Use of Web-Based Approach to Leverage the Livelihood of Maize Farmers in Trans Nzoia County, Kenya

Waliaro Apollo Madi[*]

Lecturer, Department of Computer Science, Masinde Muliro University of Science and Technology, Kakamega, Kenya

Abstract: **Information and Communication Technologies' (ICTs) are among the main drivers of socio-economic development and agricultural development depends to a great extent on how information is generated, stored, disseminated and applied. This study evaluated use of web-based approach by maize farmers in accessing information on maize production in Trans Nzoia County. Multi-stage random sampling was used to select farmer respondents where a sample size of 382 farmers was achieved. Use of website in sharing information on maize production in Trans Nzoia County was found to be low. Data on maize production was collected using questionnaires and focus group discussions. Website was developed and information on maize value chain production entered. The website was hosted at www.transnzoiamaize.or.ke. Screen shots of the web-site were displayed. Website with specific information on maize production is expected to improve food security through providing farmers with updated information on maize value chain.**

Keywords: **Extension, Information, Trans Nzoia, Website.**

1. Introduction

Maize is Africa's second most important food crop, after cassava and was introduced at the Kenyan coast by the Portuguese in 16th century (Wokabi, 2012). A report by Ministry of Agriculture, 2013 asserts that maize is the leading stable food crop for most families in Kenya. The demand for maize in Kenya has occasionally outstripped the supply, requiring importation of large quantities of maize by the government (Kiome, 2009).

According to Mbithi (2000), the area under maize in Kenya seems to have reached a stagnation point due to population pressure and one strategy to increase output is through technological development to increase pro-duction per unit area. In Kenya, maize is virtually grown in all altitudes from the sea level at the coast to over 1800m in the highlands (MOA, 2013). Since maize is adaptable to a wide range of climate conditions, it is the single most extensively grown crop in Kenya. Maize is a source of capital and employment to majority of rural people where it accounts to 25% of agricultural employment (Mbithi, 2000). It provides 40-45% of total calories and 35-40% of the protein consumed in the country (Gichuki, 2014). Kenya's economy largely depends on agricultural sector. The sector contributes 24% of National Gross Domestic Product, 75% of industrial raw materials and 60% of total export earnings and has been placed on the forefront towards attaining Kenya vision 2030 (FMTP, 2014).

The government of Kenya has developed many strategies and policies to address food insecurity over the years. Despite the many strategies, agricultural sector has not performed well in terms of food production including maize production which is the major staple food crop in country (Kiome, 2009). In Trans Nzoia county majority of households are normally food insecure by the fifth month after harvesting maize crop (MOA, 2013).

The role of ICT in enhancing food security and supporting rural livelihoods was officially endorsed at the World Summit on the Information Society (WSIS) held in 2005 (Stienen, 2007). With the right information, farmers are able to make the right decisions on timely land preparation, planting, weeding, irrigation, harvesting, storage and marketing (Ochola et al, 2014). ICTs have been established as effective tools of passing in-formation and technologies (Kendall and Kendall, 2006). The study evaluated use of web-based approach to leverage the livelihood of maize farmers through dissemination and access of agricultural information on maize production via the internet in Trans Nzoia County, Kenya.

2. Materials and Methods

The study was conducted in Trans-Nzoia County which has ideal climatic condition favorable for maize pro-duction and also it produces the bulk of maize in the Country (Kiome, 2013). The study evaluated use of web-based approach in leveraging the livelihoods of maize farmers in Trans Nzoia County, Kenya.

Multi-stage random sampling of 400 farming house-holds was targeted, from an accessible population of 77,164 households (KNBS, 2009), and this was deter-mined using Fischer's formula (Mugenda, 1999).

$$n = \frac{z^2 pq}{d^2} \tag{1}$$

Where, n= sample size

*Corresponding author: awaliaro@mmust.ac.ke

Z= the standard normal deviation at confidence interval of 95%
p= proportion of households estimated to have the characteristics of assumed household (p = 0.5)

q= 1-p = 0.5

d=level of statistical significance (0.05)

Since the sample size is larger (greater than 30), the value of z is 1.96 at 95% confidence interval. This gave the sample size (n) as 384.16 farmers. However, sample of 400 farmers was adapted to hedge against voluntary withdrawal or non-response of respondents. Out of the targeted 400 respondents, 382 were achieved representing 95.5%.

Data was collected using questionnaires and structured interviews to get farmers' views, attitudes and opinions on use of website in sharing information on maize value chain. Farmers were engaged in coming up with the contents of the web pages. Researcher also conducted interviews with extension officers to compliment in-formation provided by farmers. Focused group discussion was done with farmers' groups. Data was present-ed in form of graphs and photographic screenshots.

3. Results and Discussions

A. Socio-Demographic Characteristics of Respondents

The research was based on 382 questionnaires collect-ed from farmers. There were many males 52% (199), than females 48% (183) as indicated in figure 3.1. In a focus group discussion, women form a production gen-der, as partly based on cultural background in the region.
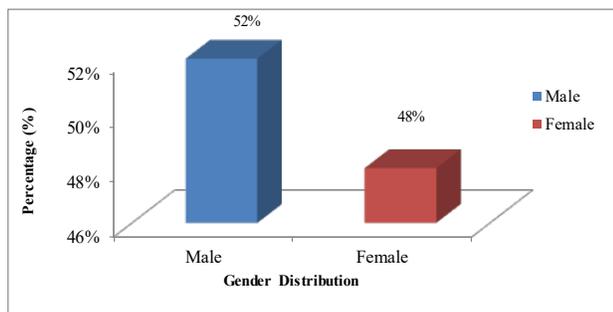

