

CONFERENCE NEWS

Information and communication technologies and social development in Senegal

Report of the UNRISD meeting
16–17 July 2001, Dakar, Senegal

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Introduction

This report provides a summary of the discussions that took place on 16–17 July 2001 in Dakar, Senegal, at the meeting organized by the United Nations Research Institute for Social Development (UNRISD). At this meeting, a review was made of the efforts carried out by the research group that began its work a year earlier, under the direction of Momar-Coumba Diop, to examine issues related to information and communication technologies (ICTs) in Senegal.

As is well known, this area of concern is an increasingly important element in the objectives of the central government of Senegal (CGS) and of other actors for whom these issues have taken on central importance.

Information available in Senegal regarding ICTs has been enhanced by international co-operation activities (e.g., the ACACIA programme of the International Development Research Center (IDRC), by the work of groups such as the Observatory on Information Systems, Networks and Information Highways in Senegal (OSIRIS) and, particularly, through the journal *Batik*¹ and the work of Senegalese and foreign researchers.

Among this body of work, the research topics supported by UNRISD can be associated with the following findings:

First, economic policies in the subregion have significant social impact, worsening the living conditions of the majority of the population. A number of sources point to increased poverty, deterioration of health infrastructure, difficulty among school-age children in attending school, household decisions on resource allocation to the detriment of education and health, and survival strategies that have a destabilizing effect. Moreover, references to development policy on the part of governmental decision makers have become increasingly infrequent, with social policy receiving even less attention. Since the early 1990s, combating poverty has become the dominant issue in most of the countries of the subregion.

A growing body of literature indicates that, in the present context, many of the hopes for progress and social change depend on the development of ICTs. However, technical advances by themselves do not improve the lot of the majority. Not all groups are similarly equipped to deal with these changes. Hence, it seemed important for both UNRISD and Senegalese researchers to initiate a discussion of ICTs focusing on the

major challenges for Senegal—economically, politically and culturally—while bearing in mind the central issue of social development and the effort to combat exclusion.

An initial mission to Senegal, in 1999, was led by Thandika Mkandawire, Director of UNRISD, and Cynthia Hewitt de Alcántara, Deputy Director, in order to dialogue with various leaders in government and in the private sector, as well as with other researchers. The goal—working in collaboration with Momar-Coumba Diop—was to identify the most innovative topics for research. The idea that emerged was to form a team composed of academics, journalists and private sector experts.

Objectives and structure of the research

The objective of the research supported by UNRISD was to focus on the relation between information technologies and social development, taking into account that information and the associated technologies cannot be reduced to mere technical questions. Rather, the technologies must be seen in the framework of a profound restructuring of capitalism (more flexible management, decentralization and networking of enterprises, the supremacy of capital over labour, the decline of the labour movement and global integration of financial markets) that serves to aggravate inequalities. The discussion could not ignore important questions of social mores and customs, or those requiring reassessment of conventional wisdom, particularly relating to that which is far away.

Other important questions also emerged from the process. What social, economic, institutional and policy innovations promote an environment in which these technologies improve the living conditions of disadvantaged groups? What basic elements are needed to build an information society that is open to all, rather than a world with growing inequalities between the information “haves” and “have-nots”?

In order to launch the research and give it a solid foundation, certain guidelines were set forth, most notably the following:

- Avoid an overly general approach to the role of information technologies in the future of the “developing world,” concentrating, rather, on specific issues that have the potential to affect public policy making.
- Take account of cultural, historical and institutional factors that influence the use of information technologies, with a view to improving the living conditions of disadvantaged groups. In this connection, it is important to focus on questions associated with identities and differences. Though we may observe the construction of an identity that confers membership in the larger world, we must also examine forces working against globalization, focusing on the primary identities around which individuals form groups.
- Provide opportunities for collaboration, allowing experts from different parts of the world to provide their input regarding the socioeconomic, political and cultural obstacles to building an inclusive information society.
- Support current efforts within various sectors to examine political, economic and cultural challenges, as well as the challenges that an information society poses for Senegal.

As a starting point in this endeavour, it was deemed essential to assess information currently available on ICTs, in order to provide researchers a basis for selecting original and relevant research topics. Olivier Sagna carried out this assessment through a meticulous survey of the available literature. After examining numerous documents—particularly the grey literature—Sagna, who also plays a key role in OSIRIS, provided a description of the current state of knowledge regarding the role of new technologies in the Senegalese society and in the country’s economy. Sagna outlined the history of ICTs, starting with the first use of the telegraph in 1859, and proceeding through the remarkable expansion of telephony—particularly cellular telephones—and the current Internet boom. He then examined the development of the main institutional and governmental programmes that made all of this possible.

