Knotting and networking agricultural information services through Web 2.0 to create an informed farming community: a case of Zimbabwe

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Abstract:

Information and Communication Technologies (ICT's) have revolutionalised every aspect of our life thus making it easier to overcome time and distance impediments in the dissemination of agricultural information, education and research. Zimbabwe has an agriculture based economy and as such the utilization of ICT's has the potential to enhance the sharing of agricultural information /knowledge among farmers. The growing demand for agricultural information and products provides opportunities for producers to sustain and improve their livelihoods through utilising technology. ICT's tools are now deep-seated in every aspect of the global community involved in agriculture. This paper seeks to find out the extent to which Web 2.0 applications are enabling farmers, students, buyers and consumers to communicate and share knowledge. It will also investigate how social media is enabling institutions and individuals involved in agriculture to share information. The paper will highlight practices in the utilization of Web.2.0 technologies in facilitating access to agricultural in formation. It will also seek to find out how mobile technology has helped to bridge the technological divide in facilitating access to agricultural information especially among the poor farmers in both urban and rural areas. It will also seek to find how social media is being utilised to strengthen connections that advance agriculture within

the country. The writer will also explore the challenges that those involved in agricultural production accessing information through social media.

Introduction

As the world advances towards a global knowledge economy access to modern Information and Communication Technology (ICTs) and its effective utilization to improve and sustain agricultural production throughout the world has become critical. The world over ICT's are viewed as a catalyst for change because they enhance communication, improve automated processes and how work is performed. In Sub Saharan Africa, agriculture is the mainstay of economic development and sustainable livelihood. Lwoga; Stilwel and Ngulube, (2010:355) view the agricultural sector as the backbone of many economies in Africa. The authors further emphasise that improved knowledge and information flows, to, from and within the agricultural sector, are key features in improving small scale agricultural production thus leading to improved livelihoods and high quality of yields. The World Summit on the Information Society (WSIS) (2003) clearly outlines its role in effectively utilising technology to empower the socially and economically disadvantaged "…We are resolute to empower the poor, particularly those living in remote, rural and marginalized urban areas, to access information and to use ICT's as a tool to support their efforts to lift themselves out of poverty…"Article 14

ICT's and information sharing

Kalusopa (2004:417) states that information is critical in agricultural development because it is a tool for communication between stakeholders and serves as a channel for assessing trends and shaping decisions. Kabanda (2011:10) states that ICT's are at the core of global socio-economic transformations because of their positive pervasive impact on all aspects of life. The Zimbabwe Farmers Union (ZFU) encourages farmers to make use of ICT's to increase productivity. Farming in Zimbabwe is characterised by very low technological advancements compared to

some countries in the region like South Africa. Zakariya (2012) recommended the immediate computerisation of agriculture so that farming can be controlled by the use of computers just like any other industry in Zimbabwe. Gibbon and Ponte (2005:92) echoes similar sentiments by highlighting how ICT's enable farmers to upgrade themselves "improving what they are doing and or how they are doping it"

The dawn of ICT's and universal connectivity provides developing countries with an opportunity to exploit information and knowledge to develop the agricultural sector. Haythornthwaite (2005) states that with the expansion and use of internet and computers as well as its integration in all aspects of life, concern should shift from "who is signing in?' to an exhaustive analysis of "what do people do online?" The WSIS (2003) endorsed e-agriculture as a way to boost agricultural production through utilising modern ICT's to create linkages, enhance the extension of development services and networks for information and knowledge sharing. FAO (2006) identified agricultural production, community development , research and development media networks in agriculture as key areas in the agricultural sector that could benefit from ICT's.Williams and Williams (1987:87) in their research on information flows and transfer noted how it is directly linked to agricultural development. Smith, and Underwood (2010:374) view information and knowledge as key factors of production critical in enabling society to find better ways of working "working smarter" rather than "working more".

The Digital Divide

Deschamps (2001) defines the digital divide as the growing gap between developed and developing countries with regards to access to information, knowledge and ideas and works of information. The concept is dependent upon access to and availability of information and knowledge through the use of modern ICT's.This divide also manifests itself at a local, regional and international level. Omekwu (2006) notes that developing countries should formulate and implement ICT policies to facilitate and coordinate the development of information technology infrastructure for the benefit of all. The modern world is characterised by the global dichotomy reflected by a dialectical relationship between resource endowed and resource famished third world countries. Norris (2001) states that the digital divide is manifested through the global, social and democratic dimensions.

