Original Research Paper

Sociology

THE SOCIAL DYNAMICS OF DIGITAL INNOVATION ADOPTION BY CITY DWELLERS IN THE CITY OF SAINT-LOUIS, SENEGAL

Dimitri Samuel Adjanohoun*	Gaston Berger University of Saint-Louis (Senegal). *Corresponding Author
Djiby Sow	Gaston Berger University of Saint-Louis (Senegal).
Tatiana Diéye Pouye Mbengue	Gaston Berger University of Saint-Louis (Senegal).
El Hadji Mamadou Ndiaye	Gaston Berger University of Saint-Louis (Senegal).
Cheikh Samba Wade	Gaston Berger University of Saint-Louis (Senegal).
Madoune Robert Seye	Higher Polytechnic School of Dakar (Senegal).
Derguène Mbaye	Higher Polytechnic School of Dakar (Senegal).
Moussa Diallo	Higher Polytechnic School of Dakar (Senegal).
Lamine Ndiaye	Higher Polytechnic School of Dakar (Senegal).
Pablo De Roulet	Swiss Federal Institute of Technology Lausanne (Switzerland).
Jean-Claude Munyaka	Swiss Federal Institute of Technology Lausanne (Switzerland).
Jérôme Chenal	Swiss Federal Institute of Technology Lausanne (Switzerland).

ABSTRACT From the analogue era to the widespread adoption of digital technologies, urban residents in West African cities such as Saint-Louis in Senegal have never before integrated technological innovations so extensively into their everyday social practices. These include monetary transactions, the payment of transport fares, and dematerialised purchases in small local shops. Through the lens of the sociology of socialised digital innovations, I demonstrate how the Internet has become an essential service, and how connection practices are shaped by disparities in access to social services within urban neighbourhoods characterised by uneven Internet coverage, itself closely linked to urban planning processes.

INTRODUCTION

At the first edition of the Conference of Public Administrators and Managers of Senegal (CMP), held on January 20, 2025, President Bassirou Diomaye Faye highlighted in his speech the urgent need for an administrative reform based on digital technology. In this regard, he stated: "We have a republican administration, certainly, but one that is stuck in outdated frameworks, while our socio-economic realities are rapidly evolving, marked by digital transformation and the rise of artificial intelligence. Furthermore, we face an oversized parapublic sector, often duplicating the central administration, which is budget-consuming and contributes too little to state dividends. Finally, we have complex and costly public services that limit the efficiency of public policies and tarnish the image of the State."

He went on to say that "it is imperative to restructure our Senegalese administration to make it more modern, closer to the citizens, and more efficient in fulfilling its missions (...). The time has come to accelerate the digital transformation of our administrations. The dematerialization of procedures and simplified access are guarantees of transparency and good governance."

This clear vision from the President of Senegal reinforces the choice of digitizing and strengthening public services through digital means. However, it also requires heavy investments that have not yet been fully implemented to support the rollout of Senegal's new digital public policy framework.

Beyond the modernization of public services, this strategy also represents a real opportunity to expand young people's access to the Internet by extending digital coverage via 4G and 5G networks. This is essential for promoting participatory urban governance, especially in view of projections from the National Agency for Statistics and Demography (ANSD, 2023), which estimate that 60% of Senegal's population will be urban by 2035. In this context, digital development should support the growth of intermediate cities. According to the World Bank, Senegal's intermediate cities have populations under 300,000, unlike Dakar, which alone is home to over one million people. This reveals a major disparity between intermediate cities and Dakar-the country's capital-which, due to its attractive business climate, hosts 80% of Senegal's companies (World Bank, 2021).

Furthermore, Saint-Louis, as an intermediate city, can play a role in territorial restructuring through the establishment of development hubs. This represents a key issue in the transition to a digital economy, especially considering the

significant shift from analog to digital observed across all economic sectors in Saint-Louis, including fishing, tourism, and crafts. Additionally, there is widespread access to technological tools among the population, particularly mobile phones. This accounts for the strong adoption of digital tools by young adults, as well as the integration of technological innovations into the daily practices of urban dwellers.

This raises two complementary questions: What is the relationship between the adoption and appropriation of digital services by urban populations in the city of Saint-Louis? What are the underlying factors that explain this dynamic in intermediate cities such as Saint-Louis?

Based on these two questions, it has been observed-drawing from factual data-that the transformation of social consumption systems in the city of Saint-Louis, Senegal, is a consequence of the expansion and adoption of telecommunication technology networks by city dwellers. However, this observation is linked to two sets of implications: on the one hand, issues of accessibility and adaptability related to digital infrastructure and equipment; on the other hand, resource availability and the affordability of digital services within households, both within and between neighborhoods. After outlining the key themes of this contribution, the next section will present the data collection instruments used and the empirical findings, which are analyzed in relation to the proposed analytical model.

