ABSTRACT

The survey was conducted to assess the accessibility level to internet facilities among rural farmers and extension workers in Benue State Northern and Eastern agro-development zones; using such variables as availability of Internet facilities, availability of enough power supply, possession of skills and knowledge, physical access and economic access. The population of this study consisted of all rural farmers and extension workers in the study area. A sample size of 193 respondents was selected using purposive, snowball and simple random techniques. Data for this study were collected mainly from primary sources, through the use of a structured questionnaire along-side interview technique. The data collected were analyzed using descriptive statistics such as frequency and percentages as well as inferential statistics such as Mann-Whitney test. It was found that there is a significant difference in the level of accessibility to Internet facilities among rural farmers and extension workers in Eastern and Northern agro-ecological zones of Benue State. It is recommended that, government should collaborate with other stakeholders with a view to putting in place, a framework which will enhance a full take off of not just Internet usage, but an agro-based website system among farmers and extension workers in order to improve their productivity.

Keywords: Accessibility, Internet Facilities, Rural Farmers, Extension Workers

INTRODUCTION

Agricultural Extension is generally interested in how scientific knowledge is transferred from research sources to the farmer, who ultimately uses it, in a suitable language and in ways and manner which is easy for him to understand, see reasons for its use, and then to use it (Obinne,1992). Messages should not just be sent, efforts must be made to ensure that they are diffused among members of a social system and the feedback received as timely as they are needed. Communication, which is an integral part of extension work, can then be seen to be complete.

Agricultural extension service has failed to deliver as required because of unpopular policies of the government, cum underfunding, deregulation and privatization of government service, all resulting to inadequate extension workers and lack of transport facilities, among many other problems. The productivity of local farmers has often been compromised by their inability to obtain and share useful information as it relates to farming activities. Besides, the rate at which available research results are lost is worrisome (Alao, 1980). To crown it all, there is a lag of about 50 years between discovery of new farming practices and their utilization in the field (Ogunfowora, 1981) as cited by Ayichi (1995). From the foregoing, one can observe that there is a weak research-farmer linkage and extension service is seemingly inefficient (find it difficult to pass information).

It is thus expected that information and communication technologies (ICTs) will provide both new and unique opportunities of effectively providing farmers with timely information, when and where it is needed and will serve as an appropriate medium for receiving immediate feedback (Arokoyo, 2008). Gyata and Obinne (2012) suggests that farmers should be trained on how to adopt and use emerging technologies especially in the area of ICT. This is possible
because many farmers now use the handset and have at least a secondary education, with some having University degrees, living and working in the rural areas as farmers.

Food and Agriculture Organization (1993) described ICT as “electronic technologies for collecting, processing, storing, retrieving, disseminating and implementing data and information using microelectronic and computers”. According to Hawkins (2002), information and communication technologies (ICTs), which include radio and television, as well as newer digital technologies such as computers and the Internet have been touted as potentially powerful enabling tools for educational change and reform. The Internet is thus described as a worldwide collection of networks through which information can be exchanged and is useful in overcoming the challenges of distance, mobility, inadequacy of extension workers (Lawal-Adewale, 2009). Aluko and Burton's (2004) stated that “one can only access what is available and then (and only then) can you really ask what the price of what you can access is”

Objectives of the Study
The broad objective of this study was to assess the accessibility level to Internet facilities among rural farmers and extension workers in Benue State Northern and Eastern agro-development zones. Specifically, the objectives of this study were to:
1. Determine the socio-economic characteristics of rural farmers and extension agents in the two zones;
2. Compare the level of accessibility to Internet facilities among rural farmers in the two agro-ecological zones, and
3. Develop adaptation techniques for the use of agro-based website system for rural farmers and extension agents.

