

Infrastructural support affect the use of information and communication technologies by farmers for accessing agricultural information in Gezira State, Sudan

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Abstract

The study aimed at examining the perceptions of farmers in Gezira State about appropriate infrastructural support likely to affect the use of Information and Communication Technologies (ICTs) for accessing agricultural information. The study also sought to identify how farmers used ICTs for accessing agricultural information. A questionnaire was developed and data collected from 120 farmers. Descriptive analyses were applied to the data. Findings indicate that the most popular methods for accessing agricultural information by farmers is radio (21.9%) followed by print media (15.33%) and TV (14.6%). Additionally, it was found that infrastructural support such as roads, electricity and telecommunication affect the use of ICTs by farmers.

Key words: Agricultural Information, Gezira, ICTs, infrastructural support, Sudan

Résumé

TL'étude visait à examiner les perceptions des agriculteurs dans l'État de Gezira au sujet du soutien approprié des infrastructures susceptible d'affecter l'utilisation des technologies de l'information et de la communication (TIC) pour accéder à l'information agricole. L'étude a également cherché à identifier comment les agriculteurs ont utilisé les TIC pour accéder à l'information agricole. Un questionnaire a été élaboré et des données recueillies auprès de 120 agriculteurs. Des analyses descriptives ont été appliquées aux données. Les résultats indiquent que les méthodes les plus populaires pour accéder à l'information agricole par les agriculteurs sont la radio (21,9%), suivie par la presse écrite (15,33%) et la télévision (14,6%). En outre, il a été constaté que le soutien des infrastructures telles que les routes, l'électricité et la télécommunication, influent sur l'utilisation des TIC par les agriculteurs.

Mots clés: Information agricole, Gezira, TIC, soutien des infrastructures, Soudan

Background

Agriculture contributes 48% of Sudan's gross domestic product, generates about 85% of non-oil foreign exchange earnings, provides raw materials for agriculture based industries and is the largest source of employment (El-Siddig and Musa, 2008). Agricultural research in Sudan started in 1902 to exploit the possibility of growing cotton under irrigation in the North and under rainfed conditions in the South. It expanded rapidly to include research activities on different crops and in different ecological zones. Most of the research in Sudan is carried out by Agricultural Research Corporation (ARC) of the Ministry of Agriculture, and the Animal Resources Research Corporation (ARRC) of the Ministry of Animal Resources. Little is carried out by the Institutes of Higher Education such as faculties and colleges of agriculture at the Universities Khartoum, Gezira and Juba (Ahmed, 2003).

Literature Summary

Some of the constraints to the usage of ICTs in rural areas are surmountable while others require a shift in both human and organisational communication and working patterns which may take longer to evolve. ICTs rely on physical infrastructures (electricity, telecommunications) but even when such infrastructures are in place, difficulties arise when they are poorly maintained or too costly to use. Development of ICTs is dependent on national policy and regulation of telecommunications and broadcasting licenses. They require high initial capital investments for hardware and software. They are also dependent on the skills and capacity necessary to use, manage and maintain the technology effectively. Matching the most appropriate communications technology with people's needs and capabilities is a crucial task for ICTs providers (O'Farrell *et al.*, 2000).

Rogers (1995) argued that the innovation process consists of four stages: invention, diffusion (or communication) through the social system, time and consequences. Information flows through networks; the nature of networks and the roles opinion leaders play in them determine the likelihood of an innovation to be adopted. Innovation diffusion research has attempted to explain the variables that influence how and why users adopt a new information medium, such as the Internet. Opinion leaders exert influence on the target audience via their personal contact, but additional intermediaries called change agents and gatekeepers are also included in the process of diffusion. According to Rogers (1995), diffusion effect is greater in a social system with a higher degree of interconnectedness.

Study Description

The study was conducted in Gezira State which is the most agriculturally productive state in the Sudan. It lies between the Blue Nile and the White Nile rivers. It is bordered by Khartoum State in the North, Gadarif State in the East, White Nile State in the West and Sennar State in the South. It lies in the rich Savanna region between latitude 13-15.2° N and longitude 32.5 – 34° E.