The United Nation's Food and Agricultural Organisation (FAO) (2005) advocated for bridging the digital divide in order to facilitate easier access to information and knowledge which are the critical in boosting agricultural production. Access to information and knowledge will assist in transforming the socio-economic status of developing countries bearing in mind the interplay of various factors namely; financial, material and intellectual resources in the development agenda according to Kaniki (2008).

Adaption and adoption: Theoretical framework

The extent of usage of Web 2.0 technologies should be closely linked with theories relating to diffusion , adaptation and use, for example , an understanding of Technology Acceptance Model (Davis, Bagozzi and Warshaw ,1989); IT diffusion Process Model (Staraub,994) ; and Social Cognitive Theory (Compeau, Higgins and Huff, 1998) helps to clarify issues. These theories even though they have been tested in developed countries there is need to build on them in developing a critical mass of knowledge on adaptation and adoption of new technologies in agricultural information systems in developing countries. There is greater need to apply these models in e-agriculture and generate scientific knowledge that can assist agricultural research and development agenda for the benefit of stakeholders. The use of mobile technology and internet kiosks needs to be prioritised in empirical research to generate usable scientific knowledge.

Technology Acceptance Model (TAM) aims to identify determinants involved in ICT acceptance, explore ICT usage behaviors and provide cross cutting theoretical explanations for the adaptation of an innovation, for example, perceived ease of use and usefulness among others. With reference to the use of social media for agriculture there are a number of factors that determine acceptance, for example, interplay of psychological, socio-cultural and other human factors are critical determinants. The ICT diffusion model is concerned with the process to which an innovation is communicated through particular channels over time among members of a social group according to Rogers (1995). Bandura (2001) states that Social Cognitive Theory is anchored on the notion that individual behavior results from complex interplay between individual characteristics and situational factors, for example, the concept of computer self efficacy when applied to use of social media in agricultural information systems. Compeau

4

Higgins (1995) defined *Computer self efficacy* as "judgment of one's ability to use a computer". This is a critical factor in determining the frequency and successes in which people use modern technology.

The greatest challenge in the use of social media for agriculture is that of accessibility especially on the part of poorer peasant farmers. It is interesting to note that not all farmers are familiar with the great potential that can be realised from using Web 2.0 Technologies, for example, in Zimbabwe mobile internet service providers need to come up with innovative services for small scale farmers, for example, the use of social media for knowledge sharing and content creation, e-health, e-agriculture and e-commerce. This implies that there is need to provide information and digital literacy programmes to enable farmers to fully utilise social media when sharing knowledge. Public Libraries and other special libraries can play a role in providing access to new technology as well as training on how to use and create content. The University of Zimbabwe UZSpace provides a link on information literacy and this is critical for scholars and researchers alike.

Davis; Bagozzi and Warshaw (1989:987) noted that perceived usefulness had an influence on attitudes towards technology usage. This implies that environmental factors are critical in determining usage of new technology, for example, rural Zimbabwe, is influenced by strong communal and cultural beliefs based on oratory and the need to share and this can be further strengthened through appropriate mobile technologies providing access to agricultural information. Barclay and Dugan (2008) noted that globalisation and increased competitiveness was forcing developing countries to gravitating from thinking about mere adoption but rather the innovative capabilities of ICT's.

The other factors that help to promote ICT's include government support through National ICT Policy, and access to networked libraries. Zimbabwe has promulgated an ICT National policy and an ICT strategic plan 2012-2015 which seek to realise the goal of total digitization in all aspects. Even though mobile communication has been the common form of exchanging and sharing agricultural information, the advent of Web2.0 Technologies is likely to alter the landscape of agricultural farming activities as farmers organize themselves into online groups, and utilise blogs and wikis to exchange and share information. There is need for Information and

Digital literacy skills for farmers so that they can exploit the potential value of Web.2.0 applications. Internet usage is also dependent upon the household socio-economic status.