Research provides the general public with an important window on certain issues connected with the development of ICTs. To support this process, a decision was made to publish a monthly supplement in the widely read newspaper *Sud Quotidien*. This work was performed by Malick Rokhy Ba and Bassirou Ndiaye, under the supervision of Abdou Latif Coulibaly.

Based on available resources, a decision was also made to include the participation of young researchers. Two students were selected, and received a subsidy for their research on ICTs. One of them studied ICTs in the informal sector, while the other worked on the use of ICTs in Senegal's educational system.

This first phase of the project received official review at a meeting held in Dakar on 31 January and 1 February 2000 to examine the work. The revised documents then served as a framework for completing the research. Olivier Sagna's study, presented during the working phase, was published by UNRISD.²

The meeting on 16–17 July 2001 was organized in order to examine the results of the work. It brought together researchers, communication professionals, decision makers, and representatives of the private sector and of civil society. The meeting gave the approximately 40 participants an opportunity to discuss the role of new information and communication technologies (NICTs) in Senegal's development.

Opening ceremony

The opening ceremony for the 16–17 July meeting was chaired by Abdoulaye Baldé, Secretary General of the office of the President of the Republic.

In his opening address, Mkandawire remarked that this meeting represented the culmination of research begun almost two years earlier. The project has given some 10 researchers, from different disciplines, the opportunity to study the role of NICTs in Senegal's development and consider the challenges and the importance of the development of these technologies.

Mkandawire observed that the choice made by UNRISD to examine the influence of new technologies on social development in Senegal was well justified by the spirit of openness seen both in the government and in society, as a whole, toward these new technologies. Accordingly, UNRISD relied upon the competence and knowledge of Senegalese researchers, and the results obtained exceeded all expectations. The diversity of issues examined in the research is impressive, and the analyses are rigorous and probing.

Mkandawire pointed out that the relation between NICTs and social development represents a field of research as yet little explored. Thus, the work carried out by the Senegalese team represents a pioneering effort. In Mkandawire's opinion, it constitutes one of the first major sources of knowledge in this field—not only within Senegal, but internationally.

Finally, Mkandawire thanked the Secretary General of the Office of the President of Senegal and the Government of the Netherlands for providing financial support for the project, as well as the Council for the Development of Social Science Research in Africa (CODESRIA) for its support in holding the meeting, and Momar-Coumba Diop for co-ordinating the research.

In his address that opened the workshop, Baldé thanked UNRISD for its initiative in studying the role played by NICTs in social development in Senegal and, in particular, for giving the researchers broad latitude in deciding what subjects to study and how to address them.

Baldé emphasized that the high quality of the research reflects local expertise and reinforces the government's efforts to encourage Africans to take responsibility for issues that affect the continent.

NICTs should receive particular attention in this connection, since they provide decision makers, researchers and the people of Africa a door to a world of dreams, encouraging them to rekindle their passion, and reintroducing within the system of social values the culture of risk and the taste for challenge.

Finally, Baldé reaffirmed the government's interest in the work emerging from this workshop, which will help lay the foundation for a more socially based and equitable use of new technology in the development of African countries.

Following the opening ceremony, plenary sessions were devoted to the researchers' presentations. The presentations were followed by comments by designated speakers, and then by general discussion.

Presentation and discussion of researchers' reports

Session 1: NICTs and economic development

Researchers' presentations

The plenary sessions began with presentations by Abdoulaye Ndiaye,³ Philippe Barry and Hamidou Diop,⁴ followed by Gaye Daffé and Mamadou Dansokho.⁵ This first session was chaired by Amadou Top, who has followed this research since it began. Momar-Coumba Diop began by recapitulating the history of the research, explaining the objectives of the meeting and discussing the anticipated results. He asked that, in commenting on the material presented, people focus on aspects that could be improved, with a view to eventual publication. He encouraged frank and constructive criticism, following this with talk of “adversarial” criticism of the papers presented.

Abdoulaye Ndiaye presented the results of a survey of small and medium-sized enterprises and industries (SMEs/SMIs) in different sectors. Data were gathered from 79 enterprises distributed as follows: industrial sector: 25%; service sector: 53%; and trade sector: 22%.