Statement of Hypothesis
Ho: There is no significant difference in the level of accessibility to Internet facilities among rural farmers and extension workers in the two agro-development zones

METHODOLOGY
The study was carried out in Benue State Northern and Eastern agro-development zones. Presently, Benue State has a land mass of 33,955 square Kilometres and lies between latitudes 6.50° and 8.80° North and longitudes 7.47° N and 10.00° East (Benue State Government, 2012). Fruits, palm, grains, legumes, root crops and tubers can be grown in large quantities in the State in addition to the production of extensive arable crop and livestock. Hence, the State is acclaimed the “Food Basket of Nigeria” (Aliegba, 2011). Benue State has a population of 4,253,641 (Gazette, 2009). Over 80 percent of this population derives its livelihood from agriculture with more than 70 percent of the populace living in the rural areas.

The population of this study consisted of all farmers (3180) in Benue State Northern and Eastern agro-development zones and all extension staff (68) of Benue State Agricultural and Rural Development Authority (BNARDA) currently working in the two zones. A total of one hundred and ninety three respondents were selected. Firstly, two agro-ecological (Eastern and Northern) were purposively selected due to their high agricultural productivity within the state. In each zone, two Local Government Areas (a total of four) were purposively selected. Again, in each Local Government Area, two settlement areas were purposively selected due to their high agricultural productivity and their geographical spread within the Local Government Areas and using stratified/proportional allocation, 5% (159) of the sample frames of farm families and 50% (34) of extension workers were randomly selected using purposive, stratified, snowball and simple random sampling techniques.

Data for this study were collected from both primary and secondary sources. The primary data were collected with the use of a well-structured questionnaire and interview techniques. The secondary sources of data included library textbooks, newspapers, journals, conference papers, office documents, theses and the Internet. These data collected were analyzed using both descriptive statistics as well as Mann-Whitney Test.

RESULTS AND DISCUSSION

Socio-Economic Characteristics
The result reveals that 75.60% of the respondents were 21-50 years, 21.30% were more than 50 years
and only 3.10% were less than 21 years old. The result also shows that 72.50% were male and 27.50% were female. More than 38.00% of the respondents attended tertiary institutions other than the University, the qualification obtained in these tertiary institutions are OND, HND and NCE. This is followed with 29.00% of the respondents who attended and obtained the Senior Secondary School Certificate (SSCE). Up to 48.20% of the respondents earned an average annual income of between ₦101,000= to ₦450,000. Only 28.00% earned less than ₦101,000 per annum. All these implied that the respondents were young and educated enough to make use of Internet facilities and earned a reasonable income with which at least to pay for air time. Up to 79.80% of the respondents were engaged in crop production with another 40.90% engaged in livestock production. On the size of farm engaged in by respondents, majority (92.70%) were small scale farmers using less than 6 hectares as their total farm size, thirteen (6.80%) cultivated between 6-10 hectares and only 0.50% respondent cultivated a farm size that was greater than ten hectares. Although, many farmers were small scale farmers, adoption of the agro-based website system will not be affected since the farmers have been looking for ways to improve their productivity hence income.

Accessibility to Internet Facilities among Rural Farmers and extension agents
Table 1 shows that majority (78.24%) of the respondent had physical access to the Internet, 68.91% had economic access to the Internet, while 40.93%, 33.68% and 24.35% stated that, there was availability of Internet facilities in their localities, availability of enough power supply in their localities and possessed Internet skills and knowledge respectively.

Table 1: Accessibility to Internet Facilities among Respondents (n=193)

<table>
<thead>
<tr>
<th>Accessibility Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of Internet facilities</td>
<td>79</td>
<td>40.93</td>
</tr>
<tr>
<td>Availability of enough power supply</td>
<td>65</td>
<td>33.68</td>
</tr>
<tr>
<td>Possession of skills and knowledge</td>
<td>47</td>
<td>24.35</td>
</tr>
<tr>
<td>Physical access</td>
<td>151</td>
<td>78.24</td>
</tr>
<tr>
<td>Economic access</td>
<td>132</td>
<td>68.91</td>
</tr>
</tbody>
</table>

Source: Field Survey (2012)  *Multiple responses

Table 2: Mann Whitney Analysis of Accessibility to Internet among Rural Farmers and Extension Workers in Two Agro-Ecological Zones (n=193)

