African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Inequalities in Internet access and appropriation of digital ressources by young people in Saint-Louis and Ziguinchor in Senegal.

Auteur 1 : Dimitri Samuel Adjanohoun
Auteur 2 : Madoune Robert Seye
Auteur 3 : Tatiana Dieye Pouye Mbengue
Auteur 4 : Djiby Sow
Auteur 5 : Cheikh Samba Wade
Auteur 6 : Derguene Mbaye
Auteur 7 : Moussa Diallo
Auteur 8 : Mamadou Lamine Ndiaye
Auteur 9 : Jean-Claude Baraka Munyaka
Auteur 10 : Pablo De Roulet
Auteur 11 : Jérôme Chenal

Dimitri Samuel Adjanohoun,Gaston Berger University, Saint-Louis, Sénégal
Madoune Robert Seye,Gaston Berger University, Saint-Louis, Sénégal
Tatiana Dieye Pouye Mbengue,Gaston Berger University, Saint-Louis, Sénégal
Djiby Sow,Gaston Berger University, Saint-Louis, Sénégal
Cheikh Samba Wade,Gaston Berger University, Saint-Louis, Sénégal
Derguene Mbaye, Higher Polytechnic School (ESP) of Dakar, Cheikh Anta Diop University, Dakar, Senegal
Moussa Diallo, Higher Polytechnic School (ESP) of Dakar, Cheikh Anta Diop University, Dakar, Senegal
Mamadou Lamine Ndiaye, Higher Polytechnic School (ESP) of Dakar, Cheikh Anta Diop University, Dakar, Senegal
Jean-Claude Baraka Munyaka,CEAT, EPFL, Bâtiment BP-Station 16, 1015 Lausanne, Suisse
Pablo De Roulet, CEAT, EPFL, Bâtiment BP-Station 16, 1015 Lausanne, Suisse
Jérôme CHenal, CEAT, EPFL, Bâtiment BP-Station 16, 1015 Lausanne, Suisse

Déclaration de divulgation : L'auteur n'a pas connaissance de quelconque financement qui pourrait affecter l'objectivité de cette étude.

Conflit d'intérêts : L'auteur ne signale aucun conflit d'intérêts.

Pour citer cet article : Dimitri Samuel Adjanohoun, Madoune Robert Seye, Tatiana Dieye Pouye Mbengue, Djiby Sow, Cheikh Samba Wade, Derguene Mbaye, Moussa Diallo, Mamadou Lamine Ndiaye, Jean-Claude Baraka Munyaka, Pablo De Roulet, Jérôme Chenal (2026) « Inequalities in Internet access and appropriation of digital ressources by young people in Saint-Louis and Ziguinchor in Senegal », African Scientific Journal « Volume 03, Num 35 » pp: 1591 – 1615.

DOI : 10.5281/zenodo.19913559

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Abstract :

This paper analyses the relations between the access of urban households to Internet, their endowment in numeric equipments and the competences of young adult between 18 and 24 years old use in Saint-Louis and Ziguinchor. The study questions the numeric and social inequelities from a specific context of households and investigate districts in mediumt-sized cities, while gathering the approach of real access to understand the intra and inter disparities districs. The results show that the weak integration of numeric infrastructures in the urban area infringes the inclusion and access of internet particularly in peripheral and spontaneous sphere. In addition, the inequalities in access to the grounded social services reinforce the numeric bill. At last, the weak numeric competence of users, specifically that of the young urbanist brakes their participation to the urban governance, calling to a second numeric socialization in the intermediary cities of Senegal.

Keywords : *households, access to internet ; urban dynamic, social numeric innequality, young, intermediary cities, Saint-Louis, Ziguinchor*.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Introduction

Being at the same time and index of development (IUT, 2023) and a stimulant of urban and modern changes, the numeric might certainly constitute, a strategic footbridge to promote the participation of young poeple to local democratie, to stimulate the creation of wealth and subside the employment crisis (PNUD, Report RNDH, 2019). It also represents a lever for the strenghthening of the public service in the intermediate cities, at the image of Saint-Louis and Ziguinchor of Senegal.

However, the analysis of the urban settings of both cities reveals a contrasted reality but structurally similar : The numeric infrastructures remain weakly integrated to the urban sphere, weakened itself by the fast demographic increase and the land development uncontrolled. This dynamic promotes the increase of surrounding habitats often located in the outskirts of planned areas down the urban districts, meaning excluded from the essantial urban networks such as electricity, sanitation and roads in numeric coverage and then with some access conditions equal the grounded services. This remark highlights a major stake of urban governance in intermediary cities ; the necessity to adjust the territorial outlining to reduce the socio-numeric inequality, that our study bounds to qualify. This notified spatial discontinuity is expressed through the inequal distribution of numeric equipment and connexion observed mode into the investigated districts in Saint-Louis and Ziguinchor.

For instance, we can enumerate the sub-districts of Pikine 3 and 4 and the outskirt areas of Ndiolofene and Diaminar in Saint-Louis, specifically touched by the sanitation issues and the weak numeric coverage. In Ziguinchor the popular districts of Néma, Kénia Nord and Sud, as well as the areas in extension of Boucotte Center and Boudody Escale, testify to a similar reality : a partial urbanisation, poorly endowed and unsufficiently connected.

In view of this non-exhaustif table of the inequal division of social services, in particular of internet access between and into the urban districts, are asked the following questions ; into what extent the non integration of numeric infrastuctures in the urban morphology mixed to the technological coverage disparity regarded in Saint-Louis and in Ziguinchor, does it contribute to the explaination and the emphasis of the socio-numeric inequalities between the districts ?

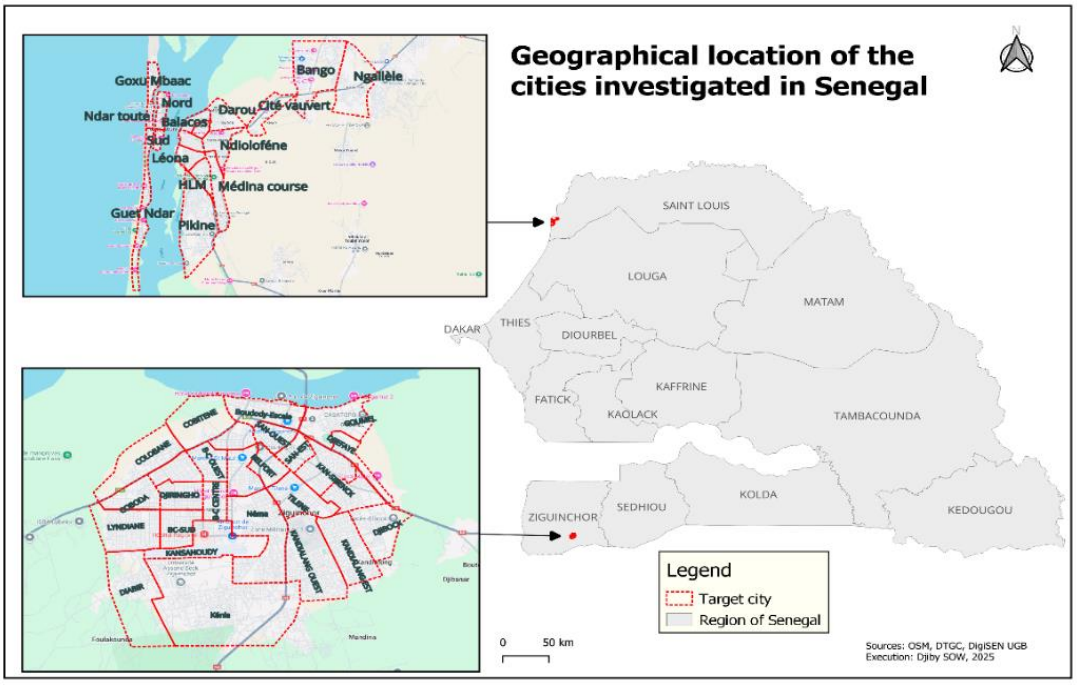
And how the privileged way of connexion by the young living in households translate back, their degree of appropriation and mobilization of numeric ressources in these urban contrasted contexts ?