Since Barry and Diop carried out similar work with large enterprises, Abdoulaye Ndiaye chose to focus on the service sector, where there is a large number of enterprises specializing in ICT services.

Abdoulaye Ndiaye explained that the survey essentially covered small enterprises: 72% have fewer than 50 employees, 69% have fewer than five management-level personnel and 68% have sales of less than 1 billion CFA francs. He added that most of the heads of these enterprises are Senegalese citizens. The majority of the entrepreneurs are over 40 years of age (78%) and have university, engineering, or other degrees.

Half of the enterprises in the sample are export-oriented. This is particularly true in the case of service and trade enterprises (67% and 53% respectively). The region covered by the West African Economic and Monetary Union (WAEMU) is the largest export market for these enterprises (64%). Most of them import finished products or inputs (78%). The imports are primarily from France (57%) and, to a lesser extent, from the WAEMU region (20%). According to Abdoulaye Ndiaye, these data show the openness of the Senegalese economy and its strong dependence on foreign markets.

He believes that in the current climate of globalization, the promotion of ICTs offers great opportunities. Senegal could benefit in a number of ways from electronic commerce. To achieve this, however, the enterprises in question must meet international standards and demands in terms of delivery time, quality, etc. If they wish to meet the demands of a highly competitive international market, they need to devote greater effort to training, in order to establish a more flexible and diversified labour force.

According to Abdoulaye Ndiaye, establishing a place for Senegalese business within the world economy, through subcontracting in the field of ICT, could make it possible for businesses to make use of electronic commerce. Developing collaborations with partners with experience using management models based on electronic commerce would allow Senegalese enterprises to become familiar with the procedures, technologies and quality standards involved in conducting business electronically.

If Senegalese businesses fail to take such action, the economy as a whole could suffer dramatically (with failure of sensitive industries, brain drain, lost opportunities, etc.).

Analysing the degree of appropriation of new technologies, the author notes that the level of computerization in small and medium-sized enterprises and industries is generally low. (Only 19% of enterprises have networked computers.) There are very few networks in the country that make it possible to connect different sections of a single enterprise.

In conclusion, Abdoulaye Ndiaye expressed his opinion that Senegalese businesses need to deal with two major deficiencies: they must reduce the digital technology gap in order to assume a more important role on the international scene and adapt their management models to the competitive demands imposed by the emergence of ICTs.

The presentation by Barry and Diop dealt with the use of the Internet in medium-sized and large industries in Senegal. Their work shows that although industrial enterprises are relatively advanced in appropriating the Internet as a tool—taking advantage of email—the impact of the technology on their operations is still small, overall, for a number of reasons, including:

- the absence of e-commerce, despite the fact that it offers major opportunities both for domestic commerce and for foreign trade;
- the absence of “Senegalese” online content that could be useful for industrial enterprises carrying out their activities; and
- low-level use of the Internet by government, private sector organizations and other partners of industrial enterprises.

Despite these limitations, surveys show that the Internet as a channel of information and communication is indispensable for the activities of 67% of industrial enterprises with connections to the Internet. Of these, 24% consider it a very important tool, 43% consider it important, 22% not very important and 11% unimportant.

To take maximum advantage of the Internet in the current context of trade globalization, at least two needs must be addressed:

- training personnel in computer skills and use of the Internet (already provided in 50% of the industrial enterprises with connections); and
- creating jobs associated with computer technology and the Internet (already a fact in 43% of connected industrial enterprises).

Moreover, there is a tendency for so-called professionalized telematics to develop among industrial enterprises, banks and a variety of tertiary-sector enterprises. Barry and Diop have ascertained that 54% of industrial enterprises connected to the Internet use online banking services. Other services are provided, via telematic networks, to 13% of connected industrial enterprises. This use of telematics helps improve the performance of enterprises by providing them easier access to information and allowing them to implement new management and data processing methods.

Various obstacles, however, stand in the way of widespread access to the Internet by management staff at industrial enterprises:

- the high cost of connection;
- the significant risk of personnel using the Internet for non-professional purposes; and
- the still-low level of need for the Internet in most of the functions carried out by management.

Cost is a major obstacle to generalized access for employees in the case of 20% of the connected industrial enterprises. In 24%, generalized access is considered premature.