Web 2.0 technologies

 Web 2.0 technologies or social media encompass online communities, social networking and user generated content Jackson (et.al) (2009) also emphasizes the same point by acknowledging the use of social media to "create, publish, share, collaborate, discuss and network through a wide range of new mainly digital formats and platforms". The only way to get the best out of social media is to exploit the numerous opportunities it provides to users through communication, education, collaboration and entertainment. Interactive web services and applications are radically transforming the world thus enabling users to create, share, collaborate and publish information online. Social media encompasses collaboratively produced or shared media content and network communities according to Ahonen and Leitsela (2007). Facebook, My Space, Flickr including quicker and cheaper platforms of communication, like WhatsApp, Mxit, Nimbuzz and 2Go have penetrated Zimbabwe. The use of such technologies is high amongst the young techno savvy generation unlike amongst adults. This lacunae can be if special and public libraries work together to promote information literacy programmes.

Ashley (et.al) (2009:8) defines Web 2.0 as the emerging interactive web services and applications that have radically altered the way online information users share, create, collaborate and publish information. Examples of such applications include those used for communication and short messaging like Yahoo and RSS feeds, those meant for content sharing, social networking and crowdsourcing through Wikipedia among others. The authors further describe Web 2.0 as a form of technology that was created and developed to thrive on the participation of people and empowerment of users. Anttiroiko and Savolainen (2011:88) define Web 2.0 as a general term for new technologies, applications and services that enable users to network and personalize websites.

Kangas (et.al) (2007) views social media as a combination of content, communities and Web 2.0 technologies. The author describes social media as applications completely based on user generated content or an application in which the actions of users play a significant role in

increasing the service. The term also refers to internet based services which include social networking sites, blogging sites, real simple syndication (RSS feeds), podcasting, wikis, and 3d virtual environments.

RSS feeds allow producers of information to broadcast online, through updated guidelines, current awareness news, library news new acquisition. Hart (2007:27) states that RSS Feeds automatically push information to users when it is updated and enhance visibility and access to information by providing links to articles. The author further states that RRS Feeds are ideal for providing library services to targeted users and libraries can integrate such applications into their agricultural Web content to provide value added library services.

Methodology

The researcher employed a phenomenological approach premised on qualitative descriptions of phenomenon relating to the topic. The researcher chose this method because it is not procedural.Hycner (1999:43) states that it is wrong to impose a method on phenomenon because doing so undermines the integrity of the phenomenon. However some guidelines were followed, for example, a survey of academic and research institutions with internet presence or web a repository was conducted in Harare. Literature available on current trends in Web 2.0 usage for sharing agricultural information among farmers in Zimbabwe also helped to develop the paper.

Use of Web 2.0 Technologies

The use of Web 2.0 Technologies is now a common feature of modern libraries and the developing world is no exception despite the digital divide. The major purposes of Web 2.0 technologies has been mainly to communicate, content sharing, social networking and crowdsourcing. Anttiroiko (2009) identified the critical applications of Web.2.0 applications as social networking through Facebook, Friendster, Netlog, special interest networks (SIN), Media communities and content based SNSs, blogging, short messaging, feeding and alerting, communication services and instant messaging through search engines and other tools among others. The widespread access to Web 2.0 technologies is revolutionalising how groups or social networks created and how work is accomplished according to Kasper (2008:1).The author further notes that the advent and increasing use of social media is promoting "networked ways of

behavior characterised by principles of openness, transparency, decentralized decision making and distributed action".

A snap survey on internet reveals that Zimbabweans are utilising social media to share information for example, "*Potato Farming in Zimbabwe Group*" and "*Aquaculture Zimbabwe Trust*" support communal projects that encourage the use of creative solutions to poverty through freshwater aquaculture and fisheries in their respective communities and New Zimbabwe Forum for soya bean farming. Furthermore, the use of such technologies has also been embraced by educational and research institutions which now can be accessed from online sites .This includes Universities, Colleges , Research Centres and Meteorological services. The following are examples of links to illustrate the extent of use of social media;

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https://www.facebook.com/#!/search/results.php?q=Potato%20Farming%20in%20Zimbabwe%20&init=quick&tas=0.0038579915227329175&search_first_focus=1334551896407