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Methodology

To explain the report of numeric inequalities and their implication to the level and the quality of households internet access linked to the ressources hold by the users in the districts of cities of Ziguinchor and Saint-Louis, we have highlighted an approach toward the triangulation of techniques of collection. Multidisciplinary, this approach has allowed by ricochet, to display the techniques of collection overcome from the social sciences and from an application of measurement *DigiSen en expérimentation* developped for this issue to measure the level of access and the quality of access of users of internet toward the districts in targeted cities. So, we suggest in the following analysis to comeback to the reason justifying the choice of the cities from the geographic localisation of the cities and the investigated districts.

Look of the urban districts representing the sphere of investigation in Ziguinchor



The choice of these two cities as our laboratory for investigating and analyzing the level of integration of infrastructures and equipment in urban circuits in relation to the statuses of housholdings linked to the ressources available to city dwellers at the neighborhood level can be explained by the strong similarities they reveal. We are thus talking about port cities, garrison towns, colonial and university town. Beyond these analogies, the cities of Saint-Louis and Ziguinchor come a long way after Dakar, which they compete with.

Disadvantaged by the political options at Dakar‘s profile, both urban strategic centers are abandonned during several decade. A former delay that explain a weak development of urban

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

infrastructures of telecommunication. Therefore that both cities have strongly evoluated toward the peripheric centers, very often without plannification and organization occuring some living space less eligible to grounded social services, impacted by the demographic dynamic which complexify the access of households to Internet. This numeric inequality is explained in diverse factors of which the infrastructures discontinuity between the districts (Adjanohoun Dimitri Samuel et al. 2024). The numerical competence of young poeple and the level of appropriation of numeric ressources by young adults coming from intermediary cities.

Method and Materials

Through digital sociology applied accross the approach of real household access to the Internet in the intermediate cities of Ziguinchor and Saint-Louis, we aim to effectively understand the changes occured by the development of Internet access and its consequences related to short comings in urban planning.

The analysis of these factors will include Senegal's digital economy in line with the outlined objectives, 07 urban neighbourhoods out of 37 in Saint-Louis has been selected as reflecting the social and urban characteristics of the cities. Indeed, the choice of neibourhood was made in interaction with local stakeholders (municipal councilors neibourhood delegates, and neighbourhoods council presidents). Furthermore, the deployment of the same process in Ziguinchor has allowed the selection of 10 urban neighbourhoods 'see the map) out of a total of 37 districts.

In the same option, a sample for each quota on the ground of census datas of (ANSD, 2013, 2023) has allowed us to question 566 young people back to the districts 10 of Ziguinchor and 549 young people of Saint-Louis back in 05 urban districs. This realized, just one operational model has been stopped in order to lead the operation of collection. This latter understand the households as structures of observation to the scale of urban districts in cities and young of 18 to 24 years old, educated and non educated, as observed units. After this operation, it has been led to the conception of the datas instrument (the questionnaire) from 08 indicators, that are :

-The level of access of households to the grounded social services ;

-The provision of cells with digital equipments (ADSL, optics fiber, modem, 4G box, and technological tools) ;

-The spatial position of urban household in the city governance ;

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

-The level of development and equipment of neighbourhoods through households ;

-The level and quality related to the Internet through services providers ;

-Young people's perception of accessibility, adaptability, and affordability of Internet services ;

-Youth participation in urban governance ;

The degree of local authorities involvement in extending and improving the needs of young people in HD and UHD connection. Moreover these variable aims to.

- Reveal and diagnose the report to digital inequalities while taking into account the level of accessibility of households to basic social services, to infrastructure and to the dotation in digital equipment.
- Integrating disparities related to numeric inequalities in the spatial system of settings of social habitats questionned.
- Identifying the digital inequalities relate to movement (incomes, competence, holding of competence) of users.
- Stripping naked the concrete logics the digital uses of young people.

This questionnaire has been realzed in format workshop of multidisciplinary co-building, with the rescourse of Kobocollect/Kobotoolbox whiwh has allowed us to deploy and make datas of the investigation of households emerged in 2024 in Saint-Louis and that collected in 2025 in Ziguinchor. Otherwithe, datas have been treated by the IBM- SPSS-Statistics 24 logicial, whiwh gives access to several statistics tests.

Results

The results simultaneously highlight the relationship between urban households' access to the Internet in Saint-Louis and Ziguinchor, their provision of digital equipment (Granjon, 2004), the digital skills and ressources of households (Hargittai, 2002 ; Kauffmann, 2000), as well as the mobilization of young poeple for civic participation through digital technologies (Fluckiger, 2008).

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Level of digital equipment provision in urban households in the cities of Saint-Louis and Ziguinchor

The measurements regarding the dotation of equipment to 1115 young women and men aged 18 to 24, in households within urban neighborhoods reflect the high density of popular urban districts. This confirm the trends observed in the last two censuses by the National Agency of Statistics and Demography (ANSD, 2013, 2024) in Saint-Louis and Ziguinchor. In Saint-Louis, 559 households have been surveyed in 7 urban neighborhoods with 50% à Pikine, 15% à Goxu Mbaac, 11% à Guet Ndar, 09% à Ndiolofene, 06% à Bongo, 04% à Cité Vauvert et 03% sur l'ile du Nord. The same approach applied to Ziguinchor has allowed to explore 566 households from which 25% à Néma, the 18 % to Lyndiane, the 11% to Kandé Sibenck, the 10% to Tilène, the 07% to Kenya, the 05%, the 06% to Djringhor, the 08 % to Boucotte Est, the 05% to Boucotte Nord and the 05% to Boucotte center. In fact, the examination of access of urban households by a level of provision in numeric equipment in correlation with the typologies of districts in both cities shows an extension of telecom operator to invest in these popular neighbourhoods due to the economic potential they offer, despite their status as marginalized areas.

However, to the scale of districts, the comparative analysis of digital infrastructures at Pikine, at Goxu Mbaac at Saint-Louis and at Néma as well as at Lyndiane at Ziguinchor inform a desintegration of numeric equipment in the urban circuit. A fact that half explain by the discontinuity of organization (Dimitri Samuel Adjanohoun et al. 2004). But also the subsiding extansion of habitats of popular districts toward outskirt areas that escape to the control of structures such as urbanism and the Directorate for Land Use Monitoring and Control. These ill territorial organization practices (non-respect of the band of 01 mile opened in the street to lodge the public equipments and accomodation space of gathering public equipments) observed must be removed by forseable and corrective measures of urban plannification to improve the level of access, but especially the quality of access of Internet. Likewise, ARTP must play the role of regulator and control of quality relative to the adaptability of services in covered areas. In Saint-Louis the datas linked to the endowment of households to equipments favoring the access of Internet let know that 45% of young people questionned in households find their connection through mobile Internet. From then, the own equipment would be the intelligent mobile phone (smartphone).

