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ABSTRACT

Farmers face constraints in farming activities with differing impacts in terms of type and dept. The, relatively recent, GSM introduction in Nigeria has eased the conduct of business activities including agricultural business with elimination of hitches in the communication system. This study assessed constraints to the use of GSM in farm activities of crop farming households in South-west Nigeria. Two out of six States' Agricultural Development Programmes (ADPs) in South-west Nigeria namely Oyo and Osun States were selected for the study. 130 farmers were randomly sampled from two randomly selected agricultural zones in the (selected) State ADPs. Primary data was obtained with the use of well-structured questionnaire through interviews of respondents. Descriptive statistics, ANOVA and chi-square techniques were used in data analysis. Result revealed that males (79.2%) dominated crop farming in the study area. The major constraints in GSM use by farmers were network coverage (31.58%) and financial (36.84%). All (100%) of the farmers asserted that using GSM in farm business activities is worthwhile and a necessity. Furthermore, the constraints to effective use of GSM by farmers differed significantly for different levels of socio-economic variables such as farm household expenditures and income ($p < 0.01$ respectively). It was recommended that any action plan to tackle constraints to GSM use by farmers must take into consideration farmers' dynamics such as differences in social interactions, farm households' expenditures and income as well as cultivation practices. Consequently, it is expected that enhanced technology and extension information dissemination to crop farmers will be achieved.

INTRODUCTION

All human activities including agricultural such as farm production and marketing activities do face a number of constraints. Communication is one of the major impediments in agricultural activities. In fact, inadequacy of communication/information facilities among other infrastructure for agricultural activities may lead to rural/urban migration by farming household. This (rural-urban drift) is having serious implication on agricultural activities today (Sanusi, 2006). Stakeholders usually identify some of these constraints and make case for as well as suggest pragmatic solutions to these problems (Sanusi, 2004; Oduwole and Sanusi, 2001). The introduction of global system of mobile communication (GSM) has made information /communication easier for many Nigerian households.

Farmers need information about expected supplies and prices in different location at different times in order to make useful decisions when planning their farm activities (CTA, 1997). Though Global System of Mobile Communication (GSM) may have some limitations such as network coverage, however the overwhelming influence and impact of communication and information on the smooth running of business has been acknowledge (CTA, 1997).

The timing, quality, presentation and sources of information have been shown to be of vital importance in agricultural communication especially with regard to the (rural) agricultural communities (Amanda *et al*, 2005; Hill *et al*, 2006; Evans, 2006). According to Telg *et al* (2005), members of Florida Farm Bureau felt that there is no adequate or good substitute for more personal and effective methods of communication, such as telephone conversations or face-to-face meetings. Rhoades *et al* (2005) revealed that though the internet has become a major

factor in the mass media industry; however, rural and agricultural audiences have favoured traditional media (e.g. telephone and face-to-face conversations) as sources of news and information. Furthermore, the determination of strategies to employ in information dissemination can only be competently tackled if the communication needs of the 21st century agriculturists and agricultural communicators are well understood (Doerfert and Miller, 2006).

Therefore, this study investigated the type and level of constraints (to GSM use) that affect crop-farming households in south-west Nigeria.

METHODOLOGY

The study area is classified as lowland semi-hot isothermic climatic region having a mean daily seasonal temperature of 22°C with a range less than 10°C and less than four months of dry season (Carter and Jones, 1987). The main cash crops are cocoa, coffee, cotton, oil palm, rubber and sesame seed while the food crops include cereals such as maize, rice and guinea corn; pulses like soybean, cowpea, pigeon pea and groundnut; tubers like yam, cassava and sweet potato; spices such as onion, chilly pepper and ginger; vegetables like tomato, okra and garden egg. The main occupation of majority of the people in the study area is agriculture. However, they are also found as traders, artisans, craftsmen; and professionals in various fields such as medicine, engineering, architecture, pharmacy, education and law. The three major groups – *Hausa*, *Igbo* and *Yoruba* – can be found residing in the study area. However, the people of the South-west are predominantly *Yorubas*. Equally, the religion of the people varies viz:- Christianity, Islam and Traditional religion.

Two (30%) out of six States' Agricultural Development Programmes (ADPs) in South-west Nigeria namely Oyo and Osun States ADPs were randomly selected for the study. Using the list of villages as compiled by the Monitoring and Evaluation Units of the State ADPs as sampling frame, 130 respondent (crop) farmers were randomly sampled from two randomly selected agricultural zones in the (selected) State ADPs. The respondents were interviewed with structured questionnaire. Information obtained include educational status, marital status, age of respondents and farm income. However, 120 questionnaires, representing 92.31% response rate, were used for the analysis (Table 1). The others were rejected due to serious inconsistencies in responses or missing information.