Methodology

The observations made during this study were carried out in the urban neighborhoods shown in orange on the first map below, in Saint-Louis, Senegal.
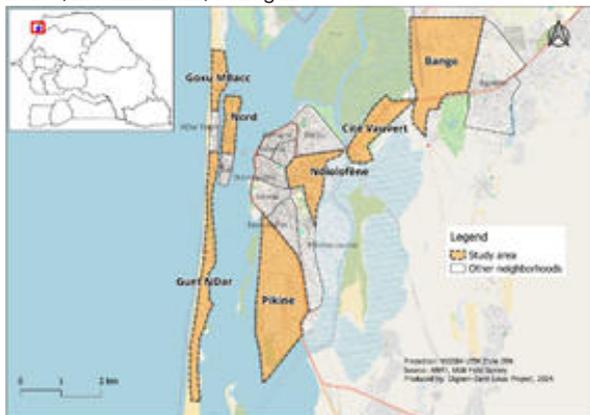
Source: Survey Data, DigiSen Project, Saint-Louis 2024

Former capital of French West Africa, the city of Saint-Louis stands out for its heritage, its role as a commercial and cultural crossroads, and its function as an administrative and university center. In terms of its urban layout, it is structured around the historic island, the Langue de Barbarie, and the mainland, leading to significant disparities in access to services and infrastructure. In the digital sphere, the distribution of equipment and Internet coverage varies significantly depending on the status of urban neighborhoods (residential, peripheral, working-class, and informal). However, residential and administrative neighborhoods often enjoy better connections, while some peripheral or working-class particularly informal areas lag behind, marked by disparities in access to social services and infrastructure. In this context, Saint-Louis faces the challenge of territorial planning that takes into account both its geographical constraints and its socio-spatial inequalities. These challenges involve ensuring inclusive Internet access and enhancing the extent to which urban residents embrace digital innovations.

For this reason, the study examines the city through its core (downtown), its extensions into the first working-class neighborhoods, and their spatial developments (peripheral districts). This choice is motivated by one main concern: analyzing neighborhoods by concentric zones to reveal, at the neighborhood scale, the level of integration of digital infrastructure into the urban network. This would make it possible to grasp the socio-economic implications of the digital economy's dynamics in intermediate cities, particularly the city of Saint-Louis, on patterns of consumption and production. The uniqueness of this study lies in the paradox it highlights: the acceleration of a digital economy, the digitization of administration driven by public policies through the new digital deal, and the deepening of tangible social and digital inequalities between and within urban neighborhoods.

Thus, the investigations led to the questioning of various groups to address the issues raised by the object of study. These include:
- 549 urban youth from household surveys;
- 992 merchants, including mobile phone shop owners, mobile phone accessory vendors, second-hand phone table managers, second-hand phone sellers and repairers, and street vendors;
- 107 managers of venues or establishments equipped with ADSL Wi-Fi or private/public fiber internet.

Additionally, 28 semi-structured interviews and 3 focus groups were conducted with both in-school and out-of-school youth aged 18 to 24, all residing in the city of Saint-Louis.

Observation Framework And Units Surveyed
Techniques and Tools for Data Collection
The approach adopted in this study is multidisciplinary. It connects urban geography with urban sociology to better grasp the object in all its complexity. This justifies the triangulation of various data collections techniques. As such, the quantitative method was combined with the qualitative method, both mobilized through the use of a two-level questionnaire, semi-structured interviews, and structured focus group discussions.

Firstly, youth aged 18 to 24 were surveyed regarding their access to and use of the internet and connected devices at the household and neighborhood levels in Saint-Louis, between April 22 and May 2, 2024. A second survey was then conducted from September 20 to October 2, 2024. This allowed the development-through two distinct questionnaires-of a participatory mapping of connected spaces, an assessment of the fluctuation of financial flows through digital services, and an analysis of the development of the smart phone and accessories market, including all related professions (repairers, vendors, and distributors of smart phones and digital services).

The data was collected using the Kobotoolbox/Kobocollect system, resulting in three databases. Additionally, 28 structured interviews, lasting between 57 minutes and 1 hour 10 minutes, and 3 focus groups, lasting 1 hour and 7 minutes each, were conducted within households and local community structures. These sessions were organized with DigiSen youth facilitators and local authorities, who served as our points of access into the neighborhoods. For security reasons, all content data were recorded and stored on digital voice recorders.

Data Analysis
The theory of urban growth through concentric zones helps highlight and explain both the urban digital divide caused by disparities in the deployment of telecommunications infrastructure and the social conditions of users-particularly youth-depending on the urban districts in Saint-Louis.