In adition 29% declare they connect alternativly accross mobile Internet and accroos private public opened wifi (PPFO) in Saint-Louis. These two categories represent a ratio of 74% of young urban

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

poeple having just the mobile phone to connect to Internet within the households. So, we observe that the man remarks linked to the endowment of saint-louisiens households to equipment perfectly aligned with the datas linked to the level of penetration of Internet mobile Senegal, with a rate that goes beyond the 100% (ARTP 2023, 2024).

Futhermore, the observed reality through the approach of real access remains different in Ziguinchor, even when the global datas of the economic and social situation of Ziguinchor, of the Agence Nationale des Statistiques et de la démographie (2023) posts a rate of penetration of increased mobile Internet, passing by from 51% in 2022 to 55% in 2023. And the ratze of penetration of the mobile telephony is estimated to 101% in 2023, it remains inequally distributed into the districs.

Out of the 566 households across the young adults, 21% declare to connect only to Internet toward the mobile telephony and 8% by the Box 4G, 11% across the modems/router. Therefore, we can note, a will of the telephonic operators (Orange, Yas et Promobile) for the strengthening of the access and the quality toward the Internet by cacle in the well-off mixt neighbourhoods like in Boucotte center, East Boucotte, North Boucotte, Boudody Escale and Néma where are concentred the essential of 41% households holding the optic Fiber and 09% of households holding Flybox (ADSL) as equipment that allow them to acceed in Internet.

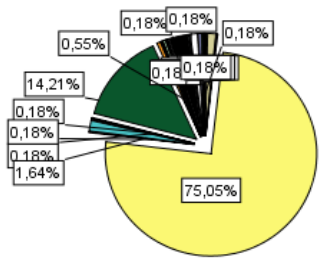
Otherwise, the districts of Kenia, Djirigho, Kandé Sibink, Tilène and Lyndiane are neglected owing to their status of peripheric districts, spontenaously and moderatly built. For such purpose, 1337, namely 1,6% of the total number of urban household in the city in 2023, use namely ADSL cable, or Box Wifi/Modem/Router or optic fiber according to the space of residency in Ziguinchor (ANSD, 2023).

An arbitration certainly based on spatial reasons and territorial organization of districts, but not justified economically. In Saint-Louis, as in Ziguinchor, if the geographic of displacement of telecom networks answer essentially to a profitably logic of investments that lead the operators to priviledge the dense areas and economically favored while neglecting the areas marked by socio-economic weakness (Margot Beauchamps, 2023), the reality is all the same different owing to the demographic increase. A new indicator making the representations relative to the categorization of spot of residency, we can also find in popular peripheric districts, spontaneous and residential all social layers.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

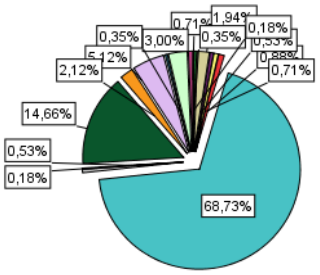
The smartphone, a tool for inclusion and dissemination of digital innovations within urban households in Saint-Louis and Ziguinchor

Figure 1: Youth access tools to the Internet in Saint-Louis



Source : survey data, DigiSen project, Saint-Louis 2024

Figure 2: Youth access tools to the Internet in Ziguinchor



Source: Survey data, DigiSen project, Ziguinchor 2025

The crossed quantitative and qualitative datas collected next to the young people and local authorities in Saint-Louis and in Ziguinchor highlights the pregnancy of the mobile telephony as principal way of access to Internet in the Intermediary city of Sénégal. On everage, out of ten persons holding access to the network, seven are connected through their mobile phone. This more pronounced trend in Saint-Louis, means a high penetration of the mobile telephony sustained during several decade of public politics and private initiatives aiming to favor the appropriation of digital technologies. The networks' consolidation of endogenous distribution and the emergzency of ecosystem structured market toward the smartphone are in fact ; contributed to the fast and massive spread of these equipments.

Contrary, the observed situation in Ziguinchor reveals a slower and contrasted dynamic. That one can be understand in the one hand by the persisting geographic isolation, and in the other hand by the cumulative effects of a balanced security-political context impacted during several decades, the development of economic and technologic infrastructures. This structural weakness has limited the ability of investment and broken the modernization of networks of communication and that of telephony. The empirical results confirm these territorial contrats : 75 % of young poeple in Saint-Louis (see table 1) and 69 % in Ziguinchor (see table 2) declare according to Internet through mobile telephony. The gap of six points between two cities means a difference of digital maturity, directly linked to inequality of territorial organization and spatial integration. Howerver, this disparity tends to reduce it self to the favor of recent public investments, among which the building of the Sénégambie's bridge, the rehabilitation of the Joola ship and the modernization of the air-port of Ziguinchor, that aim to open up the region and stimulate its economic attractivness.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

These structural transformations are part of a larger process of digital territorial recomposition, caraterized by a subsiding ascent of mobile uses and an on going spread of connected services Parallelly , datas collected toward young poeple the access of optic fiber into households reveal that Saint-Louis and Ziguinchor show comparable rates to Internet with respectivelly 14,22 % in Saint-Louis and 14,66 % in Ziguinchor, all cathegories of mixed districts (populars, residential and peripheric). These results, though modest taking into account the high demand tells a meaningful improve of the access to high speed into both intermediary cities.

They equally witness some effects derved by the implantation of the national strategy “Sénégal Numérique 2025”which strategic aim n°43 (Update Report SN2025) aimed to expand the coverage in optic fiber “MERINA” on a more linear of 2200 km, linking the urban pole such as Ziguinchor, Touba, Saint-Louis and Thiès. These initiatives constitute an oustanding step in the structuration of the digital territorial network and down the reduction the digital divide into the intermediary cities Senegal. They should experience a great speed in the sphere of the new technologic orientation strenghthened by the current political regime accross the « New Deal technologique », which aim to solidify the achievements of the digital transformation while promoting a fairer numeric inclusion between the territories.

In such perspective, it is essential to take into account the geographic position of the households into the urban system, as these latter widely conditions the effective access to the digital infrastructures. In fact, the dynamics of territorial arrangements and the spatial hierachisation of districts between well equiped urban centers and outskirts in deficit of majors infrastructures remain strutured factors of noted digital inequalities in both explored cities.

