![FARM logo] Foundation for world agriculture and rural life

ERIC PASQUATI

The professional use of ICT by the farmers of West Africa, a cultural approach

Feedback from the June 2008 field study

AUGUST 2008

The professional use of information and communication technologies (ICT) by the farmers of West Africa, a cultural approach - feedback from the June 2008 field study

A PhD is being written within the FARM foundation about the socio-cultural aspects of information exchange and farming knowledge in West Africa. This article is a summary of what has been observed and learned from an initial field study carried out in June 2008. The findings highlight that obstacles to the development of farming information include the following elements: the importance of the structure and transparency of professional farming organizations, the requirement for training in the use of the systems and the basic characteristics of an adapted technological platform (reduced cost, widespread in rural areas and based on the spoken word). The main socio-cultural observations are: the natural inclination of farmers to discuss what they do and their desire for more exchanges of information – confirming the importance of what lies behind the PhD – the potential influence of young highly educated people returning to rural areas on the development of exchanges of information and the importance of the spoken word in this cultural context. These observations will influence the choice of the practical experience which will serve as the basis for the PhD.

① Introduction

Since the beginning of 2008, we have been working on a PhD at the FARM foundation about the use of information and communication technologies (ICT) by African farmers. In the effort to identify the experience of using ICT which will serve as the basis for the development of the PhD, a mission was carried out in West Africa between the 15th and 30th June 2008. This article is a summary of what we observed and learned from this field study. It also constitutes a stage in the progress of the PhD, directing future study and action in the field of ICT at FARM.

Let us first say a few words about the PhD itself. The initial motivation for this work is to analyse the implementation conditions of a system for exchanging knowledge between African farmers. Three criteria were chosen to channel the direction of the PhD and define the scope of its question: a concept of communication as a means of exchanging information (in contrast to simply disseminating it), a technological medium both innovative and adapted to the reality on the ground, and a cultural and cognitive approach. The communicative approach we are interested in, calls for an active participation by farmers and their professional organisations, not only as end users, but as sources and relay points for the pieces of information exchanged. The technological medium envisaged must take into account the structural and financial limitations of the reality of rural Africa without however ignoring the trend to more general access to the most advanced technologies. The approach chosen concentrates on an analysis of the influence of cultural and cognitive aspects on the efficiency of knowledge exchange.

THE PRIMARY MOTIVATION FOR THIS THESIS IS AN ANALYSIS OF THE IMPLEMENTATION CONDITIONS OF A SYSTEM FOR EXCHANGING KNOWLEDGE BETWEEN AFRICAN FARMERS… THE APPROACH CHOSEN IS CULTURAL AND COGNITIVE

The first question to ask can therefore be expressed in the following terms: how to integrate cultural, social and cognitive aspects into the set-up of a system of professional farming information and knowledge exchange in West Africa with the aim of maximising its effectiveness? The PhD will investigate this question for a particular information system which has yet to be chosen. It is then planned to apply a decentring protocol to test whether the conclusions can be generalised, and by what method, to other developing countries.

During the study in West Africa at the end of June, professional farming organizations, businesses and development projects were analysed in three countries: Senegal[1], Mali[2] and Burkina Faso[3]. Rather than reporting on the contents of the various interviews[4], the aim here is to state what was learned and the conclusions drawn from the field study.

---

[1] CNCR (National Centre for Cooperation and Consultation of Rural inhabitants), ASPRODEB (Senegalese Association for the Promotion of Local Development), Manobi (Mobile and Internet services dedicated to the rural sector) et PRODAM II (Matam Farming Development Project).
[2] AProCA (Association of African Cotton Producers) and UN-SCPC (National Union of Cotton Companies and Cotton Producers).
[3] UNPCB (National Union of Burkina Cotton Producers) and Celtel (mobile telephone operator).
[4] Articles listing each of the interviews have been published on the blog of the PhD (http://agroinfoteh.blogspot.com) under the section "in the field".

② Objectives and methodology

Aiming to make the work of the PhD part of a research-action approach, i.e. in developing a theoretical basis closely connected with actual experience, the main objective of this study in West Africa was to make direct contact in the field right from the start of the research. The identification of the main challenges to the use of ICT in the rural African environment was part of the overall objectives. More specifically, a desire for a characterisation of the initiatives identified in the preliminary phase was sought. Finally, we considered it especially important to meet the various players personally to construct the solid foundations of a network of contacts and support in West Africa.