Drawing from urban sociology and geography, this approach reveals the relationship between economic development, social transformation, and spatial organization. In this regard, it supports the assertion that space, and thus the neighborhood, is dependent on a given social structure.

Accordingly, the theory reveals that central districts-such as Île Nord, the core of the city where the main administrative offices are concentrated-benefit from privileged access to the internet. This contrasts with neighborhoods like Pikine, a peripheral and working-class area characterized by irregular land allotments and limited infrastructural follow-up as it expands.

RESULTS AND DISCUSSION

The findings presented in this article first highlight the dynamics surrounding access to the Internet and technological tools among the population particularly youth and households. Additionally, they allow for an analysis of the level of integration and appropriation of digital innovations in the daily social practices of Saint-Louis residents.

Secondly, the results expose the contradictions arising from objective and social digital inequalities, which create forms of discrimination both between and within the neighborhoods surveyed. Lastly, the study points to perspectives for the future namely, measures and actions aimed at promoting digital inclusion in intermediate cities in Senegal. Digital Innovations and Opportunities in Intermediate Cities. The data demonstrate the implications of technological innovation adaptation in terms of opportunities for young urban dwellers in the city of Saint-Louis.

Digital Innovations And Opportunities In Intermediate Cities

The data demonstrate the implications of technological innovation adaptation in terms of opportunities for young urban dwellers in the city of Saint-Louis.

Figure 1: Assessment of the penetration and deployment level of mobile banking services (Free Money, Orange Money, Wave) in the city of Saint-Louis

Source : Survey data, DigiSen Project, Saint-Louis 2024

In intermediate cities like Saint-Louis, observations show that the democratization of mobile technologies and access to the Internet by users and professionals has significantly impacted productivity and consumption. Indeed, these two innovations are driving the local economy by creating economic opportunities for young urban residents, particularly in digital commerce and the sales/repair sector.

In this regard, data analysis of digital service spaces reveals that 64,54% of the 992 (figure1) businesses surveyed in Saint-Louis are digital businesses. These local services are spread across markets, major streets, and especially within the neighborhoods of Saint-Louis, as these are key places for the circulation, reception, and transfer of money flows. This dynamic is explained by the adoption of digital services by the population in their daily social activities.

A local official from Saint-Louis notes that "the digitalization of transfers helps to streamline the flow of money transfers and withdrawals" (I. D., president of the Goxu Mbacc neighborhood council). It is clear, therefore, that the shift from analog to digital has a significant effect on even the most basic social activities. Moreover, it is important to note that the population's appropriation of this innovation is linked to the speed and security it provides to its users.

Adoption of Digital Services among the Population in Saint-Louis

Table 2: Top 3 Most Sold Phone/smartphone Brands (%)

Marks	Percentage
Samsung	37%
Techno	34%
IPhone	31%

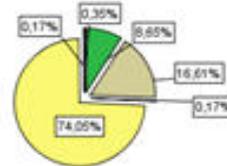**Source:** Survey Data, DigiSen Project, 2024

Data on access among the people of Saint-Louis show that young people have significant access to digital tools (smartphones, tablets, laptops, software, digital applications, social networks) with a growing trend toward social media adoption. Consequently, many young people, both students and non-students, understand the importance of digital skills. This is a prerequisite for accessing digital opportunities, which most of them pursue through self-training.

Moreover, young entrepreneurs interviewed mentioned "early access to technological tools." This highlights how digital devices like smartphones act as stimuli that lead young minds, still in a formative stage, toward a culture of manipulation. It suggests that young people develop a "click culture" before fully developing an internet culture. This observation is supported by investigation data showing that 100% of the young people surveyed in urban households have individual access to a phone. This indicator reflects the impact of mobile telephony penetration, linked to market liberalization policies, which also spurred related secondary activities. These include subsectors like the sale of phone parts, repair, and distribution, mainly found along major streets and marketplaces in Saint-Louis.

Furthermore, this study identified the three most sold smartphone brands in local markets. According to Figure 4, Samsung leads with 37% of sales, followed by Tecno at 24%, and finally iPhone at 31%. This trend was confirmed among young people aged 18 to 24 across seven urban neighborhoods of Saint-Louis. Given this, it is important to question the consequences of the diversification of distribution channels for digital tools on inclusive access to mobile telephony among the population of Saint-Louis.

