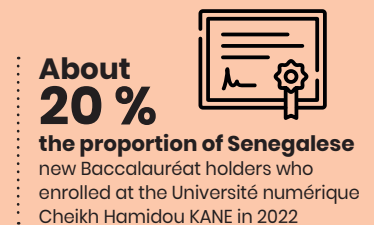
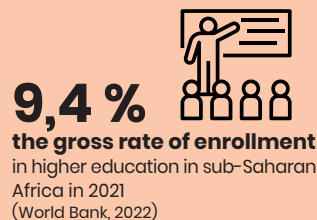


Virtual universities in Africa: The challenges that need to be overcome

An increasing number of African nations now offer virtual universities. This is an appropriate (though partial) response to the challenge of the massification of higher education. However, the rollout of virtual universities raises technical, institutional, and cultural issues, as well as concerns about the quality of the resources used.

In Africa, where public budgetary constraints are routine, the cost of funding public university infrastructure is high. Digital universities appear to offer a way of providing a less costly route to education, while meeting the challenge of massification. Distance learning complements classroom-based learning and vice versa. However, digital university projects owe their success to a number of essential preconditions: technical (hardware, cost of data), institutional (collaboration between institutions, remuneration for teaching staff), cultural (training for teaching staff), and quality of content.

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In Africa, digitization is a response to the demographic and financial challenges limiting access to higher education

Student demography forms a part of Africa's demographic challenge. The average rate of access to higher education in sub-Saharan Africa is just below 10 %, [1] while the graduation rate is even lower. Increasing these rates is key to boosting the skills of African economies.

One of the main obstacles to access to higher education in Africa is infrastructure. How can tens of thousands of additional students be accommodated, without building new universities or increasing the size of existing ones, at a time when public budgets are severely limited? By way of example, 98,000 Ivorians passed their Baccalauréat examinations in 2022, a number equivalent to the total capacity of the university system (around 110,000 students across all public and private universities and across all levels of higher education). The Félix-Houphouët-Boigny University in Côte d'Ivoire has around 70,000 students for less than 40,000 places [2]. Demand in sub-Saharan Africa outstrips supply, and it seems that in the short and medium terms, the construction of public universities will not be able to keep pace (between 20 % and 40 % more students by 2030, if the access rate stays steady or continues to increase in line with the trend observed over the last fifty years).

[1] Campus France, L'enseignement à distance en Afrique subsaharienne: États des lieux, enjeux et perspectives, 2020

[2] L'Université virtuelle de Côte d'Ivoire: Une volonté d'ouvrir la fac à tous les habitants (francetvinfo.fr)

Digital universities are one response to this shortfall in capacity:^[3] they limit the need for physical infrastructure and avoid young people in rural areas needing to undertake costly moves to the city, thereby reducing the cost per additional student educated. The successes of the Virtual University of Cheikh Hamidou KANE (UN-CHK, formerly the Université Virtuelle du Sénégal) and the Virtual University of Tunis provide evidence of this: the former will welcome one in five Senegalese new Baccalauréat holders by 2022, the latter one in four Tunisian students. These two universities represent two different models of digital (or virtual) university: the former is a university in its own right, in that it awards degrees, while the second is a cross-cutting institution that helps other universities to develop their digital resources and does not compete with them. In both cases, collaborations between virtual and traditional universities exist.

Rolling out digital universities is a long and complex process

These two models face four types of challenge: technical, institutional, cultural, and qualitative (linked to the content and knowledge transmitted).

The technical challenge: Access to data and the cost of data

One of the technical challenges is equipping students and the staff who teach them with computers or even smartphones (useful but unsuitable for certain types of learning). The other technical challenge concerns network coverage, speed and, above all, data costs, a factor of inequality in access to digital resources: proportionally, a gigabyte of mobile data represents a far greater drain on the budget of an Ivorian household than on that of a French one (up to 200 times greater). Digital campuses or spaces do not provide the 1-2 Mbps (megabits per second) per user targeted for West Africa. Infrastructure to store the resources created or acquired may be lacking. In some of the virtual universities studied, data is stored on public platforms such as YouTube. Digital universities also require long-term funding for servers and, if they are local, for teams to maintain these. There is

also the question of access to computing tools for student-researchers and researchers, as well as networks between institutions (National Research and Education Networks).

The institutional challenge: Funding and governance

Digital universities have to fund the acquisition or development of the resources they are going to use. Purchasing content is important; so is paying teaching staff to develop resources. For example, the Tunisian Ministry of Higher Education and Research has created a bonus scheme for each digital course created for the Virtual University of Tunis.