A PROCESSS OF RESEARCH-ACTION, A THEORETICAL ARGUMENTATION CLOSELY RELATED TO AN EXPERIENCE ON THE GROUND

Regarding the methodology – insofar as it is characterised by the way used in the progress of the research – we made the deliberate choice to visit both the main offices of the institutions responsible for implementing initiatives of ICT use and to the support structures for the information systems concerned. On the one hand, it was important to meet those in charge of the institutions to present the project of the PhD and to find out about the institutions' strategies in terms of communication. On the other hand, it was essential to talk with the technicians actually implementing the communication projects to understand the dynamics of the systems and the problems. As far as possible, dialogue with farmers and with technicians on the ground was emphasised to allow for an evaluation of the systems from various standpoints to be made.

Since this involved initial, exploratory contacts, preference was given to the semi-directive protocol during the interviews. Those being interviewed were asked to express themselves openly and they were directed in such a way as to go over the points of interest of the initial characterisation of the information systems such as: the information cycle (identification of needs, gathering of information, processing, dissemination, feedback), operating costs, scope of the systems etc. By comparing the various interviews, we were able to gain added insight into the challenges linked to the use of ICT in the West African farming sector. An understanding of this is essential for the proper direction of the next stages of the research.

③ Observations

A comparative analysis of the various interviews carried out led to the identification of certain constants in the characterization of the main problems linked to the development of farming information systems in West Africa. Close scrutiny of the dynamics of the existing systems was used to supplement this analysis enabling a better understanding of the cultural challenges linked to the exchange of information and knowledge among the various players. In addition, we present some observations related to the technological basis of the information systems in the rural African context.

Top of the list of the concerns of those interviewed, the **weak structuring of the farmers' organizations** (FO) seems to strongly penalize their effectiveness in West Africa. Firstly, because of their weak structuring, the FOs do not achieve independence in relation to specific development projects which naturally have both limited budgets and timescales. Secondly, despite the existence of distinct formal functions within organizations, in practice the centralization of information and power in the hands of a few elected representatives are obstacles to the free flow of information. In general, the information systems do not have sufficiently structured and transparent institutional support on which they can develop.

Farmers' low level of education can be added to the lack of professional structuring in the list of major obstacles to development in the rural African context. Functional illiteracy, which characterizes the great majority of the rural population, limits the potential beneficial effects of communication: messages intended for farmers must be summarized and simplified to such an extent for them to be understood that they risk devoid of content. Therefore people relaying data are there mainly to lighten the information received before disseminating them to farmers, which pushes the limits of the neutrality of this role.

It is only in third place that the problem of the **lack of communication technology infrastructure** is encountered. It is certainly present, at the same time in terms of access[5], cost of use[6] and the reliability of the service offered in West Africa. But the importance of this problem is put into perspective by the more experienced players as the effectiveness of the use of the infrastructure is highly conditioned by the level of structuring of the professional organization and the training of the end users, in this case the farmers. The role of technology in general remains secondary in the development process.

Finally, and based more on observation than on the analysis of the interviews, the **importance of the individual motivation of the intermediaries** in the success of the information systems was observed. Wide disparity in terms of the responsiveness and effectiveness of the communication within a single system, in specific cases, led us to take note

---

[5] The majority of rural villages are not even linked to the electric grid.
[6] In places where connection is possible, the use of internet remains expensive compared with the budgets of rural households. The cost of access in a cybercafé for example ranges from 200 FCFA an hour at Dakar to 500 FCFA an hour at Bamako or Bobo-Dioulasso. A personal low-speed internet connection costs from 20,000 FCFA to 30,000 FCFA a month depending on the region.

of the influence of the personal motivation of the intermediaries in the overall running of the system.

Other than this ranking of the main difficulties encountered in the development of farming information systems, three findings appear to us fundamental to the understanding of the cultural challenges linked to the exchange of knowledge between West African farmers and promoting this exchange: first of all the natural inclination to dialogue and a willingness of farmers to increased communication, second the importance of the spoken word in their communication and finally the attachment of the younger generation to the rural world.

All the cases analysed in this field study confirm the interest that exists for the exchange of information and knowledge, both at an institutional level – communication is a strategic priority for all the FOs analysed – and an individual level – the farmers interviewed wish to have more information and opportunities for exchange with their peers. By way of example, let us mention Emmanuel BoroKié Sanou, Vice-president of the provincial union of cotton producers of Houet (Burkina-Faso) and president of the Bobo-Dioulasso district union who spoke to us of the importance there could be in the transmission of knowledge among farmers – especially so that older ones like him could give advice to younger farmers. Promoting the exchange of information, knowledge and expertise between West African farmers seems to be less a question of the interest that needs generating than the setting up of suitable methods and the availability of appropriate technical means.