The Mobile Telephony Market And The Inclusion Of Digital Tools In Intermediate Cities

Figure 2: The rapid growth of mobile phone retail businesses within the city's traditional commercial distribution zones in Saint-Louis

Source: Survey data, DigiSen Project, Saint-Louis 2024

Figure 3: Emerging patterns in the establishment of fixed mobile phone distribution points across urban areas in Saint-Louis
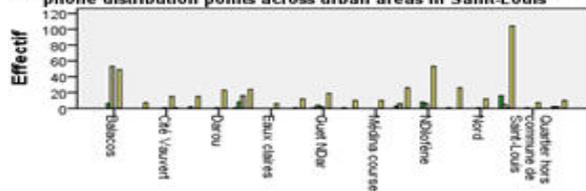
Source: Survey data, DigiSen Project, Saint-Louis 2024

The democratization of technological tools, especially digital devices distributed through local circuits, has greatly enhanced digital inclusion. It has also encouraged many unemployed young people to join this still informal sector, which is increasingly prominent in urban markets of intermediate cities. Observations of shops distributing equipment and technological accessories revealed an entire distribution chain creating a popular sector for importing smartphones catering to all social budgets, ranging from brand-new smartphones to imported second-hand and refurbished devices. This sector is very dynamic and has rapidly expanded due to the profitability of quality refurbished digital products from northern countries imported into southern countries, where they are highly sought after. These businesses enable urban residents with irregular, moderate, or low incomes to access the latest generation smartphones and the newest iPhone models.

Moreover, our observations indicate a significant correlation between urban populations' access to smartphones and Internet connectivity. This was confirmed by a household survey of 549 young people aged 18 to 24, living in seven urban neighborhoods of Saint-Louis, where 95.4% of respondents connect to the Internet via smartphones. Similar findings were also noted during exploratory observations in the city of Ziguinchor, as will be detailed in further data from our investigations.

Nevertheless, the prospects highlighted in the latest report by the Global System for Mobile Communications Association (GSMA) on the development of mobile phone markets are encouraging. It states that "smartphones are expected to account for 88% of total connections in the Sub-Saharan Africa region, compared to a global average of 92% by 2030" (GSMA, 2023), which is good news for strengthening urban residents' access to the Internet. However, the government must better organize the sector to prevent it from being entirely controlled by large firms in the industry, which increasingly prefer to use local distribution systems that are affordable, fast, and less costly. In this regard, "the sale of electronic products in marketplaces has not been left out of the strategies of manufacturers who, like mobile phone operators, have successfully mobilized actors in the informal economy to penetrate African markets."

Table 3: Percentage Of Technological Products Sold In Percentage

Article	Percentage
Accessories	51, 71%
Smartphones	31,45%
Tablets	18,25%
Smartwatches	14,72%
Smart TV	9,48%
Laptop computer	8,97%
Gaming consoles	8,87

Source: Participatory Mapping, Saint-Louis 2024

By examining the opportunities created by this booming market within the informal economy, several sub-sectors of trade were identified along the main streets and markets of Saint-Louis. According to the president of the association of young mobile phone merchants and repairers at the city's main market, "most of the young people involved in the mobile phone economy at the Sor market are aged between 14 and 35." Among the types of businesses listed, as shown in Table 2, 73.46% are fixed shops; 16.78% are stalls (stands, tables, kiosks) often set up in front of fixed shops; 9.08% are mobile vendors selling phone accessories and electronic tools; 0.34% are pushcart vendors; 0.17% sell phones door-to-door, sometimes offering credit sales; and 0.17% are mobile vendors operating from vehicles.

Table 4 : Most Commonly Sold Accessories In (%)

Accessories	Percentage
Wired earphones	50,5%
Wireless airpods	40,73%
Protective pouches	40,52%
Screen protector (tempered glass)	36,79%
Bluetooth speaker	31,65%

Source: Participatory Mapping, DigiSen 2024

In the mobile phone shops surveyed in Saint-Louis, the leading brands are Samsung, representing 37% of sales, followed by Techno with 34.48%, and iPhone at 30.65%. Furthermore, the study highlighted the significant role played by the trade of smartphone accessories and electronic devices, which are highly sought after by both consumers and merchants.

Analyzing the sales dynamics within the mobile phone industry reveals the five most sold mobile phone accessories per day, according to the 992 merchants surveyed. Wired earphones hold the top spot, representing 50.5% of daily sales. Next are wireless AirPods, which account for 40.73% of daily sales. Protective phone cases come third, making up 40.5% of the most frequently sold products in certain tech accessory shops.

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Additionally, a screen protector accessory commonly called "blindé" accounts for 36.8% of sales; this item is valued by merchants for increasing the durability and protection of often expensive and fragile smartphone screens. Finally, connected electronic devices especially Bluetooth speakers constitute 31.65% of daily sales, making them one of the top-selling products each day.