<table>
<thead>
<tr>
<th>Accessibility Variables</th>
<th>Eastern Zone (X)</th>
<th>Northern Zone (Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of Internet Facilities</td>
<td>1</td>
<td>76</td>
</tr>
<tr>
<td>Availability of enough Power supply</td>
<td>75</td>
<td>6</td>
</tr>
<tr>
<td>Possession of skills and knowledge</td>
<td>39</td>
<td>30</td>
</tr>
<tr>
<td>Physical access</td>
<td>35</td>
<td>16</td>
</tr>
<tr>
<td>Economic access</td>
<td>21</td>
<td>9</td>
</tr>
</tbody>
</table>


\[ U = N_1 \times N_2 + N_1 \left( \frac{N_1+1}{2} \right) - R_1 \]
\[ U = 5 \times 5 + 5 \left( \frac{5+1}{2} \right) - 27 \]
\[ U = 25 + 15 - 27 \]
\[ U = 40 - 27 \]
\[ U = 13 \]

But \[ U_1 = N_1 \times N_2 - U \]
\[ U_1 = 5 \times 5 - 13 \]
\[ U_1 = 25 - 13 \]
\[ U_1 = 12 \]

Decision: The critical value of \( U \) at 5% level of significance for sample sizes 5 and 5 is 0. Since the computed smaller \( U_1 = 12 \), which is greater than the critical \( U \) value, there is a significant difference in the level of accessibility to Internet facilities among rural farmers and extension workers in Eastern and Northern agro-ecological or agro-development zones of Benue State.

Perceived Adaptation Strategies for Agro- based Website System

Table 3 shows that, 71.70% of rural farmers and 55.90% of extension workers perceived that, they would adopt the website system if it is adapted to contain farmers/ extension agents problems and solutions. While most (64.70%) of the extension agents perceived that, the website will be adopted if their capacity for knowledge and skills is built; only 44.00% of the rural farmers perceived that, they would adopt the system if their capacity for knowledge and skills is built. A higher percentage of 37.10% of the rural farmers would adopt the system if rural Internet facilities are provided as against the extension agents’ 23.50%. Homophilous communication with other rural farmers is a strategy that was perceived by only rural farmers with a percentage of 24.50%. Subsidizing of the cost of Internet facilities was a strategy that was perceived by 35.30% of extension workers and only 17.00% of the rural farmers. Again, a higher percentage of 26.50% of the extension agents as against the rural farmers’ 12.00% perceived that, the provision of farmers’ friendly models using solar energy was an adaptation strategy in the use of agro-based website system. On the use of stand by generating plants, 15.10% of the rural farmers indicated that it was a strategy of adaptation of the website system and 5.90% of the extension agents indicated that it was an adaptation strategy. A smaller percentage of 5.70% of rural farmers only indicated that reduced cost of airtime was an adaptation strategy. Finally, 3.10% and 2.90% of rural farmers and extension agents indicated that, awareness creation/ economic empowerment was an adaptation strategy for the use of an agro-based website system for rural farmers and extension agents in Benue State.

A combination of the two groups of respondents (rural farmers and extension agents) shows that, 68.90% respondents said, they will be interested in using the agro- based website if it contains farmers'/ extension workers' problems/ solutions as it affect their productivity. Again, 47.70% respondents said, they will use the website, if there is a capacity building for knowledge and skills acquisition. Some (34.70%) of the respondents suggested the provision of rural Internet facilities to ensure their use of the agro-based website. Also 20.20% of the respondents each said, the Internet facilities should be subsidized and there should be homophilous communication with rural farmers. Similarly, 13.50% of the respondents suggested the use of stand by generating plant to enhance their use of the website. The results also show that reduced cost of airtime and awareness creation/ economic empowerment will make 4.70% of the respondents and 3.10% of the respondents respectively use the agro-based website. Other adaptive strategies include provision of rural Internet facilities and the provision of farmers’ friendly models using solar energy as perceived by 34.70% of the respondents and 3.10% of the respondents respectively.

These results indicate that, first and foremost, any agro-based website must necessarily be such that rural farmers’ problems can be viewed and also solutions to these problems accessed for enhanced productivity.