Table 1: Sample Distribution for the Study Area.

State	*Selected Zone*	*Selected LGA*	*Responses Used*	*Responses Rejected*	*Total Respondents*
	Ogbomoso	Surulere	33	0	33
Oyo	Ibadan	Oluyole	31	1	32
Osun	Iwo	Iwo	28	5	33
	Ejigbo	Ilawo	28	4	32
Total	***4***	***4***	***120***	***10***	***130***

Source: Field Survey, 2007.

Descriptive statistics such as averages and percentages as well as analysis of variance (ANOVA) and chi-square statistics were used in data analysis.

The variables included in the ANOVA analysis are:-

AGE = age of farm household head (years);
FPE = farm household head's experience in farming (years);
HHZ = farm household size (persons);

FMZ = farm size (ha);
CPF = cultivated portion of farm (ha);
FEX = farm expenditure (₦/US$);
HHE = farm household expenditure (₦/US$);
EXG = expenditure on GSM use (₦/US$);
HHY = farm households' income (₦/US$).

ANOVA was used instead of t-test because the analysis was beyond the pair-wise comparison (of means) addressed by t-test.

Chi-square analysis operates with the formula enumerated below:
$X^2 = \sum[(O_i - E_i)(E_i)^{-1}$ ---------- (vi)
where:

X^2 = chi-square statistic;
$\sum$ = summation of;
O_i = observed value of variable;
E_i = expected value of variable.

The variables used in this analytical technique are:

EST = educational status of respondent (EST = 1 if respondent has any form of education and 0 if otherwise);
MST = marital status of respondent [MST = 1 if respondent is married (to a living Spouse) and 0 if otherwise];
MGC = respondent's membership of social/economic-based clubs/groups such as farmers' union and cooperative societies (MGC = 1 if respondent is a member and 0 if otherwise);
MXC = cropping practices of respondent (MXC = 1 if respondent mixed crop and 0 if otherwise);
SOR = secondary occupation of respondent (SOR = 1 if respondent has other occupation apart from crop farming and 0 if otherwise);
GUP = use pattern of GSM (GUP = 1 if respondent use personal GSM set, 2 if respondent use GSM set of relations/friends and 3 if respondent use commercial GSM);
GFA = use GSM for farm activities (GUP = 1 if respondent use GSM for farm activities, 2 and 0 if otherwise).

RESULTS AND DISCUSSIONS

Table 2 revealed that more males (79.2%) than females (20.8%) were involved in crop farming in the study area. This implies that gender distribution in (crop) production in South-west Nigeria is skewed towards the males. An appreciable proportion (62.5%) of farmers had one form of education or the other in the study area (Table 2). This means that the use of extension aids such as communication facilities like the GSM will be effective in disseminating information to the farmers. A greater percentage (93.75%) of farmers in the study area were married (Table 2). The implication of this is the possibility of continuity in (crop) farming since the progenies of farmers are likely to be more interested in farm production than those of non-farmers.

Quite a number (68.33%) of farmers in the study area had no other occupation apart from farming (Table 2). Hence, the farmers enough energy and time on their farms and thus any deleterious impact on farm activities will seriously threaten farm household welfare. Many of the farmers were members of social/economic groups (Table 2), meaning that there is an appreciable level of social interactions amongst the farmers. A good proportion of the farmers in the study area practiced mixed cropping system (Table 2). This is as result of effort at maximizing the use of available

farmland and reducing risks through (enterprise) diversification. A very high proportion (76.9%) of farmers claimed to be using GSM in all of their farm business activities (Table 2). This underscores the positive impact of this gadget on agricultural business.

Table 2: Description of Socio-economic Characteristics of Crop Farmers.

Variable		*Frequency*	*Percentage*
Gender:	*Female*	25	20.80
	Male	95	79.20
Total		***120***	***100.00***
Educational Status: Regular Western Education		37	30.83
	Quranic Education	8	6.25
	Adult Education	15	12.50
	Quranic & Adult Education	15	12.50
	No formal Education	45	37.50
Total		***120***	***100.00***
Marital Status:	*Married*	113	93.75
	Unmarried	7	5.83
Total		***120***	***100.00***
Secondary Occupation: Engaged		38	31.25
	Not Engaged	82	68.33
Total		***120***	***100.00***
Membership of Socio-economic Groups: Member		75	62.50
	Non-member	45	37.50
Total		***120***	***100.00***
Cropping System:	*Mixed*	90	75.00
	Sole	30	25.00
Total		***120***	***100.00***
Farm activity for GSM use: None		23	19.20
	Extension contact	5	3.80
	All	92	76.90
Total		***120***	***100.00***

Source: Field Survey, 2007.

