

## Agricultural information systems in Sub-Saharan Africa: Rethinking the role of governments in the age of private digital services

Information systems play a key role in agricultural risk management strategies and production and marketing decision optimisation strategies. This makes them an important tool for poverty reduction in Sub-Saharan Africa (SSA). Yet information alone is not enough. If it is to have an impact, it needs to not only be considered as relevant by its users, but also to be associated with other services to foster the economic inclusion of stakeholders. Over 20 years after the arrival on the African continent of the new information and communication technologies (NICTs) and the gradual appearance of a new generation of information systems with a massive increase in digital technology and integrated services (information, technical advisory and financial services), it is important to

consider their relevance, effectiveness and limitations and explore the role that the different players (public and private) should play in the definition and introduction of future systems. This document presents a summary of the main analyses and recommendations drawn from the *Study on Improving Economic Inclusion in Agricultural Sectors in Sub-Saharan Africa: Analysis of Public/Private Information Devices for Economic Agents in Rural Areas*, a study commissioned by AFD in late 2020.

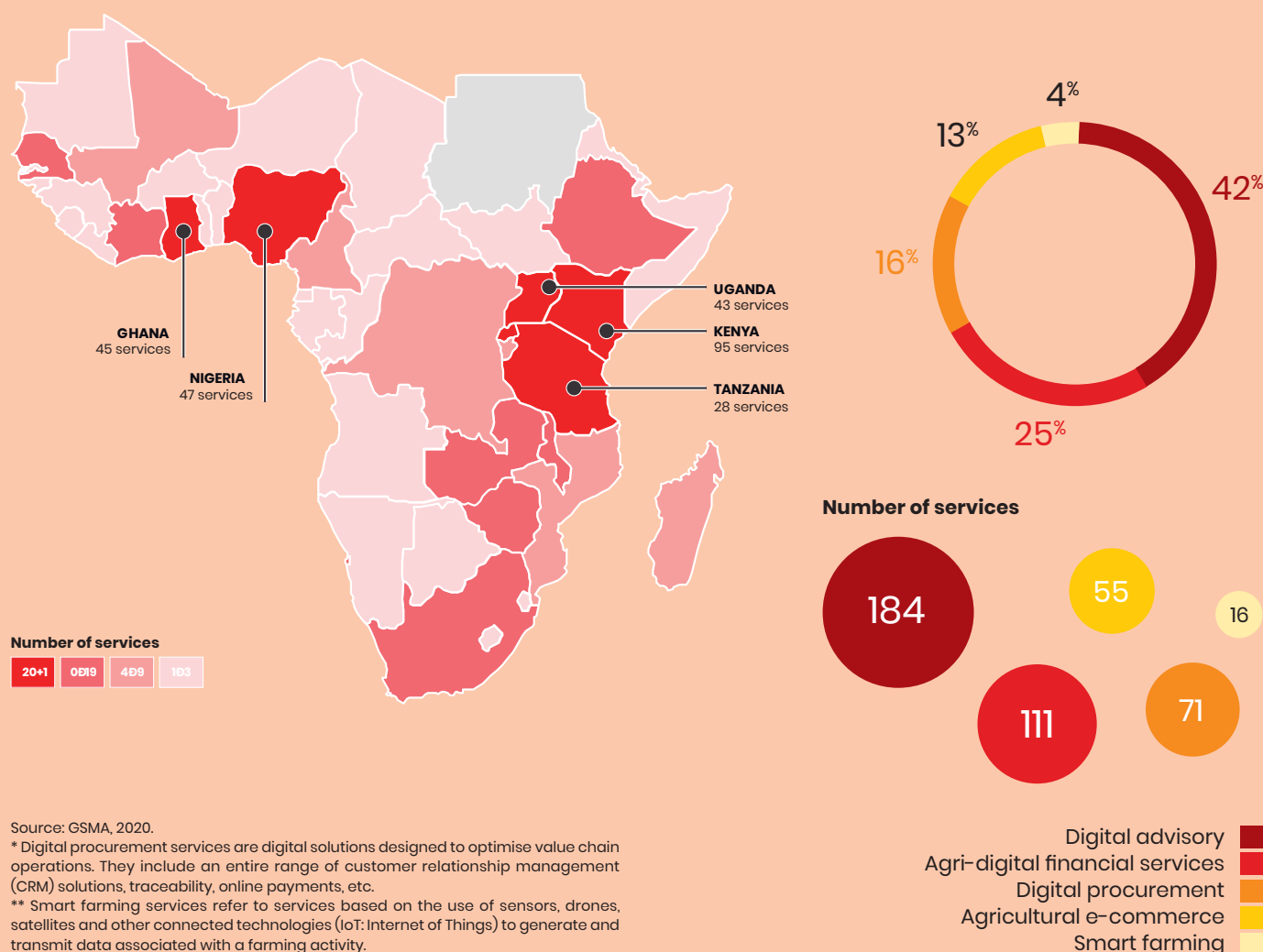
## I. Huge system diversity

An analysis of the main agricultural information systems operating in SSA today finds huge diversity in terms of the information covered, information collection, processing and dissemination techniques, institutional embeddedness, business models, forms of governance, and replicability, but also in terms of reach and impacts on economic agents in rural areas. Nevertheless, the recent landscape is marked by a growing integration of the services on offer to economic players in rural areas (price information and weather forecasts combined with technical advisory and financial services).

Innovations (both technological and institutional) have come mainly from private players (agritech/innovative start-ups and telephone operators), which have invested substantial resources in the last ten years, very often with public funding (in the pilot phases at least). Although the public-private partnerships (PPPs) focus mainly on technical aspects (design and deployment phases), relative inertia can be observed in the forms of governance, which on the whole remain either predominantly public or private, with joint forms of governance relatively scarce on the ground.