Relationship between household Internet access equipment and neighborhood location in the cities of Saint-Louis and Ziguinchor

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Table 1 : Household location and Internet access levels in Saint-Louis

	Value	Ddl	Asymptotique significance (two-tailed)
Pearson Chi-Square	126,601[a]	48	0,000
Likelihood ratio test	125,017	48	0,000
Valid N	549		

Source : DigiSen Data, 2025

Table 2 : Household location and Internet access levels in Ziguinchor

	Value	Ddl	Asymptotic significance (two-tailed)
Pearson Chi-Square	918,245[a]	324	0,000
Likelihood Ratio test	625,596	324	0,000
Valid N	566		

Source : DigiSen Data, 2025

Toward the test of Khi² of the relation setting of households and level of Internet access in both cities, the present study establishes the urban districts, as well in Saint-Louis as Ziguinchor, present some level of access differenciated to the infrastructures and the digital equipments. This situation reveals in the facts that the degree of inequality in access to basical social services and, consequently, shows the numeric gap is linked to the context and history of each district. In addition, to the position of districts in the global geographical system of cities. To the households scales, the diagnostic lets know that the access of Internet of young poeple is dependant to three parameters which the endowment of the household to digital equipment, the access of the young man to the intelligent mobile phone (the smartphone) or the access of the household to the Wifi Public Private Open (WPPO). Facing the structural digital access, the young men developed some community strategies of inclusion. In Saint-Louis as in Ziguinchor, they organize some contribution groups n order to finance some shared subscription (Wi-Fi by cable or Flybox ADSL), so reinforcing their digital autonomy in a context of saturation of infrastructures and high demand of optic fiber. These initiatives mean a logic of social innovation that youth fades, at its scale, the lack of public action in territory organisation and equipment manner.

Additionally, palliative solutions supported by NGOs and public-private partnerships (such as connected training centers for youth and women), as well as local initiatives led by sports and cultural associations. *« Sama Gox Sama Yitté »* « *My neighborhood, my priority »*, They contribute to equipping neighborhoods with Wi-Fi access points. These dynamics illustrate the ability of young adults to participate in creating solutions that, depending on the context, help overcome access barriers, foster digital solidarity mechanisms, and redefine how basic digital services are accessed. (Dimitri Samuel Adjanohoun et al. 2024).

In Ziguinchor, despite the expansion of digital coverage through fiber-optic cables, peripheral and working-class neighborhoods (such as Néma from the interior, Lyndiane, and Kénia) continue to face poor mobile network quality and limited Internet access. To cope with these challenges, households often rely on shared subscriptions via Flybox, as is also the case in Saint-Louis.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Moreover, many young people involved in digital entrepreneurship report that their development is hindered by the lack of access to high or very high-speed Internet a crucial requirement to compete in the national public procurement market.

One of them a young enterpreneur of the district : « We, the youth of the city of Ziguinchor, face double discrimination. First, due to geographical isolation, and second, because of precarious, even limited, access to the Internet. Instead of reducing the distance that separates us from the capital and the rest of the world, digital technology keeps us trapped in this enclave. As a young entrepreneur in the digital field, I struggle to access fiber optic here in the Goumelle neighborhood, despite having requested it from the provider two years ago. » (M. Sané, young enterpreneur of the Digital Goumelle).

The significance level of the correlation between household digital equipement and neighborhood status in Saint-Louis and Ziguinchor

Table 3 : Significance level of the correlation in Saint-Louis

Asymmetric measures

		Value	Approximate significance
Nominal by Nominal	Phi	0,480	0,000
	Cramer V	0,196	0,000
Valid N		549	

Source : DigiSen Data, 2025

Table 4 : Significance level of the correlation in Ziguinchor

Asymmetric measures

		Value	Approximate significance
Nominal by Nominal	Phi	1,274	0,000
	Cramer V	0,425	0,000
Valid N		566	

Source : DigiSen Data, 2025

The statistic analysis driven by the test of Khi² It highlighted a significant correlation between the spatial location of households and their access to the Internet in the cities of Saint-Louis and Ziguinchor. To measure the strength of this relationship, the test of V of Cramer has been mobilized. The results obtained indicate a low level of significance, with respective values of 0,196 for Saint-Louis and of 0,425 for Ziguinchor. Although these coefficients remain below the 1% threshold, they confirm the existence of a statistically significant yet weak association between the level of digital equipment in households and the socio-spatial status of the surveyed neighborhoods.

These results suggest that the distribution of digital equipment remains unevenly structured across urban space, reflecting differentiated territorial dynamics between central and peripheral areas. In other words, working-class and peripheral neighborhoods are marked by limited access to basic

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

digital infrastructure and services, which exacerbates the urban digital divide and, by extension, the social and economic disparities within cities.

Central connected spaces and disconnected peripherals : digital dynamic and spatial inequalities in Saint-Louis and in Ziguinchor

The theory of urban growth through concentric zones, developed by Ernest W. Burgess (1925), provides a relevant analytical framework for understanding the spatial distribution of digital inequalities in intermediate Senegalese cities, particularly in Saint-Louis and Ziguinchor. According to this model, cities are structured in concentric rings around a center where the most strategic economic, political, and social functions are concentrated. This spatial configuration also leads to a concentration of digital infrastructure in central areas, to the detriment of the peripheries.

In the case of Saint-Louis and Ziguinchor, privileged access to the Internet in central neighborhoods such as Île Nord in Saint-Louis and Escale in Ziguinchor can be explained by several structural factors. Urban planning achievements and the quality of land subdivision in these areas make them more suitable for hosting advanced digital infrastructure, thereby reinforcing their role as connectivity hubs. As noted by Granjon (2004) and Hargittai (2002), the urban digital divide often reflects pre-existing social and infrastructural divides.

The comparative analysis between these two cities highlights a strong concentration of users and consumers of digital services in central areas. These zones host key public institutions (such as the prefecture, governorate, city hall, fire department, detention center, hospitals, etc.) as well as private structures (training centers, coworking spaces, restaurants, hotels, etc.) that heavily rely on information and communication technologies. This situation illustrates the close correlation between urban spatial organization, economic development, and social transformation all shaped by the digital revolution (Castells, 1996). Central neighborhoods thus emerge as privileged spaces of innovation and modernization, whereas peripheral and low-income neighborhoods remain in a constrained adaptation dynamic, shaped by their urban morphology, density, and distance from basic infrastructure (sanitation, electricity, telephone networks, etc.). The examples of Pikine (see photo 1) and Goxu Mbacc in Saint-Louis, as well as Kenya and Néma 2 (see photo 2) in Ziguinchor, significantly illustrate these socio-spatial disparities in digital access and use. These contrasts confirm the need for a territorial approach to digital policies, one that integrates the spatial, social, and economic dimensions of urban development.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