These electronic products are increasingly being imported directly by local merchants or sourced from suppliers in China and Dubai, then distributed to small retailers and shops established in intermediate cities like Saint-Louis representing a highly profitable market, explains P.D. He adds, "They generate much more profit than selling phones themselves. For example, I buy wired earphones of second-grade Chinese brand quality from a wholesaler at 200 CFA, then resell them for 700 CFA. First-grade wired earphones from Chinese brands cost me 350 CFA, which I resell at 1000 CFA" (P.D., 28-year-old street vendor of phone accessories). This testimony highlights the profitability of these products and their appeal to many young people.

Similarly, investigations among street vendors, stands, and small shops show that female customers are the most loyal buyers. Supporting this, M.B. adds, "Some of my female clients change their phone cases once or twice a month, whereas my most loyal young male clients do so about once or twice every three months on average" (M.B., 29-year-old

accessory vendor and shop manager at Sor Market). To verify these claims, A.F., a 19-year-old young woman, states:

"Earphones and phone cases may be secondary items for many people, but I disagree. For example, my phone case allows me to personalize my phone with my favorite colors, while earphones connect me to it. I use my earphones to communicate most often, not to mention the music that helps me enjoy my time at school and at home," says A.F., a 19-year-old female student in her final year of high school. Along the same lines, A.B. adds, "Accessories like screen protectors ('blindé') and phone cases help protect the device since it's something we carry in our hands every day. Also, with earphones, you feel less lonely thanks to the music," says A.A.S., a 21-year-old young man.

A comparative analysis of these two perspectives reveals the social role and emotional dimension that phones hold for young people. For young women, the phone becomes a companion, an extension of the self that enhances their daily social experiences often reflected in the changing colors and personalized cases. Conversely, young men tend to approach these items from a utilitarian perspective: cases and screen protectors help safeguard the phone from damage, while earphones (wired or wireless) enable integration of the device into various everyday contexts. Moreover, data analysis establishes a clear link between mobile phone access and 3G/4G internet connectivity in urban populations. Secondary cities long disadvantaged by geographic isolation are now catching up. Although Saint-Louis benefited early from colonial legacies that provided infrastructure and telecommunications as early as the 1700s, it still suffers from Today, these intermediate cities, once isolated, are increasingly connected to Dakar due to the widespread availability of 3G and 4G networks, as well as the mass adoption of mobile phones the primary tool young people use to access the internet (Adjanohoun, D.S., et al., 2025). In Saint-Louis, even in its outlying neighborhoods, residents now enjoy access to digital innovations comparable to those in major African cities like Dakar.

This context lays the groundwork for the development of digital services, mobile money transfers, and the digitization of payment methods elements that can be understood as socially adapted innovations that are increasingly integrated into daily routines and essential practices.

Toward the Widespread Digitalization of Payment for Commercial and Social Services in Intermediate Cities: Urban Taxis and Small Connected Social Businesses in Saint-Louis

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

The success and level of adoption of these solutions are due to their speed, security, and practical use by users. As a result, they enable the management of urgent daily transactions, as illustrated by photos 1 and 2 regarding payment for taxis or urban buses, as well as handling small change issues in supply canteens, as shown in photo 2 above. According to a

23-year-old woman from Ndiofène interviewed about the benefits and contribution of digital platforms in daily activities, "Digital transfer platforms save me time during my city travels, help me save money without fees, and are indispensable-I use them on average 3 to 4 times during the 5 most urgent daily interactions" (AD).

From 1G analog technology to digital with 2G, 3G, 4G, and now 5G, we have observed that in West Africa, particularly Senegal, digital technologies have never been as widely mobilized to serve everyday social practices in secondary cities as they are today. In Saint-Louis, our investigations show that the democratization and access to the Internet over the past three years have had significant effects on the urban economy. Mobile money transfer services like Wave, Orange Money, and Kay Pay, to name just three, have triggered an unprecedented change in basic social habits related to monetary transactions through digital means. The level of adoption of digital innovations by city dwellers, alongside the growing trend of online sales via social networks like WhatsApp, Facebook, and Instagram (outside specialized platforms), can be explained by three factors: increasing access to mobile phones affordable for all budgets; the democratization of 3G and 4G networks; and the practical, secure use of digital applications adapted for both educated and non-educated users.

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The analysis of the dynamics of connected spaces in the urban neighborhoods of Saint-Louis (including popular, peripheral, and residential areas) revealed a close relationship between the level of infrastructure in the neighborhoods and the presence of connected spaces. In this regard, the Île Nord neighborhood stands out from the rest of the city due to its urban planning and infrastructure. It adopts innovations much more rapidly than peripheral and popular neighborhoods such as Pikine, Goxu Mbacc, and Diamaguene, which developed spontaneously.