Business models, however, have evolved a great deal, driven by private players (telephone operators and agritech/innovative start-ups). Big data is being used to offer new services and systems based mainly on the development of algorithms and to generate new information sold to third parties (fertiliser, seed and equipment suppliers, banks, insurance firms, training institutes, etc.). Telephone operators are leveraging the development of these free services for customer retention. Whereas the marketisation of information presented a high risk of producer marginalisation just ten years ago, the new business models developed using big data are based increasingly on free access to information (albeit with the use of public subsidies in some cases, especially in the system concept and seed stage). The more specialised, paid services target more the large agricultural cooperatives and agribusiness companies aiming to optimise their operations.

Regional map of digital agricultural services operating in SSA by type of service



Source: GSMA, 2020.

\* Digital procurement services are digital solutions designed to optimise value chain operations. They include an entire range of customer relationship management (CRM) solutions, traceability, online payments, etc.

\*\* Smart farming services refer to services based on the use of sensors, drones, satellites and other connected technologies (IoT: Internet of Things) to generate and transmit data associated with a farming activity.

### System juxtaposition, duplication and short life cycle

Although this diversity can offer economic players quite a wide range of information services, it can also be restricted elsewhere to a juxtaposition of similar services developed in parallel by the public sector and the private sector at large. This juxtaposition, if not duplication, of services can be the upshot, in certain cases, of a lack of strategic vision on the part of governments creating a sense of confusion. Moreover, the project approach has long tended to make these systems highly unstable, since most of them shut down their operations when the projects come to an end despite pressure from a large number of donors regarding the need for system longevity and a suitable business model (the famous “exit strategy”). Those that have managed to survive have generally done so from the sale of services (advisory, training and studies) to different projects rather than from the sale of information.

### Rise of digital technology and service integration

The recent development of a large number of private digital systems marked by the growing integration of information services with financial services (credit and insurance) shows the importance of taking a holistic approach, since information alone is not enough to increase the economic inclusion of sector players. Moreover, the information and personalised services combination often appears to be a profitability condition for private suppliers.

These digital systems are nevertheless relatively recent and have not yet shown any significant impacts, particularly in terms of income. Another important condition for the success of these digital services is to combine them (as integrated as they may be) with advisory services on the ground. Confidence in the information and thereby the use made of it by the players is also built on human interactions rather than solely the technology itself. Hence the importance of outreach structures.