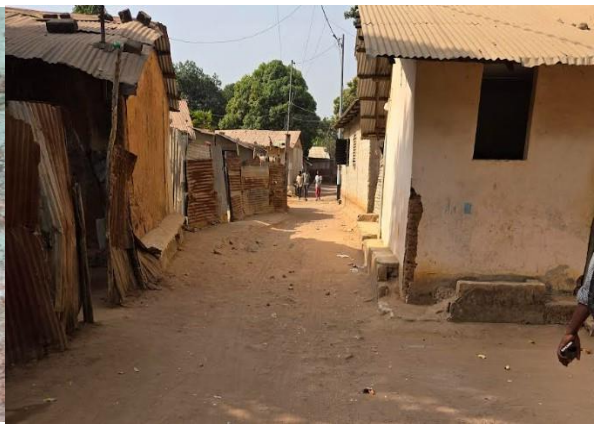


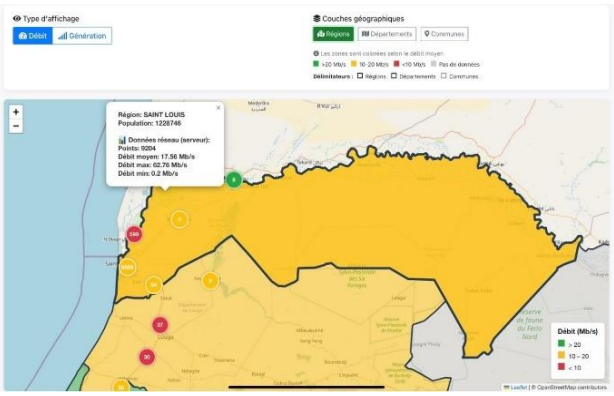
Image 1 : Pikine, Saint-Louis 2024

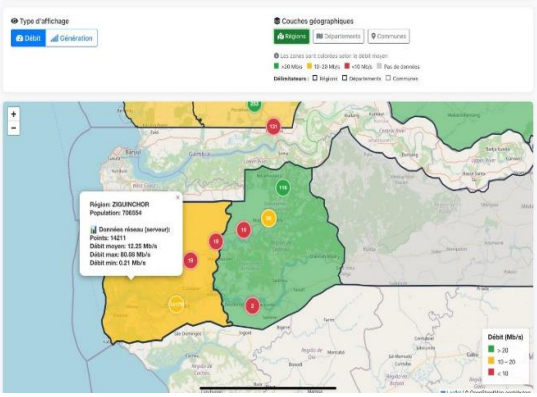
Image 2 : Néma 2, Ziguinchor 2025

The quality of mobile access of Internet in covered areas within urban neighborhoods in Saint-Louis and Ziguinchor

Image 3 : Mapping of mobile internet access quality in Saint-Louis

Image 4 : Mapping of mobile internet access quality in Ziguinchor





Source : Digisen.esp.sn

Source : Digisen.esp.sn

The analysis of trends from an empirical survey conducted among 1115 young adults aged 18 to 24 one household surveyed per person in the cities of Saint-Louis and Ziguinchor reveals that over 60% of the respondents primarily access the Internet via mobile networks in these secondary cities. More specifically, data show that 75% of young urban residents in the 7 neighborhoods studied in Saint-Louis connect using mobile passes, compared to 69% in the 10 neighborhoods surveyed in Ziguinchor. This trend reflects, on the one hand, the delayed penetration of cable Internet in Saint-Louis, and on the other hand, the recent acceleration of fiber optic deployment in the popular and peripheral neighborhoods of Ziguinchor.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

It is important to recall that these expansion operations follow the evaluation of the 2016-2025 Digital Strategy, which revealed that only 16% of the planned actions had actually been implemented (UNDP, 2024). This finding was made possible through a study funded by the UNDP and the Ministry of Communication, Telecommunications, and Digital Economy of Senegal. Following the study, an updated plan for the National Strategy SN2025 was established to enable four cities Thiès, Touba, Saint-Louis, and Ziguinchor to receive targeted support through Strategic Objective 43, titled : "Extend Merina coverage over 2.200 km of optical fiber line currently being deployed." Ultimately, these efforts are expected to strengthen digital inclusion in popular neighborhoods by improving young people's access to the Internet and, more broadly, to Web 2.0 platforms in intermediate cities.

Moreover, these technical advances must be accompanied by strengthened citizen and community oversight mechanisms, through the empowerment of local elected officials on the public service issues related to digital technology, which is currently operated exclusively by private actors. It is also necessary to provide users with tools to measure the quality of prepaid digital services, in order to reinforce the role of the Telecommunications and Postal Regulatory Authority (ARTP) in monitoring the obligations and commitments assigned to private operators.

It is within this framework that the DigiSen application was created, aiming to assess the actual level of Internet access through a matrix that operationalizes connection quality measured in Mbps, which fluctuates according to time and weather conditions. Additionally, DigiSen also allows for estimating the data consumption in Mbps used by users to access web 2.0 platforms (Facebook, YouTube, Google, Snapchat), thereby opening up possibilities for "usage-based" connection monitoring. It also has the potential to reduce conflicts between customers and operators regarding mobile data management.

Analyses based on 9204 measurements in Saint-Louis and 14211 measurements in Ziguinchor confirm the effective operational performance of the DigiSen application, while high Lightning a significant disparity in speed and quality of service among users connected via mobile Internet. These results align with and reinforce the observations of Huet and Buléon (2007), who noted that such disparities persist not only between areas covered and not covered by high-speed networks but also within the areas that do have these so-called high-speed infrastructures.

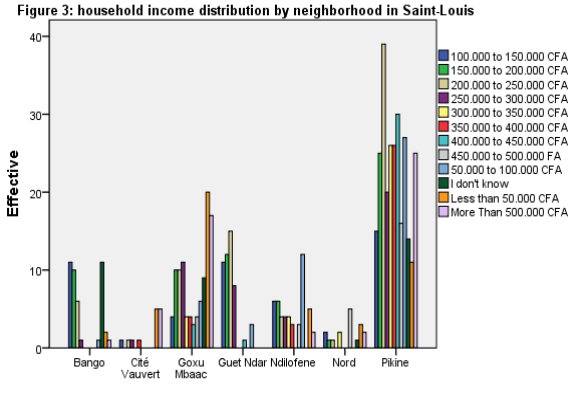
In Saint-Louis, observed speeds range from a maximum of 62.76 Mbps to an average of 17.56 Mbps, with a minimum of 0.2 Mbps (see image 1). In Ziguinchor, the maximum speed reaches 80.08 Mbps, but with an average lower than Saint-Louis (12.25 Mbps) and a comparable minimum (0.21 Mbps).

Based on these results, the DigiSen application could, in its development, model the correlation between the observed digital variability, temporality, climatic factors, geographic location, and infrastructure, in order to better guide policy actions on digital inclusion in Saint-Louis and Ziguinchor, and by extrapolation, in Senegal's intermediate cities.

The factors of inequalities of the Internet access accross the incomes of urban households analysis

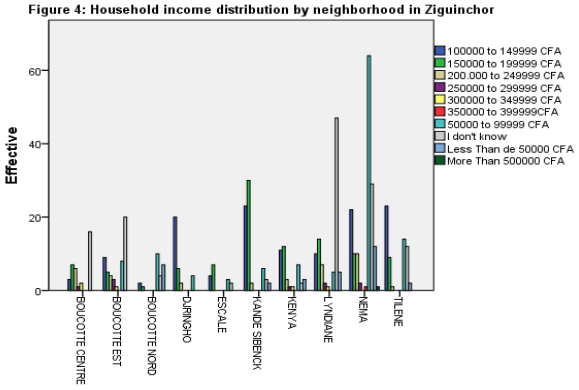
The analysis of field data from Saint-Louis and Ziguinchor reveals a significant reconfiguration of the spatial differentiation patterns in these intermediate cities. While the typology of neighborhoods remains partly linked to the level of infrastructure development, land division, and access to basic services, it is increasingly less dependent on household income. This evolution reflects a growing dissociation between social status and urban location, indicating a restructuring of the socio-residential fabric.