Figure 4: The spatial dynamics of connected sites in urban neighborhoods in the city of Saint-Louis: a strategic lever to strengthen for inclusive Internet access
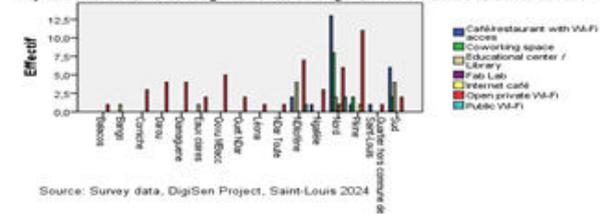
Source: Survey data, DigiSen Project, Saint-Louis 2024

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In Saint-Louis, the Île Nord neighborhood alone hosts the majority of the city's connected spaces. We identified multifunctional specialized spaces equipped with Wi-Fi, including coworking spaces and the city's only Fab Lab. Additionally, private establishments such as cafés/restaurants, educational and cultural centers, and libraries

have all integrated a new service: Internet connectivity. These spaces, traditionally frequented by older individuals, are now much more open to young people.

Beyond Île Nord, the Ndiolofène neighborhood has recently benefited from a restructuring plan through the PUDC (Emergency Community Development Program), which allowed for the expansion of its road network and public lighting infrastructure a set of improvements that position the neighborhood for more balanced household access to the internet via fiber optics in the coming years.

Furthermore, the study revealed the current state of household internet access in urban areas, mainly through ADSL and increasingly through fiber optics. Beyond the cost, lack of household internet access is often due to network unavailability. As DB, a 24-year-old resident of Pikine, states: "We were subscribed to Wi-Fi that worked well when we lived in Cité SAED, but now that we've moved to Pikine 3 (a sub-area of Pikine), our internet speed has dropped to 2G." The only tasks that can be performed with such a low connection speed are limited to checking emails and interacting via the WhatsApp social network, which is sometimes even inaccessible." This inequality, reinforced by disparities in infrastructure and equipment in peripheral and popular neighborhoods, is a recurring concern in users' testimonies. It limits certain segments of the population from accessing internet services, while others in the city fully benefit from them. This situation has sparked growing interest in identifying the implications of the paradox brought by the digital revolution and its democratization across all spheres of social life. This shift has been deliberately pursued by the new political regime as a means of systemic transformation, aiming to fight corruption and improve public services. However, such an approach requires significant investment in digital infrastructure, as proposed in Senegal's National High and Very High-Speed Broadband Plan, developed in 2018 through the Universal Telecommunications Service Development Fund (FDSUT), under recommendations from the Broadband Commission of the International Telecommunication Union (ITU). This initiative aims to improve network accessibility across urban neighborhoods, helping to address structural inequalities in urban governance (planning and infrastructure), which are prerequisites for making internet services both affordable and adaptable-essential conditions for achieving the goals set by the government's Technological New Deal strategy.

Digital Inequalities and Their Social and Spatial Implications on Young People's Access to the Internet in Urban Neighborhoods of Saint-Louis

Figure 5: Report on the level of urban neighborhood infrastructure in relation to household internet access in the city of Saint-Louis
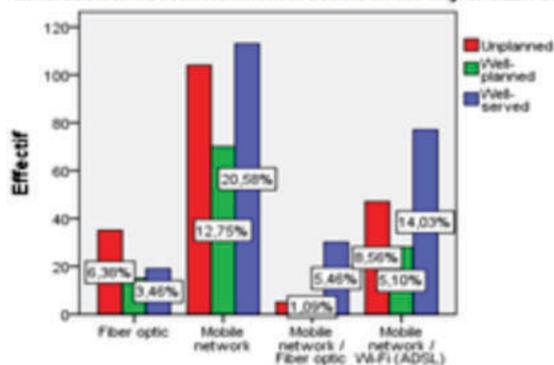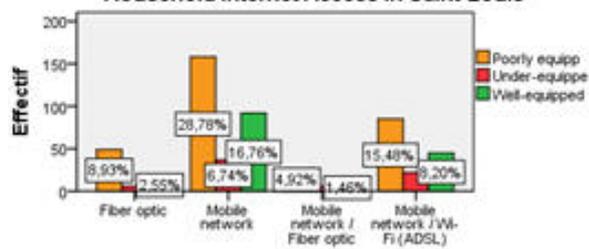

Source: Servey data, DigiSen project, Saint-Louis 2024

The cross-analysis of variables-namely, the level of neighborhood development and young adults' access to the internet within urban households-followed by the assessment of infrastructure and access to digital tools, revealed

significant correlations (Chi-square = 0.000, less than 5). As shown in Figure 5, there are notable disparities based on the status and development level of neighborhoods.