. https://www.facebook.com/pages/AQUACULTURE-ZIMBABWE/71399856194#!/pages/AQUACULTURE-ZIMBABWE/71399856194

http://forum.newzimbabwe.com/index.php?/topic/36948-soya-beans-farming/

www.facebook.com/.../Agriculture-in-Zimbabwe/143289232

https://www.facebook.com/uzlibrary.

http://kutsaga.co.zw/

http://www.weather.co.zw/

Bafana (20110 notes that here is a wide scope for effective agricultural extension services outreach with regards to provision of information to remote areas in Africa. The author cites the Ugandan programme managed by women use ICT's to share information. The same situation is reflected in Zimbabwe especially amongst those farmers with access to mobile connectivity.

Jackson (2009:9) states that social media and ICT's are beginning to demonstrate their potential for the creation, co-documentation and co-distribution of information and advice on farm

practices because of their abilities as enabling media tools and as symbols for open and collaborative ways of working. Karamagi and Nakirya (2010) argue that African farmers in the rural areas in Africa require platforms and resources to share the valuable knowledge they possess with regards to boosting agricultural production.Wakapala (1982) noted that key areas in agriculture , for example, agricultural extension, local farmer participation, credit , marketing, social services, project administration and training, project administration and training as information dependant .The author noted that the role of information in supporting agriculture is of paramount importance.

Richardson (1997) noted how global economic, environmental and political developments were influencing the small scale farmer through creating numerous opportunities for exploitation thus breaking down the barriers of isolation and placing the small scale farmer in the realities of the global market. Kalusopa (2004:416) notes that with information, small scale and labour intensive farming can be able to reduce input costs and provide consumers with higher food quality in production safety and taste. The author further notes that information must serve as a tool for acquiring knowledge, decision making and facilitating communication between various stakeholders involved in agriculture.

Libraries have embraced these technologies and applications services as a way to harness the enormous potential they provide. Anttiroiko and Savolainen (2011:88) has identified four major purposes of Web.2.0 technologies namely; communication, content sharing, social networking and crowdsourcing.The author further notes that social networking technologies are useful for finding people, building directories and social networks, managing relationships across media, collaborating with others within users network and content sharing , knowledge finding and sharing among other functionalities. Sadeh (2017) notes how developments in web technologies are creating user friendly, social and fun environments for retrieving and information through social networking, for example blogs. Ayiah, and Kuma, (2012) notes that Web 2.0 technologies are transforming the library landscape through provision of an enabling platform that transcends the traditional services.

These services aim towards stimulating and accelerating creativity and supporting online collaboration and sharing according to Tioripathi (2012).Boyd and Ellison (2007) define social

networking sites as "….web based services that allow individuals to construct a public or semi – public profile without a bounded system, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the sytem.The nature and nomenclature of these connections may vary from site to site"

Sembhoo (2010:14) states that Web 2.0 technologies are empowering users to cope with information deluge and enabling convenient news sharing or information exchange since users do not need to visit the respective websites to take stock of updates, but through Really Simple Syndication or Rich Site Summary (RSS) feeds they can be updated without having to individually consult each of these websites. These technologies facilitate the generation, initiation and circulation of information and knowledge through allowing users to post, tag, dig or blog according to Xiang and Gretzel (2010:179-180).

Rhoades and Aue (2010) acknowledge the critical role that blogs and bloggers play in facilitating access to information, for example, blogs provide an open relationship between the blogger and readers and the interactivity through options for commentary. The two authors further recommended agricultural media to adapt social media and encouraged those using social media to regularly update them in order to capture the attention of the users. Southern African Development Community (SADC) is harnessing Web.2.0 technologies to facilitate exchange of information and demonstrate the immense potential that can be derived from such technology through establishment of the following blogs;

http://facultyagriculture.blogspot.com

http://zar4din.blogspot.com

http://news-agriculture.blogspot.com

http://lovezim.org/Blog/uncategorized/ebenezer-a-stone-of-helps-in-the-matopos/

http://www.zbc.co.zw/news-categories/agriculture/5641-organisation-formed-to-boost-potato-production.html

https://www.facebook.com/ZimbabweFarmers

The following represents a chat session between farmers interested in potato farming after having read an online article on potato farming in the local paper.

