

Awareness level of use of Information Communication Technologies tools among Extension officers in the North- West Province, South Africa.

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Abstract: A simple random sampling technique was used to select 169 extension officers to examine their level of awareness of information communication technologies in North West Province, South Africa. Data were collected with structured questionnaire and analysed using frequency counts, percentages and multiple regression analysis. The results show that majority of the extension officers were male (76%) with the mean age of 44.6 years, married (79%) and 82.5% were Christians. Forty one percent of the extension officers had Diploma as their educational qualification and a mean of 16.7 years as working experience. The results revealed that out of the 37 ICT tools listed, extension officers indicated high level of awareness of nine tools, which include mobile phones (1.79), computer (1.68), internet (1.77), overhead projector (1.62), fax machines (1.60), organization e mail (1.58), fixed telephone (1.52), personal email (1.52) and organization website (1.50). Significant determinants of awareness level were religion ($t = 1.91$, $p = 0.58$); constraints to ICT use ($t = 1.78$, $p = 0.78$); importance of ICT tool ($t = 1.93$; $p = 0.63$) and 2 were significant at 0.05% which were competence on ICT use ($t = 3.50$; $p = .001$); ($t = 2.0$, $p = .003$). The study recommends that more information communication technologies should be made available to extension officers, so that they will become more aware of the use of ICT in extension work as tools that can gather and disseminate agricultural information.

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Introduction

Information and Communication Technologies (ICTs) are all technologies used for the widespread transfer and sharing of information. ICTs are rapidly consolidating global communication networks and international trade with implications for people in developing countries. ICTs can be used to enable, strengthen or replace existing information systems and networks. ICTs in agriculture promote and distribute new and existing farming information and knowledge which is communicated within the agricultural sector since information is essential for facilitating agricultural and rural development as well as bringing about social and economic changes (Swanson and Rajalahti, 2010). Agricultural extension, which depends to a large extent on information exchange between and among farmers on the one hand, and a broad range of other actors on the other, has been identified as one area in which ICTs can have a particularly significant impact. There is growing recognition that farmers and members of rural communities have needs for information and appropriate learning methods that are not being met (Greenridge, 2003; Lightfoot, 2003), and these have been lacking in South Africa. In the midst of this change, extensionists are grappling with the question of how best to harness ICTs to improve rural livelihoods. Meera et al (2004) had noted that as a

result of the emerging new paradigm of agricultural development, old ways of delivering important services to citizens are being challenged; traditional societies are also being transformed into knowledge societies all over the world.

Agricultural improvement in South Africa, especially among small scale and resource-poor farmers, requires a major effort to improve the quality of extension services available to farmers. DAFF (2008) reported that currently, the Extension Recovery Plan (ERP) is being implemented in all the nine provinces in the country. This is predicated on the fact that agricultural extension bridges the gap between available technology and farmers' practices through the provision of technical advice, information and training. Without these, farmers' ability to adopt new technologies and plant varieties, which would benefit their production and incomes, would be limited. South African farmers receive much advice and information from other farmers and/or private input suppliers, and many also benefit from radio and television programmes, agricultural trade magazines, shows and demonstrations. Despite the different roles and functions that agricultural extension and advisory service should play, much leaves to be desired for the use and integration of ICTs in the agricultural extension and advisory services in South Africa (DAFF, 2009).