Digital universities must also organize their collaborations with other universities, especially if these involve their teaching staff. The creation of digital resources must be integrated into the career paths of teaching staff, while intellectual property must be managed and aligned with the standards of the Conseil africain et malgache pour l'enseignement supérieur (CAMES, the African and Malagasy Council for Higher Education).^[4]

In addition, the education provided must be certified and its quality audited. Senegal, for example, has created diplomas for its virtual university that are at the same level as other higher education diplomas. They are managed by the Autorité nationale d'Assurance Qualité de l'Enseignement supérieur, de la Recherche et de l'Innovation (National Quality Assurance Authority for Higher Education, Research and Innovation).

[3] The development of the private sector is another response, but poses different challenges, particularly around social inequalities: AFD, "L'expansion de l'enseignement supérieur privé et le creusement des inégalités sociales," *Papier de recherche* no. 156, AFD, Paris.

[4] CAMES is specifically responsible for "designing and promoting concerted action to coordinate higher education and research systems in order to harmonize programs and enrollment levels in the various higher education and research establishments, fostering cooperation between the various institutions, and exchanging information." Translator's note: Our translation from the French.

Figure 1- Main obstacles to rolling out Digital educational resources (DER)

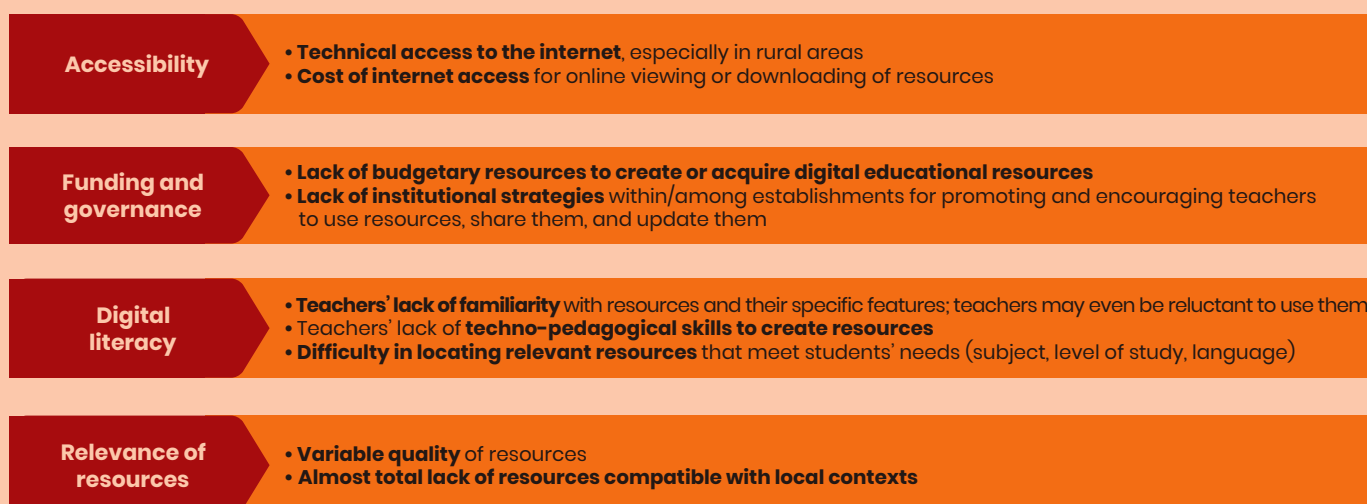


Figure 2 – Segmentations of Digital educational resources (DER)

Target group	Type of DER	Location	Purpose	Formats	Consultation methods
Teaching staff Supporting resources intended to help teaching staff prepare classes, adapt and use existing resources, or even create new ones	Restricted access	Class-room-based	Initial education	Nature • Texts • Images • Videos • Audio recordings • Software • Interactive and multimedia devices • Web documentaries • Websites	Online access only
			Continuing education		
		Distance	Refresher courses	Type • Open distance learning (ODL) • Synchronous online courses (videoconference) • Conferences • Massive Open Online Courses (MOOCs) • Exercises, quizzes • E-books and book chapters • Articles, reports • Tutorials, games	Partly or fully downloadable
			Independent learning		
		Hybrid	Learning assessment		
Learners Learning and evaluation resources	Open/free				

The cultural challenge: Knowledge of digital tools and skills

Digital literacy is perhaps the greatest challenge. Despite the fact that some universities are well connected and equipped, teaching staff may not be applying digital skills sufficiently. In higher education in the broadest sense, change management and the training of teaching staff at university level, or even at faculty level, are critical.

The volume of training required is considerable, while experts in techno-pedagogical skills are rare. Typically, one digital expert is required for around every twenty members of teaching staff, who will each need up to six weeks of training.

Students also need support in learning how to use digital tools. A large proportion of them still lack basic knowledge of IT tools and the ability to use digital content. This is particularly true of students from less affluent backgrounds.