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http://www.zimpapers.co.zw/index.php?option=com_content&view=article&id=3877:potato-hidden-treasure-crop&catid=47:agriculture&Itemid=139

2011-06-27 13:11

did this guy calculate the return/$invested.sometimes it doesn`t make sense especially in our economy where most people don`t engage into biz with a the ratio being less than 3. $7000 on inputs what about post harvest costs (losses, transport and other marketing costs)?I will have to do a budget myself but the figures in this article are surface.
Reply

2011-07-08 16:14
I am sure he did not get that far. But some how @ face-value i believe the whole potato farming is viable. Considering that if you are using 5 hectares that is communal land your gross will be around 80K and costs upto to preharvest will be 35K. As a farmer you are still left with 45K to carter for costs and so forth. Which from rational estimates will not exceed 15K. Leaving the farmer with 30K. But one thing to note is life is not mathematical especially farming in uncontrolled environments as the statistics being used could have been from a greenhouse operation or a quarantined production unit, which distorts everything. A friend of mine tried this and was surprised big time... So make sure that basics are met b4 you start crunching numbers.
Reply

2011-07-10 15:01
Fantastic information on Potato seed sellers but where can these people be contacted, no phone numbers or addresses given etc. I think sometimes when we publish this type of information to the populace, it should be to help them at large and moreso, growers in particular. Otherwise just letting people know of there being a seed grower out there and giving them a task of where do I find them is only wetting their appetite.
The Saint B.
Reply

2011-07-22 16:56
Plenty of seed sellers in Nyanga. For those who are really interested let me know. I am prepared to give you the contact details of reputable seed sellers in Nyanga.
Reply

2011-09-07 08:04
would u pliz supply me contacts of seed sellers,thanx in advance
Reply

2011-09-28 23:38
can you pliz send me the contacts of the seed sellers and if possible the varities which are suitable for mutare in summer. thanks so much

Adapted from the Herald

Legal and Ethical Factors

Ashelly (2009) states that Web 2.0 tools have the potential to enhance the ways people interact and share information online but issues relating to intellectual property rights, privacy and security of information need to be taken into account. The author further states that there is need to be clear on issues regarding intellectual property rights to information uploaded on to social media sites , for example, Facebook and Your Tube retain the right of ownership to any

information uploaded to their site. The creation and exchange of knowledge relating to farming can create legal and ethical problems unless there is selectivity in the type of information to be shared and also registration and use of pass words to access information from blogs.

Morgan states that the culture of sharing which is a key feature of Web 2.0 has stimulated interest in intellectual property protection. This is critical in situations whereby farmers share indigenous knowledge relating to farming. The internet as a public platform seems not to have mechasmisms to ensure that information posted will not be abused for commercial purposes either through resuse, mistintepretation, distortion or manipulation. Kevin and McGrath (2001) acknowledge the role of the internet in creating a new society of netizens who cherish outright freedom of expression but recommends decorum or netiquette. The greatest ethical challenge of the current ICT dispensation will not be confined to autotelic activities with regards to use only but the extent to which technologies can be integrated into the socio –cultural milieus and overcome global homogenization of culture according to Bruni (2011).This implies the recognition of agricultural indigenous knowledge systems as a complement to scientific knowledge.

Networking and knowledge sharing

Nahdy (2011:17) states that famers in Africa require reliable and relevant agricultural information relating to better farming methods. The author further attributes the failure of current agricultural extension services to meet the information needs of farmers to the absence of systems that facilitate timely information–sharing, gathering and transmission.Durrani (2008:20-21) states that African countries need a paradigm shift from the colonial model of agriculture information systems which prioritised settlers, bureaucracy, research, educational staff and extension workers at the expense of the disadvantaged peasant farmers. The author bemoans that peasant and urban farmers who make up the larger percentage of the population of developing countries including Zimbabwe, are not adequately taken care with regards to access to agricultural information.