The development and improvement of agriculture worldwide, with specific reference to the African continent and South Africa in particular, requires a paradigm shift on communication and information dissemination. Swanson and Rajalahti (2010) and Rivera and Sulaiman, (2009) posted that extension services, either general or more specialized exist in many countries to provide information, advice and educate communities relating to many facets of rural life and its improvements. In South Africa, the Department of Agriculture, Forestry and Fisheries (DAFF) introduced the Extension Recovery Plan (ERP) in 2007. The introduction of the ERP was necessitated by the 2006 research findings and consolidated recommendations on the report by DAFF on the state of extension and advisory services in South Africa which highlighted the challenges and constraints facing extension and advisory services. The important role played by extension services in providing linkages and support to agricultural research in information and technology for farmers and farming communities has been crucial to agricultural successes in most developed countries. Public extension services have been ineffective in reaching farmers and farm communities with information and technologies needed to ensure food security and sustainable development (FAO, 2004). The situation is exacerbated by lack of skills by extension officers in using ICTs to promote new farming technologies, to enhance the flow of farming information relating to inputs, finance and marketing activities amongst others and bridging the rural digital divide. IFAD (2002) reached the conclusion that extension services in Africa have failed to address the needs of small-scale farmers. In another study, Richardson (2006) argues that agricultural extension services that provide agricultural information do not work effectively in Africa. These shortfalls may be due to changes in the extension

process that have resulted in the shift to the facilitation and brokerage of information, communication and advocacy services. This range of services, meant to improve rural livelihoods, can benefit from the applications of ICTs.

Materials and Method

The study was carried out in North West province, South Africa. The study population included all extension officers (200) in the province. A simple random sampling technique was used to select 169 extension officers from which data were collected. A structured questionnaire was designed based related literature and objectives of the study and comprised 37 items categorized as awareness level of information communication technologies. Validity of the instrument was ensured through a panel of experts in the Departments of Agricultural Economics and Extension and extension professionals from the Department of Agriculture and Rural Development, South Africa. The questionnaire had a reliability coefficient of 0.92 using the split half technique. Data were analyzed with Statistical Package for Social Sciences (SPSS) using frequencies, percentages, mean and multiple regressions.

Results

Table 1 shows the personal characteristics of extension officers in North West Province, South Africa. Table 2 shows the mean and standard deviation of 37 ICT tools on awareness levels of ICT tools among extension officers which were rated on a 2-point scale of Yes (2), and No (1). The result of multiple regression analysis of relationships between extension officers' socio-economic characteristics and awareness level of ICT tools were presented in Table 3.

Table 1. Personal characteristic of extension officers.

Personal characteristics	Description
Gender Predominantly	male 76%
Age Mean	44.6 years SD = 5.40
Marital status	79% married
Religion Predominantly Christianity	82.5%
Educational level Predominantly diploma	41% , BSc =15%
Household size Mean	4.8 persons SD = 1.20
Working experience Mean	16.7 years SD = 4.50
Living in job location Predominantly	Yes 79%, , No 21%
Job designation Predominantly	Extension officer 53%,Senior/Chief agricultural technicians 36%

Table 2: Awareness of specific ICT tools among extension officers in the Northwest Province

ICT Tools	Yes	No	Mean	SD
Mobile phones	150 (88.8)	19 (11.3)	1.79	.59
Computer	139 (82.2)	30 (17.8)	1.68	.71
Internet	136 (80.5)	33 (19.5)	1.77	1.65
Overhead Projector	131 (77.5)	38 (22.5)	1.62	.73
Fax Machines	129 (76.3)	39 (23.1)	1.60	.75
Organization e mail	128 (75.7)	41 (24.3)	1.58	.76
Fixed Telephone	124 (73.4)	45 (26.6)	1.52	.81
Personal email	119 (70.4)	50 (29.5)	1.52	.78
Organization website	118 (69.8)	51 (30.2)	1.50	.80