Figure 6: Relationship Between Urban Infrastructure and Household Internet Access in Saint-Louis

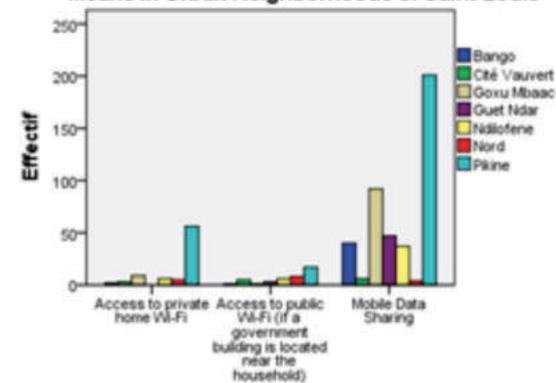Source: Servey data, DigiSen project, Saint-Louis 2024

Thus, young people's access to the internet in Saint-Louis' urban neighborhoods is mainly influenced by the level of urban planning and infrastructure, as well as household access to equipment and youth access to digital tools. This trend is supported by empirical data showing a mismatch between the pace of neighborhood urbanization and their digital infrastructure. In reality, newly developed areas in Saint-Louis incorporate traditional public utilities (electricity, sanitation, waste management, septic systems, transport, etc.) unevenly and often lack essential infrastructure for digital inclusion at both neighborhood and household levels.

This directly impacts the quality of internet access among young adults, with over 97% of them in surveyed households relying on mobile data to connect. Therefore, the level of urban development and infrastructure emerges as a key variable in explaining the digital divide in Saint-Louis. Addressing this divide requires targeted actions to reduce inequalities in digital access between neighborhoods, within neighborhoods, and among households-particularly in terms of technological infrastructure and equipment.

Even more significant than social digital inequalities-which are directly tied to users' ability to access available services within their neighborhoods, as discussed by Kauffmann through the concept of motility-are inequalities measured through variables such as household status, monthly income level, and the attractiveness of the neighborhood or space in which the household is located.

The analysis reveals that objective inequalities have a direct impact on both accessibility and adaptability, due to the infrastructural requirements they entail. This compromises many households'-and therefore young people's access to quality internet in certain neighborhoods, primarily due to a lack of infrastructure and proper urban planning.

Figure 7: Youth Access to the Internet Through Alternative Means in Urban Neighborhoods of Saint-Louis

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

This highlights a dysfunction in the relationship between

urbanization and infrastructure provision, pointing to a two-tiered governance system. The first is the formal category, consisting of well-planned and serviced areas designed by specialized institutions (land registry and urban planning). The second is the informal or popular category, characterized by a patchwork of dwellings in unplanned spaces or sometimes planned but poorly equipped often located on the outskirts or extensions of main peripheral neighborhoods (see Figure 7).

The analysis of Figure 7 above highlights the collaborative strategies used by young people affected by social digital inequalities, linked to household status, income level, and isolation from urban infrastructure in the neighborhoods of Saint-Louis. These include free access points that allow young people with no income-generating activity often from precarious households with irregular monthly incomes ranging from less than 100,000 to as low as 50,000 FCFA to connect to the Internet. Such limited financial means prevent them from subscribing to monthly Wi-Fi services. As a result, these alternative access points in the neighborhoods become crucial and highly beneficial solutions for young adults and households in intermediate cities like Saint-Louis.

Indeed, these collaborative methods show and explain that young people facing social digital inequalities due to economic reasons take advantage of accessible Wi-Fi passwords from nearby households or open public Wi-Fi networks to connect to the Internet. These shared access strategies provide at least a second option for this group of young people to connect once or twice a day for various digital uses, as clearly illustrated.

The experience of M.D. illustrates this clearly: "It's thanks to my access to the center's Wi-Fi, which I use twice a day for 2 to 3 hours in the mornig and evening, that I'm able to watch Java coding tutorials. This allowed me to shift from photography to graphic design. I also use AI to create content that raises awareness among young people about deforestation, and I organize tree-planting initiatives in my neighborhood here in Bango."

This testimony highlights the importance of addressing the digital divide through inclusive digital access, partly made possible by collaborative modes that help young people get online
The examination of local sites identified within the neighborhoods of Saint-Louis through mapping methodology highlights the level of accessibility and the connection young people establish with these social, economic, cultural, and religious institutions in the urban areas of Saint-Louis. The analysis of this data reveals two key findings: the unequal distribution of socio-economic and cultural infrastructure, and disparities in internet access. The first observation clearly shows that all urban neighborhoods in Saint-Louis are under-equipped with social and recreational infrastructure. In this regard, only the neighborhood of Ndiolofène hosts two youth-oriented facilities a professional sports center and a political party headquarters both connected to the internet via fiber optics. In addition, there are six cultural centers, but only one located on the North Island is equipped with open-access Wi-Fi for visitors. Regarding the second point, the three graphs mentioned above show a strong concentration and proximity of young people to places such as health centers (paramedical facilities, clinics, and pharmacies), commercial centers, and places of worship, which are more prominent in the urban landscape. However, none of these places have internet access. Yet, connecting these sites could significantly improve household internet access.