Table 3 shows that the major constraints to the use of GSM by farmers in the study area were network coverage (31.58%) and financial (36.84%). Also, the fact that 5.36% of the farmers identified these two constraints as being crucial further reiterate the importance of these factors in the farmers deriving maximum benefit of unhindered use of GSM. Most especially in view of the fact that all (100%) of the farmers were unanimous that GSM use in farming activities is worthwhile and that all farmers should be using it because according to all the farmers GSM is a necessity for farm business.

Table 3: Use and Constraints to the Use of GSM by Crop Farmers.

Variable	*Frequency*	*Percentage*
Network coverage	38	31.58
Finance	44	36.84
Electricity	19	15.79

None identified	13	10.53
Network coverage and Finance	6	5.26
Total	***120***	***100.00***

Source: Field Survey, 2007

Constraints to the use of GSM by crop farmers in the study area differ significantly ($p < 0.05$) for farmers at different level of farming experience (Table 4). Also, constraints to farmers' GSM use differed significantly at different level of farm holdings, cultivated portion of farm holdings and farm expenditure ($p < 0.1$, $p < 0.05$ and $p < 0.01$ respectively). Equally, the constraints differed significantly for different levels of expenditure on farm household, expenditure on GSM use and farm household income ($p < 0.01$ respectively).

These findings imply that expenditures and income of farm household will seriously affect unhindered use of GSM (for farm activities) by farmers. Furthermore, scattering of holdings and rotational cultivation practices of farmers had serious impacts on effective use of GSM by the farmers.

Table 4: ANOVA Result for Constraints to GSM Use by Crop Farmers.

Variable	*F-Statistic*
AGE	1.22
FPE	2.71**
HHZ	1.43
FMZ	2.42*
CPF	2.99**
FEX	12.61***
HHE	13.59***
EXG	19.52***
HHY	11.34***

******Sig. at 1%, **Sig. at 5% and *Sig. at 10%.***

Table 5 indicates that constraints to the use of GSM by crop farmers in the study area differ significantly for farmers on the basis of membership of social/economic groups, engagement in other occupation apart from crop farming and GSM usage in farming activities ($p < 0.05$, $p < 0.1$ and $p < 0.05$ respectively).

These findings mean that social interaction, which is an indication of different group membership affect farmers' use of GSM. These inter-personal relationships determine to a large extent friends, acquaintances, partners to whom communication with GSM become relevant in the day to day activities of the farmers. Also, being engaged in other non-farming activities further stress the need/use of the GSM to reach business partners outside the farming families in the environment. Above all, the main thrust of the farmers which is agricultural activities call for a widespread use of the GSM, since he has to make calls/ensure intimacy with extension agents, cooperative farmers' organization executive, input distributors and the like to further his needs in the farming enterprise. All the above components had serious impacts on maximization of the use of GSM by farmers.

Table 5: Chi-Square Result for Crop Farmers' in Oyo and Osun States.

Variable	*X^2-Statistic*
EST	2.89
MST	4.68
MGC	11.22**
MXC	5.74
SOR	9.18*
GUP	9.15
GFA	9.57**

******Sig. at 1%, **Sig. at 5% and *Sig. at 10%.***

CONCLUSION

The fact that all (100%) of farmers in the study area unanimously agreed that GSM use in farm business activities is essential goes to emphasise the need to help farmers mitigate the constraints they are facing in the use of GSM for farm business activities. The Federal Government regulating body that oversee the efficiency and effectiveness of the various network service providers must ensure that network is made available by asking them to give a boost to network installations in the countryside, since farming is largely predominant in the rural areas.

Furthermore, there is the need to enhance the income of farmers through appropriate prices for their farm products, since the use of GSM has correlation with financial status of the farmer. Also electricity generation constitute a constraint, hence the government organ which is responsible for the provision of electricity should ensure adequate supply in the rural areas. This will assist the farmers in the charging of their GSM handsets. However, it also informative that there are small gadgets which use batteries that will facilitate the charging of GSM handsets. Consequently, extension agents in the area should inform farmers about the availability of these simple equipment.

Finally, a policy framework aimed at rural development and economic transformation by government will adequately tackle these constraints. Because it will be holistic and therefore take into cognisance farmers' dynamics in terms of influence of differences in gender, social interactions, livelihood diversifications, farm household expenditures and income as well as available farmland and cultivation practices.

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