Productivity of farmers in term of farm yield and productivity of extension agents in term of job efficiency

The results also imply that, cost of airtime is never a problem to extension agents and a problem of just few of the rural farmers. Awareness must however, as a matter of necessity be created for the use of the agro-based website system. The use of stand by generating plants is a common thing now and so is not recognized by many as an adaptation strategy especially among the extension agents. Agbarevo and Obinne (2010) summed it up by saying that, technologies which are adaptable to local conditions are considered more appropriate and would therefore, be more
readily adopted than technologies which are imported, but not so suitable for use in the rural areas. Foreign technologies need to be adapted to local conditions for better adoption (Agbarevo and Obinne, 2010). Apantaku and Lawal-Adebowale (2009) submitted that appropriate ICT would bring about efficient and sustainable use of ICT in Nigeria Agricultural development system.

Table 3: Distribution of the Respondents According To Their Perceived Agro-Based Website System Adaptation Strategies (n=193)

<table>
<thead>
<tr>
<th>Adaptation Strategies*</th>
<th>Farmers (n=159)</th>
<th>Extension Workers (n=34)</th>
<th>Farmers and Extension Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint Farmers'/ Extension Workers' Problems/ Solutions</td>
<td>71.70</td>
<td>55.90</td>
<td>68.90</td>
</tr>
<tr>
<td>Capacity building for knowledge and skills acquisition</td>
<td>44.00</td>
<td>64.70</td>
<td>47.70</td>
</tr>
<tr>
<td>Provision of rural Internet facilities</td>
<td>37.10</td>
<td>23.50</td>
<td>34.70</td>
</tr>
<tr>
<td>Homophilous communication with rural farmers</td>
<td>24.50</td>
<td>0.00</td>
<td>20.20</td>
</tr>
<tr>
<td>Subsidizing of the cost of Internet facilities</td>
<td>17.00</td>
<td>35.30</td>
<td>20.20</td>
</tr>
<tr>
<td>Provision of farmers friendly models using solar energy</td>
<td>12.00</td>
<td>26.50</td>
<td>14.50</td>
</tr>
<tr>
<td>Use of stand by generating plants</td>
<td>15.10</td>
<td>5.90</td>
<td>13.50</td>
</tr>
<tr>
<td>Reduced cost of airtime</td>
<td>5.70</td>
<td>0.00</td>
<td>4.70</td>
</tr>
<tr>
<td>Awareness creation/ Economic empowerment</td>
<td>3.10</td>
<td>2.90</td>
<td>3.10</td>
</tr>
</tbody>
</table>

Source: Field Survey (2012) *Multiple responses

CONCLUSION AND RECOMMENDATION

There is a significant difference in the level of accessibility to Internet facilities among rural farmers and extension workers in Eastern and Northern agro-ecological zones of Benue State. It is recommended that, government should collaborate with other stakeholders with a view to putting in place, a framework which will enhance a full take off of not just Internet usage, but an agro-based website system among farmers and extension workers in order to improve their productivity.
REFERENCES

Agbarevo, M.N.B. and Obinne, C.P.O. (2010): Elements of Rural Sociology and Agricultural Extension
organizations in South-Western Nigeria: Policy Implications for ICT –Based Information Exchange.
Lecture Series, No. 44, University of Ife Press, P.1
Dawodu.com/auko98htm
Benue State Gov't (2012): Benue State Government Diary, Produced by Benue State Ministry of
Information and Orientation, Makurdi..
F.A.O. (1993): The Potentials of Microcomputers in support of Agricultural Extension, Education and
Training: Food and Agriculture Organizational (FAO) of the United Nations, PP1-173.
Farmers in Nigeria. A Paper Presented at the 17th Annual National Conference of AESON,
University of Nigeria Nsuka Nigeria, 13th March Pp11.
Perspective in Agricultural Extension and Rural Development, Springfield Publishers, Owerri. pp
214-254.
Method”. Unified Extension Induction Training Workshop for Bauchi ADP. CEC Training Workshop
Series. No. 4, Pp. 225-235