Table 3 Determinants of awareness level of ICT tools by extension officers

	B	Std. Error	Beta	t	Sig.
(Constant)	7.333	9.187			
Gender	-1.620	2.346	-.034	-.691	.491
Age	.016	.158	.007	.103	.918
Marital Status	-.558	.771	-.035	-.723	.471
Number of children	-.070	.847	-.005	-.082	.934
Religion	2.534	1.325	.083	1.912	.058
Educational qualification	.000	.599	.000	.000	1.000
Studying for a higher degree	-.480	1.789	-.011	-.268	.789
Household size	.134	.466	.014	.288	.774
Working experience	-.137	.124	-.070	-1.106	.271
Living in job location	2.603	2.225	.050	1.170	.244
Place of residence	-2.390	1.614	-.063	-1.481	.141
Number of farmers covered	5.057E-5	.001	.002	.035	.972
Distance to farmers	.002	.002	.045	1.054	.294
Use of ICT	-.242	.150	-.100	-1.616	.108
Constraints to ICT use	.415	.233	.104	1.776	.078
Effect of e- readiness on officers	.144	.237	.030	.609	.543
Effect on information access	.033	.063	.026	.520	.604
Importance of ICT	.164	.088	.173	1.872	.063
Competence on ICT use	.423	.121	.430	3.502	.001
Accessibility to ICT	-.056	.157	-.052	-.357	.722
Availability of ICT	.374	.126	.337	2.970	.003
F	22.55				
p	0.00				
R	0.87				
R squared	0.76				
Adjusted R squared	0.73				

Discussion

From Table 1, majority of the extension officers were male (76%) with the mean age of 44.6 years, married (79%) and 82.5% were Christians. Forty one percent of the extension officers had a diploma as their educational qualification and a mean of 16.7 years as working experience. There was a mean of 4.8 persons per household and 79% live in their job location, rural or peri urban notwithstanding. In terms of job designation 53% were extension officers. Zwane (2009) reported similar findings that that

extension officers in Limpopo province of South Africa were mainly males, between 40 to 49 years, and had Diploma as their educational qualification. Bembridge, (1991) also reported similar findings in terms of the personal characteristics of extension officers in South Africa. Table 2 shows the 37 ICT tools that extension officers are aware of. The results in Table 3 revealed that extension officers were more aware of the nine ICT tools out of the listed 37 ICT tools. Prominent information communication technologies among extension officers were mobile

phones (1.79), computer (1.68), internet (1.77), overhead projector (1.62), fax machines (1.60), organization e mail (1.58), fixed telephone (1.52), personal email (1.52) and organization website (1.50). This finding is similar to Adesope et al. (2007) who noted that in the Niger Delta area of Nigeria, about 98 percent of the extension agents indicated they were aware of information technologies, while 2.3 percent were not.

Seepersad (2003) reported that cell phones are fairly common among extension employees in Trinidad and Tobago, but added that cell phones have not been used in an organized way by agricultural organizations. This finding is also supported by Agwu et al. (2008) that 63% of extension officers in Enugu state, Nigeria had high level of awareness of the major ICT tools. This means that most of the respondents were aware of information technologies especially as they concern Agricultural Extension work. In Table 3, the independent variables were significantly related to awareness level with the F-value of 22.55, $p < 0.05$ showed that there was a strong correlation between independent variables and awareness level. The result further predicted a 76% of the variation in the awareness level of ICT among extension officers. Significant determinants were religion ($t = 1.91$, $p = 0.58$); constraints to ICT use ($t = 1.78$, $p = 0.78$); importance of ICT tool ($t = 1.93$; $p = 0.63$) and 2 were significant at 0.05% which were competence on ICT use ($t = 3.50$; $p = .001$); availability of ICT tools ($t = 2.0$, $p = .003$). It implies that more male extension officers will be more aware of the information communication tools than female extension officers. Agwu and Uche-Mba (2010) in Enugu State, Nigeria, revealed that the researchers, extension workers and farmers had favourable perceptions of the role of ICTs in agricultural development. The lower level of the constraints experienced by the respondents, the higher the awareness level of ICT tools will be experienced. Similarly, the higher the realization of the importance of ICT, the competence and the availability of ICT tools to extension officers the more they become aware of the information communication tools. The study showed that the most common information communication tools among officers in North West Province, South Africa were mobile phones, computer, internet, overhead projectors, fax machines, organization e-mail, fixed telephones 73.4%, personal email and organization website. Significant determinants of extension officers' level of awareness of ICTs were religion, constraints to ICT use, importance of ICT tool, competence on ICT use and availability of ICT tools. This information communication technologies highlighted will help extension officers to be more aware of their use in the

promoting, gathering and disseminating agricultural information.

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