The fact remains that the opportunities offered by the Internet have not yet been addressed seriously. In 78% of connected industrial enterprises, the benefits mentioned in interviews only include lowering the cost of telephone calls, faxes and courier service, and locating professional and general information.

Despite its potential, the risks associated with Internet use should not be ignored. Indeed, 43% of connected industrial enterprises believe that Internet use could disrupt their functioning for at least two reasons:

- transmission of computer viruses against which the enterprises have no weapon except to separate their connection to the Internet from the workstations devoted to accounting and production tasks;
- violation of the confidentiality of certain information. To prevent this, Internet access in industrial enterprises is limited, and outgoing electronic messages are checked by a company official at the end of each work day.

Barry and Diop emphasize that the Internet is not yet integrated enough in the functioning of enterprises to allow them to adapt to technological changes, create and consolidate trade alliances, develop new products and services designed to conquer new markets, or carry out important transactions.

It is up to the state to stimulate the use of the Internet in various ways, for instance, by developing its own online activities and making administrative forms and various business and citizens' services available online.

The presentation by Daffé and Dansokho analysed the challenges represented by ICTs for the development of the Senegalese economy. They showed that in sub-Saharan Africa, Senegal is a pioneer in the use of NICTs. Nevertheless, despite renewed growth and the influx of capital as a result of the devaluation of the CFA franc in 1994, the country has been slow to take advantage of its enormous potential in the area of NICTs and to work toward becoming a service economy, as the Bretton Woods institutions encourage.

The Senegalese economy has a problem with stagnation, though there has been a revitalization of economic growth since the devaluation of the CFA franc. In the 1994–2000 period, the transportation and telecommunication subsector was one of the fastest growing and most stable, exceeded only by construction, public works and vegetable oil production.

The development of information and communication services is closely connected with the geostrategic and economic role that the country played in the expansion of French colonialism in Africa. It is with the launching of the data packet transmission network (SENPAC) by the National Telecommunications Corporation (SONATEL), in 1988, that Senegal entered the NICT era. Having opted for planned telecommunication development, the state launched an ambitious programme of investment in the sector.

Analysing strategies for developing ICTs, Daffé and Dansokho described their evolution as being punctuated by two major reforms, those of 1983 and 1996, which were designed to modernize the national telecommunication network and liberalize the sector.

Senegal's communication infrastructure and tools give it access to the most advanced technologies in the world. Despite a series of rate reductions by SONATEL, however, and the elimination of duties on computer equipment, the cost of NICTs remains high for both enterprises and individual citizens.

Telephone access expanded considerably during the past decade, with the proliferation of trunk lines, an explosion of telecenters and a love affair with cellular telephones. Similarly, Internet access has expanded, with the creation of numerous cybercafés and an increasing number of Internet service providers.

Application of NICTs in the education and health sectors constitutes an economic and scientific challenge. It is in the university context that projects for the use of these technologies in distance learning programmes offer the most interesting possibilities for the future. The interest shown in telemedicine is due to the attractiveness of interconnecting hospitals by transmitting images in real time and facilitating professional communication regarding treatments.

Telecommunication services have advanced strongly since 1987. With an average rise of 16% annually, the increase in the value added of telecommunication services is clearly greater than either the 6.3% rise in the gross domestic product (GDP) or the 7% rise in the tertiary sector.

An analysis of the interdependence of telecommunications and other areas of the economy by means of input-output tables (IOTs)⁶ provides a broader view of the impact of NICTs on the economy. The study uses a simplified version of the 1996 IOT, which breaks the economy down into 29 production categories (and a corresponding number of products). For the sake of the analysis, only data regarding categories that use telecommunication services or data regarding products used for the production of such services were taken into account.

Interactions between telecommunications and the rest of the economy are manifest at two levels: use of telecommunication services by other areas of the economy, and the consumption of the products of those areas by the telecommunication area. In the former case, the authors ascertained that telecommunication services are inputs for all categories of production, with the exception of livestock and forestry. In the other

direction, however, the production of telecommunication services uses the products of only 11 categories of activity.⁷

These findings make clear the absence of a local industry dedicated to telecommunications and to information technology materials and equipment, in the face of growing and ever more universal demand for these technologies and services.

The wager on investment in NTICs poses problems in terms of the conditions for the economy's appropriation of applications and tools. These constraints exist on the supply side as well as on the demand side.