Figure 3: household income distribution by neighborhood in Saint-Louis



Source: survey data, DigiSen projet, Saint-Louis 2024

Figure 4: Household income distribution by neighborhood in Ziguinchor



Source: survey data, DigiSen projet, Ziguinchor 2025

In both Saint-Louis and Ziguinchor, there is a presence of middle-income households in the popular peripheral neighborhoods, and conversely, low-income households are found extending into the historic residential areas. In Saint-Louis, the expansion of neighborhoods such as Cité Vauvert and Ndiolofène towards the periphery and non-buildable zones clearly illustrates this social mix. In Ziguinchor, the same phenomenon is observed in the recent extensions of the

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

neighborhoods of Boudody Escale, Boucotte-Center, East -Boucotte, and North-Boucotte. Once marked by a clear distinction between residential, popular, and informal neighborhoods, the urban structure is now renewed through a blending of social spaces driven by population growth and urban household density pressure. This dynamic has caused a housing crisis and land speculation, which have gradually erased the symbolic boundaries between neighborhoods, leading to flood-prone zones. The Wolof popular expression "Fenn Soré toul" ("no place is far") aptly reflects this transformation : contemporary urbanity tends to blur the old markers of spatial distinction. In Saint-Louis, data reveal an unexpected concentration of middle- and high-income households in peripheral neighborhoods such as Pikine, Goxu Mbacc, Guet Ndar, and Bango, which alone account for more than 90% of households earning between 200.000 and 250.000 FCFA. Similarly, among the 52 households earning over 500.000 FCFA, 42 nearly 90% reside in these peripheral neighborhoods.

This observation reflects a growing disconnect between urban centrality and socio-economic status. The old model, where the city center housed the wealthy classes, tends to reverse : the outskirts are becoming spaces of residential upward mobility, favored by land availability and the expansion of urban services. The observations made in the neighborhoods of Saint-Louis largely confirm the correlation between urban morphology and the spatial distribution of household incomes surveyed.

This trend of socio-spatial disarticulation, already observed in other Senegalese cities, manifests here with particular intensity, although some resistance linked to the persistence of local socio-cultural values continues to temper strict spatial segregation between social categories. Middle-income households, earning between 100.000 and 150.000 FCFA, are spread indistinctly between peripheral and residential neighborhoods, reflecting a relative social heterogeneity in the city's geography. In contrast, higher-income households, earning between 150.000 and 200.000 FCFA, are mostly concentrated in neighborhoods such as Tilène, Lyndiane, and Kandé Sibenck, which are characterized by better access to urban services and digital infrastructure.

However, it is important to note that even within these relatively privileged areas, a significant portion of households do not spend anything on digital services. This lack of investment reflects a persistent usage gap within the emerging middle classes, revealing that possessing economic capital does not necessarily guarantee effective integration into contemporary digital dynamics.

The urban restructuring observed in both cities paradoxically contributes to widening the social digital divide, even though the revised Senegal Digital 2025 plan has significantly impacted

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

intermediate cities like Ziguinchor and Saint-Louis regarding inclusive access to cable internet. The uneven distribution of infrastructure and the variable quality of connections, linked to adaptability across urban zones within the complex geography of neighborhoods, create new forms of exclusion. In Saint-Louis and Ziguinchor, between 65% and 75% of young people connect to the internet via mobile data a precarious and costly mode of connection that limits their internet use and the real opportunities it offers.

This situation reflects the structural vulnerability of urban households to connectivity costs and highlights the growing role of housing conditions and location in producing digital inequalities. Simultaneously, the integration of digital technology into social practices communication, domestic management, economic transactions has led to the essentialization of information technologies. Internet access is now seen as a priority service, even a basic necessity, especially among young adults for whom digital tools shape social interactions and professional integration.

In this regard, the comparison between Saint-Louis and Ziguinchor reveals a common process of disconnection between space and social status, characteristic of evolving intermediate cities. While urban growth, residential mobility, and land speculation reshape spatial hierarchies, they also contribute to producing new forms of digital inequality. Digital technology, now a cross-cutting marker of urban living conditions, simultaneously reinforces the homogenization of social practices and the differentiation of usage capacities, thus crystallizing a divide not only in access but also in skills, quality, and the power of appropriation.

Appropriation and mobilization of digital ressources by young poeple in Saint-Louis and Ziguinchor

The comparative analysis of young people’s means of accessing the Internet within urban households, based on the statements of stakeholders namely youths and local elected officials highlights varying levels of appropriation and mobilization of digital ressources in Saint-Louis and Ziguinchor. In other words, it reveals the conditions of access, including the types of equipment used (mobile internet, ADSL, fiber optic, etc.) and the purposes pursued by the youth. Depending on the context of the two cities, the digital divide goes beyond material access. It also involves the capacity for use by young people, as well as their digital skills. This is why examining how young people combine connectivity, skills, and civic engagement allows for a better understanding of the forms of appropriation and mobilization related to Internet access in the urban areas of Saint-Louis and Ziguinchor.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

This approach aligns with the perspective developed by Cédric Fluckiger (2008), who sees digital appropriation as a dynamic and situated process, where users adopt technologies according to their social, economic, and symbolic contexts. As Beauchamps (2012) emphasizes, “appropriation of Web 2.0 tools is not limited to usage ; it involves a work of meaning and integration of the tools into the fabric of everyday practices.” Thus, beyond simply owning a smartphone or having an Internet connection, it is important to analyze how and for what purposes digital tools are invested by young adults. In this regard, the testimony of H.M. Fall from Saint-Louis provides insight into the unequal conditions of household access to fiber despite its availability, stating :

"*In our neighborhood (at La Pointe on the North Island), access to fiber optic is limited, mainly due to the unavailability of connection ports. While waiting for improved coverage, the majority of households are forced to use alternative solutions such as the 4G Flybox, combined with mobile internet, which makes the cost relatively high."* ((H. M. Fall, a young of 20 years old, living in the district of l’île Nord, à Saint-Louis, schooled and suscribed to the 1st form of Multimedia studies at the digital University of Senegal).

These statements reveal a practical accessibility issue, showing that the availability of Internet service in urban neighborhoods is not directly linked to households’ actual access to the Internet. This observation is documented both in the urban neighborhoods of Saint-Louis and Ziguinchor and, by extension, in Senegal’s intermediate cities. In this regard, the accelerated expansion of cable Internet in popular neighborhoods under the revised Sénégal Numérique 2025 plan quickly faced high demand from households for fiber optic connections, concerns about Internet quality, as well as challenges related to the limited integration of digital infrastructure within the neighborhoods studied in both cities. Therefore, the expansion of fiber optic networks must take into account the context of each neighborhood and their level of urban planning to better address inequalities related to digital equipment. In that trend, D. Beye, local official in Ziguinchor sustained according to him :

"Beyond the high cost of mobile internet the main access point for the majority of the population, especially young people the quality of service remains low, even very low. In reality, there is a clear mismatch between the growing demand and the supply provided by operators. Even more concerning, most users do not know which authorities to turn to in order to call out the operators on these issues. When they do manage to contact them, the operators often justify these shortcomings by pointing to the low housing density in certain neighborhoods or shift the

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

responsibility to the installation of relay antennas." (D. Beye, young entrepreneur very active on social medias, local official and politician).