Social interaction between farmers can be likened to the interaction within a parade of elephants operating in networks. Watson (2003) views networking as a critical component of the

knowledge management dispensation, whose absence would make it difficult to set knowledge into motion and facilitate sharing. The author likens the social structure of elephants to that of a Community of Practice (COP) because of strong networking ties that facilitate knowledge sharing. This concept is applicable to the social structure of peasant farmers because they exhibit characteristics of a Community of Practice, for example, because they share high sense of community belonging and a deep and wide passion for what they do, whether it's farming tobacco, maize or potatoes.

Kreb (2004) describes the chemistry of social networks as consisting of people with different properties and their capacity to bind with other people with also different binding forces. Burt (2000:345) states that when we use the social capital metaphor to analyse networks, people who are networked do better than those who are not because society is like a market place whereby people exchange goods and ideas to serve their own interests. Farmers operate as social networks and they utilise various media and fora to exchange ideas to improve production and minimize loss. Web 2.0 technologies have the potential to enhance farmers' social capital through developing networks to sustain mutual relationships. These technologies have an element of collaboration and user centricity which makes them more appealing to techno savvy users. The ability to give and receive information is a critical component of social capital. It is through the effective use of modern technologies that farmers can strengthen their ties and thus improve themselves with regards to quality agricultural production.

Lwoga; Stilwel, and Ngulube (2010) recommended that regular research should be conducted on rural information needs and the local people should be considered in the design and development of agricultural technologies to increase their adaption rate. Mitchel (2011:18) highlights how farmers in Jamaica are utilizing ICT"s in the form of innovative extension services to prepare for unpredictable weather patterns, improve farming techniques, preserve crops and livestock and penetrate new markets. The author highlighted the Rural Development Authority (RADA) text messaging service and how it alerts farmers when climatic disasters like hurricanes are about to strike and also provides information on internal and external markets.

Agricultural Information systems: Challenges and opportunities

Durrani (2009:21) bemoans that the agricultural information systems that exist in third world countries have evolved over many years in the course of social struggles. The author further notes that globalization has not helped in any way because third world agriculture and Agricultural information systems are increasingly being seen by transnational companies as fertile grounds for plunder through the commoditization of information. However, there is need to adapt to new technology and make use of it to benefit local communities. Chin's (2010:1-3) advise to medical practitioners is equally applicable to Information Managers and users of information, because incorporating social media in agricultural information services is an innovation, "A knee –jerk reaction to reject any new technology or platform that appears to threaten professionalism risks rendering practitioners irrelevant." Chin (2010:1-3)

Bafana (2011) reechoes similar sentiments by stating that agricultural extension services in Africa also have connotations of colonialism reflected by their exclusive, elitist and anachronistic nature. The author argues that there should be a participatory approach to enable farmers to learn from each other. The author distinguishes between two distinctive agricultural information systems namely; one developed by peasants based on oral traditions and traditionally regarded as useful in passing on useful agricultural information and then the official one developed by the colonial authorities to serve their own interests. Agriculture provides at least 60% of all employment and makes up the backbone of African economies and in most Sub Saharan Africa , it is the biggest contributor to the Gross National Income, the main source of foreign exchange, main generator of savings and tax revenue and source of industrial raw materials according to NEPAD ((2002:9).

It is noted that ICT's have a critical role to play in increasing food production because they are crossing cutting, for example , they are critical in weather forecasting ,monitoring climate change, sharing information relating to disease outbreaks and marketing among others. e-Agriculture is an issue that is on the developmental agenda of government and also non-governmental organisations, for example, Practical Action in its endeavor to provide access to ICT 's to urban and rural farmers, is experimenting with podcasting to record indigenous

knowledge relating to veterinary health, immunization, dehorning, castrating bullocks or controlling ticks on cattle.

Systems Approach and Agricultural Information Systems

Demiryarek (2010:2009) states that agricultural information is critical since the productivity of the other four factors of production namely; land, labour, capital; and managerial ability are anchored on the reliability and authenticity of agricultural information. The author uses a defines an information system as either manual or automated system, comprising people, machines and methods to collect, organise, process, transmit and disseminate information. The systems approach investigates physical and social systems which enable complex and dynamic interactions to be understood in broader context.