Table: Summary of the strengths and weaknesses of the different systems identified in SSA

Status	Type of supplier	Strengths	Weaknesses
Public	International (GIEWS, AMIS, FEWSNET, etc.)	Reliable, free and updated data Sustainable systems associated with international political commitments	Content and format very rarely meet the needs of sector players. Some systems only cover a small number of countries (e.g. AMIS only covers Nigeria and South Africa in SSA)
	Ministries and public agencies	Access entirely free of charge Systems relatively sustainable (aside from those directly associated with project aid)	Data not always suited to players' needs Data not very reliable and often not very up to date (“cold data”) Highly limited dissemination tools Very low level of integration with other types of service (access to fertilisers, access to financing, etc.) Absence of participation by the agricultural profession
Private	Consular chambers	Access generally free of charge Information geared more to field players' concerns (consultants, farmer organisations, cooperatives and agricultural SMEs) Predominantly joint governance (multi-stakeholders)	Potential politicisation, which could weaken governance (case of certain highly politicised agricultural chambers) Highly dependent on subsidies (government and donors) Limited dissemination of tools Low level of integration with other types of service (access to fertilisers, access to financing, etc.) Access sometimes paid (subscriptions)
	NGOs		
	Agricultural profession (farmer organisations (FOs) and joint trade organisations)		
	Telephone operators	Increasing integration of services (advisory, prices, weather forecasts, fertilisers, credit and insurance) Very wide range of dissemination tools High level of innovation Effectiveness and performance driven by a private-sector model	Access sometimes paid (risk of exclusion) Complexity of partnerships, which could weaken the systems Commercial model (risk of suspension of unprofitable services and risk of biased content) Risk associated with uncontrolled use/misuse of data/user profiles Predominantly private governance
	Agribusiness multinationals		Reserved for approved suppliers/buyers Restricted to certain sectors

## Towards much-needed (re)investment in public information systems

Relying solely on entirely private systems appears to be a risky strategy. Even though the risks of producer exclusion due to the marketisation of information are now tending to diminish (most of the information services are free of charge), the new business models can give rise to significant risks in terms of the nature of the information disseminated (“biased content”), service continuity and data ownership. It is therefore important for governments to be able to regain control by reinvesting in the development of a “minimal” public agricultural information service with broad-based access to neutral and high-quality information. However, this does not mean excluding the private players. Far from it. The point is to redefine each player's roles and together build complementary systems based on a coherent strategy that meets the needs of the economic stakeholders. Governments need, in partnership with the agricultural profession (chambers of agriculture, farmer organisations and joint trade organisations) and the private sector at large, to redefine the information needs, draw up an inventory of the existing systems at national level (public and private) and define the technical specifications for the systems to be provided on that basis. This implies ongoing public-private dialogue and hence the creation of appropriate consultation platforms.

Once a consensus has been reached regarding needs and objectives as well as technical specifications, governments could draw on private expertise for the design/operationalisation and management of the systems. As in the case of other key government functions, governments could feasibly assign these systems to competent private operators using a bidding procedure and signing performance contracts. The question of funding sources for these public-private systems nonetheless remains key. In addition to private investments by operators and innovative start-ups, the systems could be run jointly in accordance with allocation criteria to be defined. With respect to public funding, taxes levied on cash crops could probably constitute a possible source of funding in certain countries (example of the Interprofessional Fund for Agricultural Research and

Advisory Services (FIRCA) in Côte d'Ivoire with the raising of substantial financial resources by the coffee-cocoa sector's management structures). The same applies to taxes levied on telephone operators, part of which could be allocated to funding these systems.

## Assisting governments with setting up a suitable digital ecosystem

The development of a national strategy entailing a redefinition of public and private players' roles should also address the question of the terms and conditions for setting up a digital ecosystem. If private information services are to round out the public supply and be viable, it is important for governments to develop public digital infrastructures (cloud) with appropriate forms of governance. This should reduce the investment costs for these digital services, which could moreover create substantial youth employment opportunities. The creation of start-up and SME incubators and accelerators across the African continent over the last ten years is a driver for the development of these services.

Similarly, it is important to be able to assist governments with setting up an appropriate regulatory framework (especially regarding the issue of data use and protection) and to give thought to sustainable financing models. Lastly, an effort needs to be made to build in situ the big data analytics capacities of African scientists and agricultural technical institutes (training).

Development partners, including the Agence Française de Développement (AFD), could hence play an important role in assisting governments with this process, which will necessarily call for public player capacity building, the creation of collaborative spaces and experience sharing, all of which are required to improve public-private dialogue and put in place sustainable high-performance systems.

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