THREE SOCIO-CULTURAL OBSERVATIONS: THE READINESS OF FARMERS TO EXCHANGE INFORMATION AND THEIR DESIRE FOR MORE EXCHANGES, THE IMPORTANCE OF THE VERBAL COMMUNICATION, AND THE ATTACHMENT OF THE YOUNGER GENERATION TO THE RURAL SECTOR

Verbal communication is a fundamental aspect of West African cultures. Methods and technologies the most easily learned by farmers are always based on the spoken word. It is the result not only of low education attainment – confronted with a high rate of illiteracy of the general population, the spoken word is primordial in the effective operation of communication - but also a cultural tendency – independent of educational achievement, verbal communication is preferred by habit and custom.

Nearly everyone in West Africa has a background linked to farming and life in a rural environment. Those people who have migrated to towns seeking out opportunities have also found considerable drawbacks. **The idea that development can only take place within city walls is beginning to be put into perspective**. The example here comes from Senegal, from where Amadou Diop, head of communications at ASPRODEB spoke to us of young Senegalese people from rural background who, after studying in higher education in cities or abroad, confirm their interest in rural development and return to rural areas to act as local leaders. Thanks to their programme of studies, these young people are generally used to a highly active way of communicating, often through the use of ICT and can take on the roles of promoters of dialogue between farmers.

More especially in the use of technologies, we can report now on three main findings: the high cost of internet access, the explosion of the use of mobile phones in urban areas and the undisputed role of radio in rural areas.

The use of the **internet** is still much reduced, less because of the possibility of access than of the cost of the services on offer. For example, high-speed

internet access is available in all the regions of Senegal but this does not prevent the number of users to be still very low. The internet service providers are still using a business model of high prices and a low number of users. As long as this situation continues the costs of access and use os the internet will remain high. Moreover, the electric grid is often unreliable and power cuts are frequent, which makes continuous use of the internet difficult even for those who can afford access to it.

The **mobile phone** has triggered a far-ranging social phenomenon in West Africa, and the number of users has increased exponentially in the last few years[7]. This revolution remains however essentially urban: arguing that the low population density in rural areas does not allow sufficient profitability for the infrastructures, very few mobile operators are interested in offering a service in rural zones. An argument that is often unfounded, as the partnership in Burkina Faso between the Burkina Cotton Producers Union (UNPCB) and the operator Celtel illustrates: called "the fleet"[8] by the users, this project for deploying a mobile telephone network in rural areas has been highly successful and is also beginning to be set up in other African countries where the operator in question is present. Apart from exceptional cases like this one, the use of mobile phones in the professional farming context runs up against the widely found problem of insufficient coverage in rural areas and also certainly the cost of access, which, although lower than that of the internet, remains high in relation to the budget of rural households. Added to that, and because of both the constraint of illiteracy in rural areas and the cultural influence of the spoken word, in those cases where mobile phones are used by farmers, this use remains essentially restricted to spoken exchanges.

The **radio** still dominates as the undisputed medium when one speaks of the dissemination of information to a great number of farmers. With a marginal access cost and that for using it virtually zero, the non-negligible fact of it being already widespread among farmers and furthermore based entirely on the spoken word, the radio is well able to respond to both the budgetary constraints and the cultural habits of the West African rural population.

---

[7] According to the International Telecommunication Union (ITU), the use of mobile phones in Africa has increased by 65% per year in the last five years – which is twice as fast as average worldwide growth over the same period. Currently, again according to the ITU's statistics, Africa numbers over 300 million users of mobile phones and the level of penetration of the technology on the continent is nearly 30%.

[8] This is a preferential contract signed between the mobile telephone operator Celtel and UNPCB, enabling unlimited calls between a given number of mobile telephones for the payment of a fixed monthly rental charge. For more information about the fleet see the article published on the Agrinfotech blog at the following direct link (in French): http://agrinfotech.blogspot.com/2008/08/visite-celtel.html

④ Findings

Each of the main obstacles to the development of agricultural information systems discussed above teaches us one thing: the importance of the structure and transparency of the FOs, the requirement for training in the use of the systems and the basic characteristics of an adapted technological platform (reduced cost, widespread and based on the spoken word). The observations concerning the cultural aspects linked to the exchange of knowledge allow us, on the one hand to conclude that the question posed by the PhD is in line with the current concern of the FOs to promote exchanges of information and their effectiveness, and on the other hand to identify one of the socio-cultural conditions for achieving this objective: the taking into account of the spoken word. Here follows a commentary on these findings.