Indeed, this account highlights two significant determinants related to digital inequalities as analyzed by Olivier Sagna (2006) : It is about affordability, linked to the digital divide, and adaptability, defined as the gap between the growing demand for services and the quality of service actually delivered. Furthermore, young people and local officials clearly indicate that Internet access is structured around several indicative dimensions : the accessibility, the affordability, and the adaptability. Inequality, in this sense, arises from the social disruption of one or more of these variables that condition access. In both Ziguinchor and Saint-Louis, urban households facing these constraints resort to alternative solutions such as mini Wi-Fi boxes, Flybox 4G, or mobile data connections. This reality strongly illustrates what Fluckiger (2008) calls “constrained appropriation”, referring to a form of usage shaped by material access conditions and available economic resources.

In this regard, young people's relationship with Internet usage reveals that they primarily engage with Web 2.0 tools for utilitarian and individual purposes. Indeed, for students, the Internet is integrated into their educational and socialization pathways, while for out-of-school youth, it serves as a space for self-training and the acquisition of practical skills, thus helping to reduce gaps between social categories. The analysis of young people's digital practices highlights a strong level of cognitive and functional appropriation, coupled with high social engagement. However, civic appropriation remains limited, particularly in areas such as civic participation, local innovation, or collective transformation. This trend could potentially improve with the implementation of a second-degree digital socialization in Saint-Louis and Ziguinchor, and, by extension, in all intermediate cities across Senegal.

Discussion

Through the provision of digital equipment within urban households in Saint-Louis and Ziguinchor, this study demonstrates that young people's unequal access to the Internet stems from a set of interdependent factors. On one hand, it is linked to the weak integration of digital infrastructure within fragmented and poorly planned urban areas ; on the other, it is rooted in the dimension of adaptability, understood as the gap between service demand and the actual quality of service delivered. Added to this is a third dimension : users' digital skills, which enhance their capacity to appropriate and leverage digital resources. This triptych infrastructure, adaptability, and skills remains largely uncoordinated, resulting in a limited appropriation of Web 2.0 tools and

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

broader digital resources by youth. This is a critical issue that digital development stakeholders must urgently address through incentive measures aimed at reducing disparities in access to socio-economic opportunities and benefits. The words of young people from Ména 2 are particularly telling : "*We are at a disadvantage compared to youth from other neighborhoods in Ziguinchor due to the poor quality of the Internet network in our area."*This situation, both experienced and denounced by local actors, certainly reflects the lack of urban planning in this village-like district located at the heart of the city. However, it primarily highlights a deeper inequality in Internet access In this respect, access strategies must consider the geographical specificities of neighborhoods. Therefore, the expansion and deployment of digital infrastructure should be designed with local social and spatial contexts in mind, to improve users' effective access to Internet services.

In this regard, Ferreira and Batey (2007) urge urban planners and developers to examine how accessibility is understand in different contexts, particularly from the perspective of places or from the point of view of usage. Mobilizing both perspectives has made it possible to understand how varying levels of access can reshape neighborhoods some being upgraded into highly valued sub-neighborhoods due to their strong internet connectivity, while others become less attractive to tenants because of limited household access to the Internet, as seen in the popular districts of Pikine, Gox Mbacc, and Ndiofène.To address this situation, Denouël (2019) recommends implementing local and national territorially adapted infrastructure plans to fully account for the diverse contexts of household internet access. Similarly, Margot Beauchamps (2023) emphasizes the need to strengthen regulatory and oversight mechanisms for actors responsible for distributing this public service, especially telecom operators. However, such an approach is only effective if politically supported by local authorities whose involvement remains marginal in both Saint-Louis and Ziguinchor, and more broadly across Senegal's intermediate cities. In this respect, Senegal could draw inspiration from the French institutional model. Indeed, the French law of June 21, 2004, on confidence in the digital economy allows local authorities to acquire the status of telecom operator in order to establish and operate networks, provided there is a documented shortfall in private provision.

Transposed to the Senegalese context, such a framework could have a twofold structuring effect : local position of authorities as supervisory bodies, complementing the ARTP in overseeing the quality of service provided within the administrative boundaries of their municipalities ; equip local elected officials with legal tools that enable them to hold operators accountable for the socio-spatial impacts of fragmentation caused by the uneven deployment of infrastructure.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

This institutional framework would thus help to reterritorialize public digital policy and repoliticize issues of infrastructural inclusion by linking them to spatial justice and the reduction of territorial inequalities in access. The implications of such a model lie in the ability to bypass the economic logic that currently shapes the geography of telecommunications network deployment. Indeed, infrastructure distribution is primarily driven by profitability, leading operators to prioritize dense, solvent, and economically attractive areas at the expense of popular neighborhoods and zones marked by socio-economic vulnerabilities. However, these capitalist dynamics conflict with the mission of the State, whose public action should aim to cover the entire territory beyond urban hypercenters by including intermediate cities and, by extension, rural areas. These observations argue for the implementation of incentive policies to strengthen digital infrastructure, aimed at extending and improving Internet access in the peripheral neighborhoods and popular areas of Saint-Louis and Ziguinchor. This situation is particularly evident in the urban margins of Pikine 3, Pikine 4, and Goxu Mbacc 2 in Saint-Louis, as well as in the neighborhoods of Goumelle and Néma 2 in Ziguinchor.

This differentiated treatment of territories by private operators refers to what Graham & Marvin (2001) conceptualize as splintering urbanism : an urban fragmentation produced by selective networks, creating "floating neighborhoods" in their access to social and infrastructural services. In this context, the level of young people’s access to the Internet in Saint-Louis and Ziguinchor appears primarily conditioned by the degree of neighborhood planning and the adaptability/actual quality of the service provided. These two variables are key determinants that continue to limit the appropriation and mobilization of digital resources by young people. Furthermore, the comparative analysis of digital usage reveals a strong cognitive and functional appropriation, supported by relatively sustained social mobilization. However, this dynamic has not yet translated into a consolidated civic appropriation : at this stage, it remains embryonic in both cities, particularly in terms of civic participation, territorial innovation, and collective transformation.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Conclusion

By examining the link between Internet accessibility and the level of digital equipment in urban households in Saint-Louis and Ziguinchor, this study aims to identify the degrees of appropriation and mobilization of digital ressources by young people for differentiated social uses. It thus falls within the field of digital sociology in Senegal and, more broadly, in the Global South, as it highlights, in a situated manner, the structural complexities underlying young people's conditions of Internet access and the resulting social dynamics. Empirical results reveal that the weak integration of digital infrastructures into the urban fabric is a major determinant of access inequalities.

The fragmentation of network coverage between neighborhoods and even within neighborhoods not only generates differentiated connection practices but also contributes to the reproduction, and even reinforcement, of existing socio-urban divides. Young people's connection methods within urban households are therefore not primarily correlated with household income but are more closely linked to the geography of telecommunications network deployment, itself shaped by economic profitability logics. Operators indeed favor densely populated and solvent areas to the detriment of urban peripheries affected by demographic growth, informal urban development, and lack of planning.

This differentiated treatment helps maintain, and even increase, the gaps between centers and margins, thereby limiting young people's capacity to appropriate and mobilize digital resources. A central condition for reducing these asymmetries is to strengthen the political management of digital development. More specifically, it is necessary to reintegrate local elected officials into an operational and strategic role, in order to overcome their current marginal involvement in network governance and ultimately reduce the inefficiences caused by coverage systems based solely on market-driven logics.