Results

Figure 1 shows the ICTs that are used for accessing agricultural information by farmers in Gezira State. They include radio, television, internet, mobile phone, print media and others. While 21.9% of farmers were using radio, 15.3% of farmers were using print media, 14.6% of farmers were using TV, 10.2% were using mobile phones and 3.28% of farmers were using internet. A high percentage (34.6%) of farmers were getting information from other sources such as friends or neighbours, extension staff, agro-chemical companies and Agricultural Research Corporation stations.

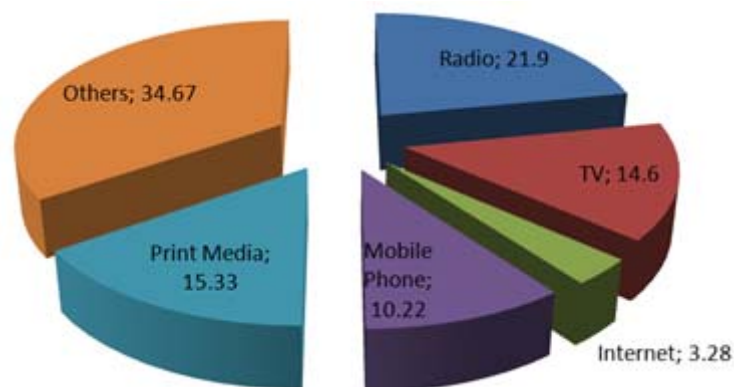


Figure 1. ICTs use in accessing Agricultural information in Gezira State, Sudan.

Infrastructural support. The percentage of farmers who mentioned that there are insufficient roads (infrastructural support) was 52.5 while 19.2% mentioned that the support was average. About 27% indicated that there were enough roads. Most of the farmers complained that the few available roads were very dangerous during the rain seasons and that the government did not seem interested in enhancing the safety of roads. Table 1 shows the availability of roads to facilitate access to agricultural information.

Table 1. Availability of roads to support access to agricultural information by farmers.

Availability	Frequency	Percent
Missing	2	1.7
Little	63	52.5
Average	23	19.2
Enough	32	26.6
Total	120	100.0

The results showed that 47.5% of the farmers have little electricity (infrastructural support) while 11.7% mentioned that the support was average and 37.5% indicated that electricity support was enough. Most of the farmers living in remote areas do not have access to electricity which limits their use of ICTs. Table 2 shows the availability of electricity to support access to agricultural information.

Table2. The availability of electricity to support access to agricultural information by farmers.

Availability	Frequency	Percent
Missing	4	3.3
Little	57	47.5
Average	14	11.7
Enough	45	37.5
Total	120	100.0

The study indicated that 27.5% of the farmers mentioned that there was little telecommunications infrastructure while, 8.3% mentioned that such support was average and 60.8% indicated that there was enough telecommunications infrastructure. This high percentage may be a result of the extensive development of telecommunication in the study location both by the government and private sector. Table 3 shows the level of telecommunication support for accessing agricultural support for accessing agricultural information.

Research Application

The results of this study will be useful to agricultural policy makers to help them improve information accessing mechanisms to farmers. The results will also be useful to researchers who will gain a better understanding of the infrastructural support levels related to use of ICTs for accessing agricultural information. The research results will additionally inform trainers

Table 3. The level of telecommunication support for accessing agricultural information by farmers.

Availability	Frequency	Percent
Missing	4	3.3
Little	33	27.6
Average	10	8.3
Enough	73	60.8
Total	120	100.0

and educators as well as extension agents to help them improve the methods used for technology transfer activities for farmers in rural communities.

Recommendation

There is need for the Sudan Government to scale up the use of ICTs in agricultural information system especially radio and TV which are the most preferred and can help the researchers to disseminate and the farmers to access information. The Sudan Government also needs to provide more infrastructural support especially telecommunication and electricity to encourage use of ICTs in Gezira State.

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