Farmers need to be structured in professional organisations to be able to use an information system effectively. The issue of making the structuring of the farmers' organisations a priority for rural development in general and for information support systems in particular was brought up several times during our interviews, and not only from those involved in FOs, but also other independent institutions. **While a strong and transparent structuring of the farming profession is lacking, farmers will not be able to benefit from an information system**. As far as the information system is concerned, the structuring of the professional organisation is used to formalise the roles of the various people who will constitute the key-points of the network for the flow of information. The amount of structuring of the system and the transparency in its operation will determine how easily information flows within the organization. The structuring of the professional organisations therefore remains a priority.

WHILE A STRONG AND TRANSPARENT STRUCTURING OF THE FARMING PROFESSION IS LACKING, FARMERS WILL NOT BE ABLE TO BENEFIT FROM AN INFORMATION SYSTEM

Confronted with the lack of training farmers have, considered by a large part of those interviewed as the second major constraint on agricultural development, **any development initiative involving the deployment of an information system must include a training programme for the users**. This programme must include both training in the use of the technical tools of the system and methodological instructions regarding the processing and exchange of information. If, moreover, the system is designed in a participative and clear way to meet local needs, users will want to use it and the appropriation of the technical means used will be enhanced. Potential users will be motivated to learn and, helped by local people, will be more self-confident about overcoming possible problems in becoming proficient in using the system.

Since **internet** access and, consequently, the control of its use are still very limited in West Africa, especially in rural areas, this means of communication **cannot currently play a central part in the setting up of a farming information system**. In the current context, and targeting short and medium-term results, such a system must use technologies for which access is cheaper and more widespread than the internet. Moreover, learning the system will be easier since the technologies used allow an exploration of the oral dimension in the communication. In a nutshell, technology which is

cheap to access and use, based on the spoken word and which is widespread in rural African areas; this is a specification requirement which the **radio** and, increasingly, the **mobile phone** appear to be able to meet.

For the development of a farming information system, the order of priorities suggested here – firstly the structuring of the FOs, secondly training for farmers and only thirdly the issue of technological infrastructure – deliberately gives an ancillary role to technology. Technology is not an end in itself. But all of our interviewees are convinced of its importance and its potential in facilitating exchanges between the various players on the ground. **Technology is a catalyst of local development, a tool for making this development easier and faster**. Furthermore, the right use of technology can give rise to positive results in terms of the structuring of the FOs: by "catalysing" internal communication, technology facilitates greater participation by the producers in the activities of the organisation, consequently strengthening its structure.

TECHNOLOGY IS A CATALYST FOR LOCAL DEVELOPMENT, A TOOL FOR MAKING THIS DEVELOPMENT EASIER AND FASTER

As far as the cultural aspects discussed previously are concerned, on the one hand, we can attest that **the interest for the exchange of knowledge in the farming world has already been expressed by farmers in West Africa**. The motivation behind the PhD is not therefore based on a simple hypothesis, but it turns out to be coherent with the reality on the ground. The spontaneous expression of the need to exchange more information and knowledge between farmers shows the aptness of the subject and suggests a warm welcome from the organizations and operational projects for the analysis offered in our research work. On the other hand, **the return of young people to the country after receiving higher education in the cities or abroad may bring about a new impetus for rural development**. This new generation of local players is better disposed and prepared for the use of ICTs and may bring a greater dynamic to the contacts between farmers.

Finally, the **taking into account of the spoken word, as a fundamental basis of the West Africa communication culture, is a necessary condition for the success of systems for the exchange of information and knowledge between farmers.** How much the information systems correlate with this socio-cultural characteristic determines the facility with which they are appropriated by the local population and hence how successful they are.

⑤ Conclusion and prospects

This initial field study in West Africa was positive since it enabled us to have contact with the players on the ground and allowed the identification, as an initial step, both of the practical problems involved in implementing farming information systems and some basic socio-cultural aspects for ensuring the success of such systems. It confirmed the interest of the question posed by the PhD – about the exchange of information and knowledge between farmers – and the innovative nature of the approach chosen for its development – from socio-cultural aspects.

However, the observations and the analysis which followed are not yet conclusive regarding the choice of the field experience which will be used as a basis for the development of the thesis. The information systems analyzed are not sufficiently structured to allow an impact study of the consideration of socio-cultural aspects in their set-up. These systems are still either at the project stage or in the initial implementation stage.