Acknowledgments : We would like to thank the Botnar Foundation (www.fondationbotnar.org) for funding the Digital Policy Research, Infrastructure Development and Youth Participation project in Saint-Louis and Ziguinchor (DigiSen), which made it possible to carry out this work.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

References

Adjanohoun, Dimitri Samuel et al. (2025). « The digital policies in the face of access and usage inequalities among young people in intermediate cities in Senegal : the case of Saint-Louis ». Journal of Infrastructure, Policy and Development. 9(1) : 10899. https://doi.org/10.24294/jipd10899 .

Adjanohoun, Dimitri Samuel et al. (2026). « The social dynamics of digital innovation adoption by city dwellers in the city of Saint-Louis, Sénégal » International global journal for research analysis, Print ISSN No. 2277 – 8160 https://www.doi.org/10.36106/gjra/4804696

Akindès Francis et Kouamé Yao Séverin. (2021). L'immixtion « par le bas » des technologies digitales dans la vie urbaine africaine. *Afrique contemporaine*, N° 269-270. DOI: 10.3917/afco.269.0087.

Annie Chéneau-Loquay. (2010). *Modes d'appropriation innovants en téléphonie mobile en Afrique,* MAEE, UIT, Paris. https://www.itu.int/ITU-D/cyb/app/docs/itu-maee-mobile-innovation-afrique-f.pdf (Consulté le 03/07/2025 à 16h 28).

ANSD. (2013). General Census of Population and Housing RGPH-4. Final Report.

ANSD. (2023). General Census of Population and Housing RGPH-5. Preliminary Report.

Beauchamps Margot. (2023). « *L'accessibilité numérique. Transformer le risque de renforcement des inégalités numériques en opportunité* », les cahiers du numérique, DOI :10.3166/lcn.5.1.101-118 .

Brotcorne Périne. (2019). « *Pour une approche systémique des inégalités numériques parmi les jeunes en age scolaire* ». Nouveaux cahiers de la recherche en éducation, vol.21, n°3, p. 135-154.

Castells, M. (1996). The rise of the network society. Oxford : Blackwell Publishers Ltd.

Chambat P. (1994). « *Usages des TIC : évolution des problématiques* », *Technologies de l'information et société*, vol. 6, n° 3, pp. 249-270.

Dahmani Ahmed, « *Les technologies numériques dans les pays en développement. Quel paradigme* ? », Communication, technologies et développement [En ligne], 6 | 2018, mis en ligne le 18 décembre 2018, consulté le 02 juillet 2025. URL : DOI : https://doi.org/10.4000/ctd.437.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Denouël Julie. (2019). « *D'une approche sociocritique à une approche sociocritique critique des usages numérique en éducation* ». Revue formation et profession, vol. 27, n°3, pp36-48. https://dx.doi.org/10.18162/fp.2019.483

Dolorès Kamtchueng Foping. (2022). « Sociologie du numérique », *Communication, technologies et développement* [En ligne], 12 | mis en ligne le 15 décembre 2022, consulté le 07 juillet 2025. URL : http://journals.openedition.org/ctd/8437 ; DOI : https://doi.org/10.4000/ctd.8437 .

Fluckiger Cédric. (2008). *« L'école à l'épreuve de la culture numérique des élèves. Revue française de pédagogie* ». Recherches en éducation, N° 163, p.51-61.

Ferreira A., Batey P. (2007). Re-thinking accessibility planning. A multi-layer conceptual framework and its policy implications, *Town Planning Review*, Vol. 78 No. 4, p. 429-458.

Graham Steve, Simon Marvin. (2001). *Splintering Urbanism*, Networked Infrastructures, Technological Mobilities and the Urban Condition. Routledge London :512 https://doi.org/10.4324/9780203452202

Granjon Fabien. (2004). « *Les sociologies de la fracture numériques* ». Jalons critique pour une revue de la littérature. Question de communication, n°6, p217-232.

Granjon Fabien. (2009). « *Inégalités numériques et connaissance sociale* ». Les cahiers du numérique, Vol 5, n°18, p. 37-62.

Guichard Éric. (2011). « *Le mythe de la fracture numérique* ». Regards croisés sur l'Internet, édité par Éric Guichard, Presses de l'enssib, https://doi.org/10.4000/books.pressesenssib.

Gillespie, A., & Robins, K. (1989). Geographical Inequalities : The Spatial Bias of New Communications Technologies.

Huet, A., & Buléon, P. (2007). *Collectivités territoriales : le défi du haut débit*. Futuribles, (n° 328), pp.51-70

Hargittai Eszter. (2002). « *Second-level Digital Divide* : differences in people's oline skills. First Monday », vol.7, n°4.

Jouët J. (2011). « *Des usages de la télématique* aux *Internet Studies* », in J. Denouël, F. Granjon, *Communiquer à l'ère numérique*, Paris, Presses des Mines, pp. 45-90.

African Scientific Journal
ISSN : 2658-9311
Vol : 03, Num 35 Avril 2026

Kaufmann V. et Widmer E. (2004). « *L'acquisition de la motilité au sein des familles. État de la question et hypothèses de recherche* », Espace et sociétés, 120-121, pp. 199-217.

Sagna Olivier. (2006). « *La lutte contre la fracture numérique en Afrique : aller au-delà de l'accès aux infrastructures* ». Hermès, pp 15-24. DOI : 10.4267/2042/24030.

Ruth Mireille et Manga Edimo. (2010). « *Les TIC, nouvelles formes d'action politique. Le cas des diasporas camerounaises* », Afrique Contemporaine, n° 234, pp. 127-140.

Rapport du plan d'actions. (2025). Actualisation de la stratégie Sénégal Numérique (SN2025), 64p. https://www.undp.org/fr/senegal/publications/strategie-senegal-numerique-2025-sn-2025 .

Seye M.R et al. (2025). « A Crowdsourcing-Based Walk Test Approach to Evaluate Mobile Network Quality », IEEE International Conference on Consumer Electronics (ICCE) DOI : 10.1109/ICCE63647.2025.10930104 .

Touré, I. (2017). « *Jeunesse, mobilisations sociales et citoyenneté en Afrique de l'Ouest. Étude comparée des mouvements de contestation "Y en a marre" au Sénégal et "Balai citoyen" au Burkina Faso* », Africa Development, vol. XLII, n° 2, pp. 57-82.

https://africtivistes.net/fr/africtivistes-autonomise-les-jeunes-africains-a-travers-digitalise-youth 02/07/2025 et 2 :42 p.m.

https://www.itu.int/en/ITUD/Statistics/Documents/publications/misr2017/MISR2017_ES_F.pdf accessed on 03/07/2025 at 5:40 p.m.

https://africtivistes.net/fr/africtivistes-autonomise-les-jeunes-africains-a-travers-digitalise-youth 02/07/2025 à 14h 46 .

https://www.itu.int/en/ITUD/Statistics/Documents/publications/misr2017/MISR2017_ES_F.pdf Accessed on 03/07/2025 at 5:40 p.m.

https://africtivistes.net/fr/africtivistes-autonomise-les-jeunes-africains-a-travers-digitalise-youth 02/07/2025 at 14:42 p.m.