In summary, Daffé and Dansokho believe that since the Fifth Economic and Social Development Plan (1977–1980), the state has chosen the option of making telecommunications one of the priority sectors in the economy. With the Ninth Plan (1996–2001), the objective of promoting a service economy makes the spread of NICTs an “absolute necessity for development.” Relying on a public provider model since the 1980s, the government has undertaken massive investment in telecommunication infrastructure.

Though this investment has made possible a major transfer of technology to Senegal, and has made it possible to build the foundation for disseminating and applying NICTs in numerous areas, it has not yet overcome all of the problems involved in appropriating technology. Furthermore, the investments that have been carried out have done more to reinforce the country's technological dependency than to unleash the economic growth that was expected from the development of telecommunication infrastructure.

Discussion

Commenting on these presentations, Top first emphasized the fact that they provide significant data on the use of NICTs in enterprises, without, however, deepening the thinking on the environment in which enterprises must deal with the new technologies. Studies have not put sufficient emphasis on defining the context in which enterprises appropriate NICTs. Moreover, the studies have not examined the role of the state as a model NICT user.

Finally, Top highlighted the problem of distinguishing between technologies and the uses to which they are put. There often is a tendency to emphasize technology and infrastructure, though in reality usage is as important as the technology itself. It is essential to give greater attention to how the participating actors implement particular NICTs.

Matar Seck believes that the presentations make it clear that NICTs are a useful element in the country's economic development. They show the challenges connected with rapid and efficient access to reliable information in a climate of increased competition among economic agents. On average, only 6% of Senegalese enterprises have long-distance access to networks. This weakness is related to sociocultural factors (illiteracy, absence of a computer culture, lack of knowledge about NICTs), as well as economic factors (poor electrical networks and telephone equipment, monopolistic operation of infrastructure and high cost of equipment).

To improve the appropriation of new technologies and increase their impact on the functioning of enterprises, Matar Seck proposes exploring a number of paths, including the following:

- create an information technology oversight office;
- improve communications and related infrastructure in order to reduce costs;
- improve the regulatory framework;
- promote e-commerce;
- strengthen human resources; and
- improve employment possibilities.

Pape Touty Sow commented on the digital technology gap mentioned in various presentations. This gap translates to the technological marginalization of the Southern countries. In his view, it is indispensable to consider the economic and social content of the gap, rather than reducing it to its technological dimensions.

He added that the presentations make clear the potential of new technology for the Southern countries, but fail to make clear the risks involved. The risks are associated with the fact that NICTs reproduce the old economic model, of which one essential feature is countries' outward orientation. The surveys show that 75% of trade is foreign trade, which depends essentially (95%) on imports. This tendency is reinforced by the fact that nearly 74% of the enterprises surveyed concentrate on the opportunities offered by foreign markets.

In addition to the technology gap, there is a geographic gap that divides cities and rural areas. Among other differences, there is a great concentration of computer equipment in the country's large cities, which contain the main users of NICTs. This reproduces the current economic model, in which Dakar has 90% of enterprises, 75% of value added and 70% of jobs.

A similar situation exists in that the economy is a two-track economy, one fast and one slow. NICTs are used primarily by modern enterprises, while the "popular" economy is left behind. In this connection, Pape Touty Sow remarked that the sample did not take micro-enterprises and those enterprises classified as part of the informal economy into account. In social terms, he points out that the jobs created are in small and medium-sized enterprises and industries, and that job creation is primarily taking place at the management level.

He mentioned another gap introduced by NICTs: between enterprises and their environment. The Barry and Diop study shows the absence of an environment that would favour the appropriation of NICTs by enterprises.

It remains true that NICTs represent a formidable opportunity for the development of Senegalese business. The technology in question is relatively accessible, and obstacles are minor, unlike the situation that prevailed in the case in the industrial revolution. It must be added that they reduce, and even eliminate, some constraints (spatial, unit size, etc.). Because of their flexibility, the new technologies seem perfectly adapted to the needs of micro-enterprises (varied content, uses relevant to all markets, etc.).

Pape Touty Sow emphasized that one of the major challenges that faces the actors involved relates to the creation of alternative development strategies, since the new technologies make it possible to break away from the current model of economic functioning. Taking this path assumes, first of all, political will (a commitment to develop national capacity and create an environment where the state is positioned as a model NICT user).

The other important priority is to adopt an approach that is simultaneously local, national and subregional. This would make it possible to identify needs and demands at these different scales, with a view to building endogenous platforms to capture shares of the foreign market. This requires partnerships and networking.

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