One of the responses to support students has been the hybridization of teaching, through the creation of physical spaces and student tutoring. The Virtual University of Sénégal has set up 17 Espaces Numériques Ouverts (ENO – Open Digital Spaces)^[5] (out of a target of 50), while Tunisia has created a network across its territory with 256 access centers that are smaller-scale than Senegal's ENOs, and the Virtual University of Côte d'Ivoire has set up 11 digital spaces of 50 seats to date. In Senegal, these spaces, combined with tutoring, have helped reduce the high dropout rate that characterized the early days of the virtual university. The introduction of support for new Baccalauréat holders – including one to two months' training on the virtual university platform – in the ENOs has reduced the dropout rate for first-year students from 50 % to 20 %, while the dropout rate for second-year students has fallen to 5 %.^[6]

The challenge of ensuring relevant and high-quality content

Finally, these technical, institutional, and cultural preconditions must enable access to content that is useful for educating students and for researchers. For the latter, the main issue seems to be the volume, quality, and curation of digital documentary resources (databases, scientific articles, book chapters, etc.) that have been acquired or are accessible. This raises the question of organizing public procurement contracts, at the level of individual universities or university groupings, or even national licenses, as well as creating physical and digital libraries to make these resources accessible. Some contents prove ill-suited to current needs and may end up being under-utilized. It is therefore important to carry out upfront checks on the relevance of the resources to be acquired or developed, and then to monitor their actual use.

In countries such as Senegal and Côte d'Ivoire, where the digital university strategy is starting to be implemented on a larger scale, the impact of digital resources on student education has not yet been evaluated systematically. For a given resource or program, how much budget is expended? How many users are there, and how much do they use it? How many hours of courses have been created? What are their impact on learning, knowledge quality, and employability? On this last point, in the three countries examined here, and more widely in other African countries, evaluations of the impact of digital skills on fundamental knowledge and the ability to use digital tools is lacking. Yet they are indispensable.

Some of Africa's most advanced countries on these issues have developed relevant benchmarks for impact analysis. Tunisia, for example, measures the adoption rate, retention rate, user evaluation, impact on academic performance, and user engagement and interaction for digital educational resources.^[7]

[5] Physical spaces where students can access computer equipment (200 workstations) and an internet connection, with a 200-seat lecture theatre, a videoconferencing room, printing services, and a telemedicine room.

[6] Moussa Lo, president of the UN-CHK, presentation at the high-level regional workshop on "Strengthening Regional Cooperation in Distance Education in West Africa," May 2023.

[7] We have not had access to the results of these evaluations, however.

What are the priorities for creating a digital university?

Coordinating stakeholders

Setting up a virtual university requires the concerted action of a large number of stakeholders: the ministries of higher education and digital technologies, the management of the universities involved, telecoms operators, and, to prepare future students, the ministry of education. The teams set up by the institutions involved in providing technical assistance and funding for these projects must reflect this degree of complexity.

Examining and prioritizing key preconditions

The successful rollout of a virtual university depends above all on examining, prioritizing, and validating essential preconditions. It requires long-term investments: around 100M€ to 150M€ for an independent virtual university with territorial coverage (e.g., UN-CHK and the Virtual University of Burkina Faso), 25M€ to 50M€ for a model like Côte d'Ivoire's virtual university, and 5M€ to 10M€ for a demonstration project without territorial coverage. Depending on whether it is new or installed in an existing building, a digital space will cost between 50,000€ and 1.5M€.^[8]

- **Governance:** is there a clear strategy, a dedicated and funded budget line, project management capacity, and the necessary authorizations to create the virtual university?
- **Technical:** do the connectivity infrastructure, data rates, data storage infrastructures, and computer or smartphone/tablet equipment meet requirements?
- **Business model:** can the institution finance its own operations? Can students afford the data and software required?
- **Human resources:** are the following planned or in place: an information system; resources for change management; the deployment of techno-pedagogical expertise in distance learning; and an administrative team?

[8] For example, 12M€ for the construction of the Orkadiéré ENO (UN-CHK, Senegal); an average of 1.8M€ each for eight ENOs budgeted in 2017.

- **Methodology and training:** are resources for communication and for training teaching staff in front-office and back-office tools planned or in place?

Conclusion

Projects for setting up virtual universities require a broad and complex ecosystem. Despite some encouraging signs, it is still difficult to measure their success in the field, beyond the number of students who benefit from them.

This raises the broader question of how to measure the impact of virtual universities on their students' academic performance, skills, and entry into employment.

This also requires project sponsors to work with their counterparts to specify the projects to be carried out, and to target their efforts on the most vital preconditions.

However, these findings do not detract from the need to continue developing virtual universities, given the huge need for access to higher education in sub-Saharan Africa.

Translated BY Cadenza Academic Translations

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