Circumstances seem to suggest a methodological change in the thesis' work: instead of choosing the field tests which would be analysed afterwards, it would involve studying the implementation of a project setting up an information system. From this new angle, the work of identifying the experience basis for the PhD must concentrate on the professional organisations which have a structuring plan for their information system in the short term and which demonstrate a serious commitment to this project.

From the point of view of the technological basis, the findings of the field study enable us to conclude that it is necessary to design or to better structure systems which are cheap to use, that are easily learned by people who have had little or no education and if possible make use of the spoken tradition which is so close to the hearts of West African farmers. **Combining information systems based on the use of mobile phones and radio programmes may turn out to be a promising route to explore**. A system thus designed could use the interactivity of the mobile phone and the broadcasting power of the radio in rural areas.

In the socio-cultural field, apart from the consideration of the spoken word, the wish of farmers to exchange more information and the prospect of the return of highly educated young people to rural African areas, other points would appear to have an important influence on the success of an agricultural information system. Considering the relation between information and power for example, gaining a better understanding of the logic of how power is shared out within the FOs could be envisaged. It may be a way to appreciate better the findings of a lack of transparency in the existing information systems.

Future work on the thesis within FARM will consist, on the one hand of instigating a discussion with the partners of the agricultural development field using the findings described in this article, in order to define the initiative that should be studied on the ground. On the other hand, we shall continue bibliographic research to build on the analysis of the PhD.

Challenges for the exchange of knowledge using mobile phones and the radio
The example of the fleet discussed previously highlights some of the challenges linked to the use of the mobile phone or even the radio for the exchange of knowledge. Although it has allowed an improvement in the flow of information within the cotton sector in Burkina Faso, the fleet is still very limited – both in terms of the number of those benefiting and the applications offered – to allow the development of a system of exchange of knowledge on a large scale. With the objective of deploying such a system using mobile phones or the radio, there remains the challenge of developing more flexible applications and methodologies to ensure the traceability of information and asynchronous access to the system. This is a route to explore in close collaboration with the players on the ground.

⑥ Resources

On the internet:

- The blog on ICT statistics' news by the International Telecommunication Union
http://www.itu.int/ITU-D/ict/newslog

- The blog monitoring progress of the PhD
http://agrinfotech.blogspot.com

Interviews:

- Daniel ANNEROSE, managing director of Manobi (mobile phone services and internet dedicated to the rural sector, Senegal)

- Mamadou BA, communication relay for the CRCR (Regional Centre for Cooperation and Consultation of Rural inhabitants) at Dakar (Senegal)

- Thierno BA, managing director of PRODAM II (Agricultural Development Project at Matam, Senegal)

- Mamadou BOCOUM, communication relay for CRCR (Regional Centre for Cooperation and Consultation of Rural inhabitants) at Matam (Senegal)

- Emmanuel BOROKIE SANOU, vice-president of the Provincial Union of Cotton Producers of Houet and president of the District of Bobo-Dioulasso District (Burkina Faso)

- Tiassé COULIBALY, information and communication delegate for the board of directors of UN-SCPC (National Union of Cotton Companies and Producers, Mali)

- Marius DIA, coordinator technician of CNCR (Regional Centre for Cooperation and Consultation of Rural inhabitants, Senegal)

- Natha DIARRA, general secretary of UN-SCPC (National Union of Cotton Companies and Producers, Mali)

- Komonsira DIOMA, head of communication at AProCA (Association of African Cotton Producers)

- Amadou DIOP, head of communication at ASPRODEB (Senegalese Association for the Ground Promotion and Development)

- Ibrahima FAYE, head of planning and monitoring and assessment of (Agricultural Development Project at Matam, Senegal)

- Paul GOUBA, head of Celtel agency (mobile telephone operator) at Bobo-Dioulasso (Burkina Faso)

- Mamadou KANTE, technical advisor for UN-SCPC (National Union of Cotton Companies and Producers, Mali))

- Karim OUATTARA, general secretary of Provincial Union of Cotton Producers of Houet (Burkina Faso)

- Lamy OUATTARA, general secretary of UNPCB (National Union of Cotton Producers of Burkina)

- Oumarou SAVADOGO, coordinator of the provincial Union of Cotton Producers of Houet (Burkina Faso)

- Rose SOMDA, head of communication at UNPCB (National Union of Cotton Producers of Burkina)

- Joseph SOME, head of sales at Celtel (mobile telephone operator) at Bobo-Dioulasso (Burkina Faso)

- Teremagan TRAORE, treasurer of Provincial Union of Cotton Producers of Houet and president of the Fo District Union (Burkina Faso)

FARM

Foundation for world agriculture and rural life