the city, from service provision to urban management and governance. The opportunities of this technology are therefore multiple but it presents limitations, like the reinforcement of the assumptions contained in the data and their design, the lack of capacity for self-assessment, and the impossibility of integrating

nuances[7]. These limits open the way to several possible inequalities in access to urban services integrating AI.

The starting point of any AI system is the data, which must be as representative and free of any form of bias as possible, at the risk of exacerbating the inequalities and exclusions of the input data on a larger scale in the application of the final solution. Discrimination against certain groups of individuals can emerge especially when the developers' biases seep into the algorithms. Especially when AI is used in sensitive areas[8].

The emergence of AI also raises the question of increasing inequalities between rich and poor in cities. Although this technology is still in its infancy, for Jon Talton (2021), Winner-take-all or winner-take-most cities vs. Everyone else[9].

The digital divide is another form of issue emerging from cities in the digital age according to the participants. It is the gap between those who have access to and use ICT, including internet connectivity, internet-enabled devices and digital skills, and those who do not. Its three components are location, gaps and roots[10]. As cities become increasingly connected and digital, inequalities are widening between those who can and cannot imbibe technology, and the digital divide further accentuates existing divides in access to urban services and economic opportunities. Reasons may include lack of infrastructure, lack of skills, or cultural reasons.

This digital divide also rhymes with geographical disparities according to the origin of technologies and those at 02 scales. On a global scale, most emerging technologies are developed in northern countries, which poses a challenge of technological domination over southern countries for this case in Africa. For example, in the case of AI, many countries in sub-Saharan Africa are the least prepared to use AI in public services[11]. This situation contributes to widening the gap between rich and less developed countries.

On a national scale, innovation centers and technological hubs are mainly concentrated in large cities to the detriment of secondary cities and rural areas. This contributes to increasing the geographical disparities with the domination of the big cities on the secondary cities and rural areas. The consequences are a greater loss of attractiveness of the secondary cities, spatial inequalities, urban-rural disparities and the rural exodus.

A second part of the workshop (30 min) was dedicated to brainstorming in order to formulate recommendations to recommendations to local governments. The participants were taken individually according to the themes to write recommendations on post sticks which they then had to present to the rest of the participants so that these could be discussed. The participants agreed that the deployment of digital technologies in African cities raises many societal issues that it is important to take into account for people-centered smart cities. From the establishment of digital infrastructures to the inclusion of vulnerable groups, the digital transformation of African cities must not increase disparities or create new inequalities. Local governments are at the heart of the process of inclusive territorial transformation in Africa.

Conclusion

This workshop explored the societal impacts of emerging technologies in African cities and proposed mitigation measures for local governments. The participants agreed that it is therefore necessary to examine what are the rationalities and stakeholders of the future "smart city" for better inclusion [12]. In this sense, multi-actor and multi-scale governance is an essential first step to ensure that the deployment of digital technologies in cities guarantees digital inclusion by limiting the digital divide while preserving digital rights [13]. In addition, the governance of African cities in the digital age must

consider the social elements of the digital transformation of territories, namely the impact on the quality of life, work and interactions of citizens. Artificial intelligence (AI), Internet of Things (IoT), Big Data, 5G, etc. essential points must be taken into account from the beginning, namely the consequences of the technologies used on society and the institutional mechanisms to be put in place to limit them as much as possible.

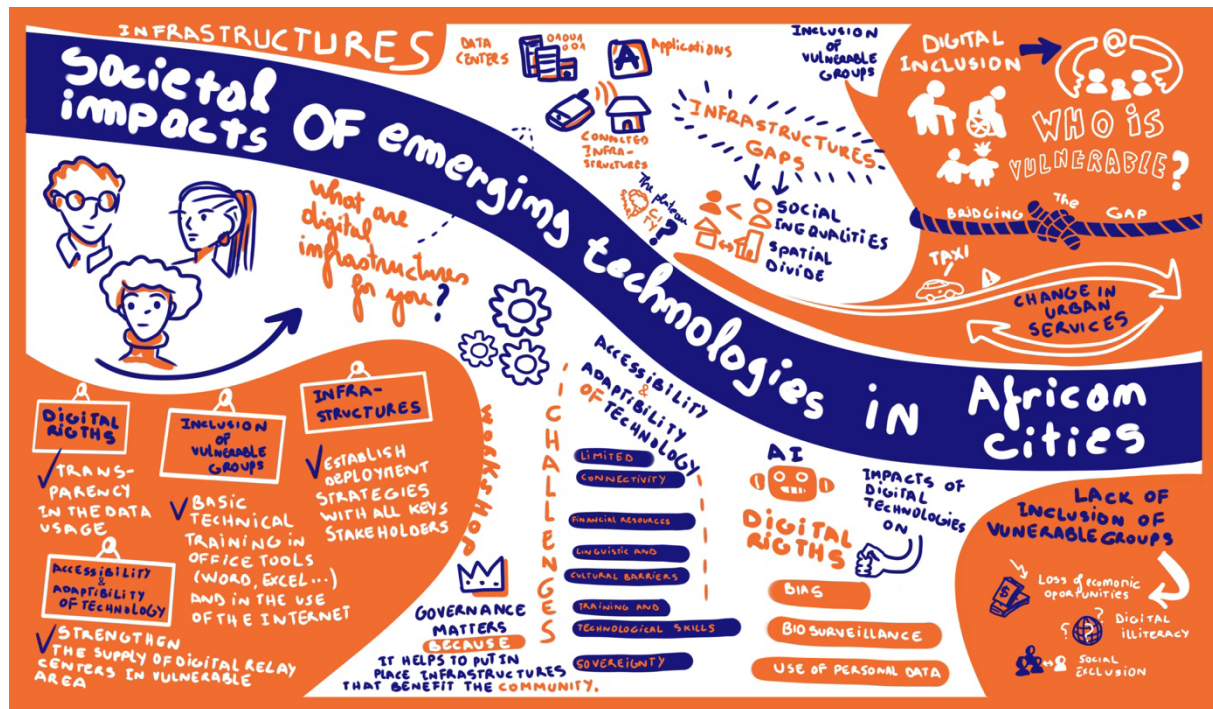


Fig 1: Fresco realized by an live illustrator during the workshop summarizing the discussions

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