Today in Saint-Louis, many households especially in peripheral neighborhoods like Pikine, Goxu Mbacc, Ndiofène, and Bango have expressed the need to subscribe to wired Wi-Fi. Connecting public spaces, which attract many people, and putting urgent services like health centers online remain a challenge for developing innovative solutions to improve citizens' access to services in intermediate cities like Saint-Louis. This is an imperative in the digital age.

It presents a clear opportunity for action and intervention to find solutions that ensure population access particularly young people to public and private services via the Internet. Therefore, it is crucial to involve and raise awareness among Senegalese legislators to establish a legal framework that would grant local authorities the necessary legitimacy to oversee the quality of Internet services provided by operators. This measure would strengthen the work of the Telecommunications and Postal Regulatory Authority (ARTP), responsible for ensuring compliance with the terms of service and operating license regulations. In this regard, the case of France can be cited, with the law of June 21, 2004, on trust in the digital economy, which allows local authorities to gain the status of telecom operators. Analysis of this legal framework grants local authorities the possibility, despite the opacity of the telecom sector, to establish and operate networks, provided there is a lack of private sector offer.

Here is a proposal to encourage private operators, involve local elected officials, and combat digital social inequalities that drastically impact young people's access to the Internet in African intermediate cities an issue highlighted by the present study based on the city of Saint-Louis.

DISCUSSION
The results from the data analysis on the impact of internet democratization in intermediate cities highlight three key parameters related to intervention strategies aimed at addressing digital social inequalities and strengthening young people's access to the internet at the neighborhood and urban household levels. These two levels of analysis are perceived by young people as their living spaces. Compared to the state of the art, the study reveals both socio-economic dynamics and the reinforcement of digital inequalities in Saint-Louis, while proposing possible solutions. For instance, regulating distribution markets, which are still embedded in popular trading circuits, remains a challenge to secure the jobs this market is expected to generate in the coming years. Additionally, improving connectivity of nearby social structures represents a real lever for digital inclusion in underserved or moderately covered areas by digital service providers. Regarding the complaints collected from young people about the quality of Internet services, it would be beneficial to involve local elected officials by granting local authorities the power to oversee operators involved in providing digital services. This means increasing the involvement of local representatives in a rather opaque sector by raising their awareness of the challenges related to digital infrastructure planning, which is directly linked to digital accessibility in urban neighborhoods and sub-neighborhoods of Saint-Louis.

Thus, we propose that this goal can only be achieved through the development of a legislative framework granting elected officials the status of evaluators or even operators with the legal means to request corrections of the services provided or offered to users. This would allow local authorities to play a role beyond merely collecting licenses and fees for hosting base transceiver stations (BTS) within a given municipality. Moreover, particularly in the field of mobile telephony distribution, it would be important to define and protect future jobs in this sector, which are currently threatened by the informal system widely adopted by firms because it better suits the flow of goods in African urban markets. By implementing these mechanisms, the state can improve the quality of services offered by digital service providers and promote greater adoption of digital solutions through

enhanced Internet access in intermediate cities. This is a crucial prerequisite for administrative digitalization, without which disparities in the population's access to public services risk being further reinforced.

CONCLUSION

This research renews the interest in digital innovations within intermediate cities in Africa. It represents a step forward in the long march toward African modernity, to borrow the title of the critical work on the concepts of "Africanism" and "Africanness" in relation to modernity and democracy in the singular, proposed by Africanist and anthropologist Jean Copans (1990). In Saint-Louis, Senegal, our empirical observations have documented the diffusion process of digital tools, notably the smartphone, and demonstrated that the adoption and appropriation of digital innovations are directly linked to the strengthened and democratized access of city dwellers to this device. A significant indicator that reflects the assessment of actions taken by public authorities towards the liberalization of the mobile telephony market and its effects on the very high demand from young people for high-speed Internet to undertake or strengthen their digital skills. In this regard, just over 94% of our target group, young adults aged 18 to 24, connect to the Internet via a smartphone. This prerequisite did not exist before, but it now explains both the adoption and the appropriation of technological innovations in intermediate cities that were once isolated but are now connected to major urban centers through digital algorithms. In fact, the real value of this study lies in encouraging the integration of new mass consumption patterns into the analysis of urban social transformations.

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