In management the systems approach is concerned with growth and stability of systems under a range of possible futures, unpredictable perturbations and alternative policies according to Bullock and Stallybrass (1989:842).Johanessen;Olaisen and Olsen(1994:24) view the systems approach as the philosophical basis for knowledge management and organizational learning because it provides a philosophical foundation for interpreting social phenomemon.Druicker (1993) and Stewart (1997) in their analysis of social systems divided organizations into machines, organisms and social systems , with the latter being associated with the knowledge - based economy, knowledge management and learning organizations. Information systems are also social systems because they exist in socio-cultural milieu and are influenced by the goals, interests' values and beliefs of such environments.

An agricultural information system is composed of various interrelated entities, for example, information related processes, systems mechanism and systems operations comprising of control and management with a subsystem consisting of research, extension and the farmers. Rolling(1988:33) uses a systems approach to describe an agricultural information as " …a system in which agricultural information is generated, transformed, consolidated, received and fed back….to underpin knowledge utilization by agricultural producers"

The ICT revolution and access to agricultural information

Zimbabwe's teledensity stands above 74.7 % with reference to subscriptions to Econet, Telecel, NetOne and TelOne.There is need to bring in innovation to enhance use of mobile technology for farming as is what happens to banking through e-banking services. There are a number of programmes aimed at empowering disadvantaged rural farmers through mobile technology, telecenters and community multimedia centers. Through mobile phones, Zimbweans access financial, education and agricultural information, for example, the University of Zimbabwe's mobile service available on (http://m.uz.ac.zw/library/opening_hours_main.html). This has helped to provide convenient services to students and researchers involved in agriculture and other academic pursuits. Mobile technologies also facilitate access to agricultural information thus replacing traditional agricultural marketing based on radio and message boards according to Aker and Mbiti.Through mobile technology, ICT's afford a platform where farmers can exchange agricultural data and information directly from source to destination

It should be noted that access to mobile technology enhances participation in social media.Gillwald and Stork (2008) noted that limited internet usage in Sub –Saharan Africa was too expensive for generalized use in Sub Saharan Africa was low uptake of broadband access, high cost of computers and low uptake by households In Zimbabwe mobile financial applications are currently in use, for example, EcoCash from Econet Wireless, allows you to send and receive money quickly and easily from cellphone to cellphone.Aker and Mbiti (2010) refer to such technologies as systems that facilitate financial transactions , for example transferring money between individuals.

The other significant development with regards to provision of agricultural information to rural farmers is that of telecenters. These technologies facilitate access to social media. Gomez; Hunt and Lamoureaux (1999:7) define a telecenters as a physical space that facilitates access to Information and Communication Technologies (ICT's) for, socio-economic development. Southern Africa has developed the Southern Africa Telecenters Network (SATNET) whose main aim is to promote regional interaction and knowledge sharing.

Mulozi (2008) highlight how telecenters enable communities to access information resources relating to farming practices through the internet or offline through the telephone and through provision of opportunities for physical and virtual networking. Telecenters provide for access to online market information services, access to local price information, farming tips, marketing information, knowledge sharing amongst rural farmers. Initially telecenters are supported through government or donor funding but they are supposed to transform into self sustaining entities and this implies the inforpreneurial dimension. The development of telecenters in Zimbabwe has enabled rural public to access ICTs to share agricultural information through social media.

Conclusions.

Already farmers in Zimbabwe have begun to exploit the numerous opportunities that Web 2.0 technologies provide and hopefully this trend will spread throughout the country as internet connectivity spreads to allow mobile connection to penetrate rural areas. Considering the prevalent use of social media across ages but more so, amongst the young people, there is great potential that such technologies can help to knot and network disadvantaged farmers to share knowledge and add value to production. However social media alone can address all problems relating to increased agricultural production but it can serve as a "special vehicle" in establishing networks for advancing agriculture. It is through such technologies that agriculture can be transformed into an alluring activity by the young people. Zimbabwean peasant farmers characterised by a strong sense of community can utilise technology to network to boost agricultural production. Such technologies provide an enabling platform that transcends the traditional service delivery of agricultural information. If utilised effectively Web 2.0 technologies can change the landscape of agricultural information systems in Zimbabwe for the better. Social media is the ideal tool to knot and network agricultural populations that are geographically isolated and empower them to share agricultural information and increase productivity and eradicate poverty.

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