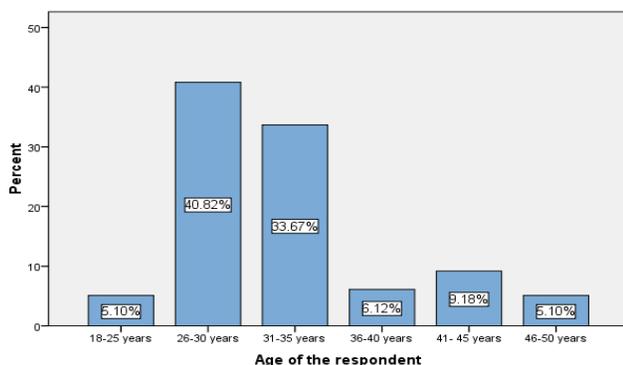Fig. 1. Gender distribution of the respondents

Fig. 2. Age of distribution of maize farmers

The study revealed that maize farming in this region is majorly practiced by young and energetic age category from 26–35 years forming 75% of the total population of farmers' interviewed. The 2009 census report indicated that the regional population is youthful with 50.5% of the population being 15-28 years old (KNBS, 2009).

Many farmers 85% (325) had attained secondary education, 10%(38) tertiary level while 5%(19) had attained primary education.
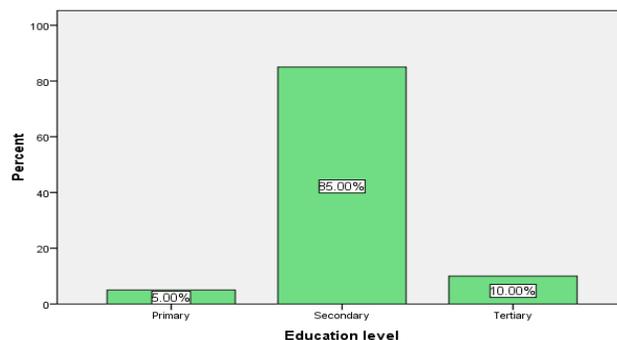

Fig. 3. Education levels of maize farmers

B. Website for Sharing Information on Maize Production

A website with information on maize production with focus on Trans Nzoia County was developed. The web-site was hosted with the domain name:
http//www.transnzoiamaize.or.ke.

The menus of the website are 'Home, About Us, Workers, Mission and Contact Us. The sub-menus contain technical information on maize production, management and marketing. Other links are twitter, YouTube, Facebook and Short Message Service.

Through the website, farmers can access and share in-formation on maize production as well as interact ex-tension officers for increased farm yield and income. Aker, (2010) asserts that ICTs are used to facilitate and transform agricultural extension delivery and help to empower the rural poor. Market information provide improved access to information, transformation the way farmers do business and also supply of new technologies and innovations is made more efficient (Och-ola et al, 2014).

1) The "Home" Page

Fig. 4. The Home page of the website for maize production

The Home page welcomes and introduces one to the website.

One is able to tell at a glance the core services and products provided by the website on maize production. The mission, vision, core values and importance of maize production as an enterprise are enlisted here. Figure 4 is a website screen shot of the home page.

2) The "Workers" and "Contact Us" Pages

The page has list of all staff working for the ministry of agriculture together with their contact addresses. A farmer wishing to get information on maize production can simply get in touch with the extension agent in his/her area of jurisdiction through SMS, phone call, email or other apps like twitter, you tube and face book as shown in Figure 5. This reinforces Gurmeet (2014) assertion that the world has become a global village where information can be shared instantly over long distances.
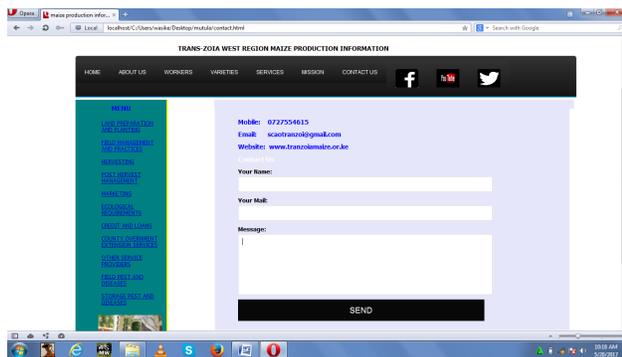

Fig. 5. The 'Workers' page/menu

3) Technical Information Pages of the Website

The information includes land preparation and planting, ecological requirement, field management practices, harvesting, post-harvest management, marketing, pests and diseases management. Other information includes how farmers can access credit and loans for maize pro-duction and profile of other service providers in maize value chain in the County. Maize varieties and other farm inputs plus shops that sell the inputs, shop location and input price are also indicated. Figure 6 is a screen shot of "extension services" in Trans Nzoia County.
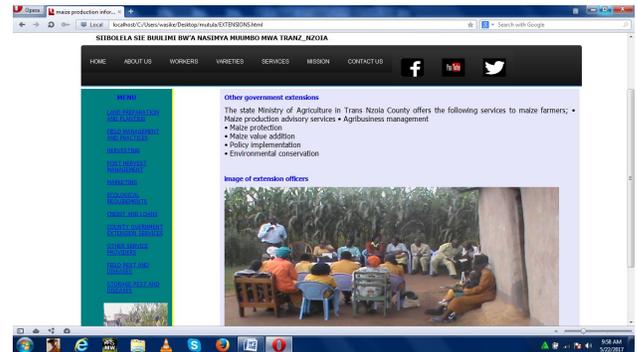

Fig. 6. The extension services web page

4. Conclusion

Website on maize production enhances information sharing among farmers and extension service providers thereby promoting food security. It is therefore recommended that the County government of Trans Nzoia which happens to be the grain basket in the country develop a website on maize production to foster food security.

This website can serve as a prototype that the County government can use to develop and customize its web-site for use by the Ministry of Agriculture.

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