



Opportunities for Facebook to Improve knowledge transfer to Farmers and Enhance Agricultural Extension

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Abstract

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The aim of this paper was to report an action research that examined the potential of social media as a tool for knowledge transfer in agricultural extension. The research focused on developing group Facebook pages that were designed for adult farmers. A total of 49 participants who were already members of four separate discussion groups were instructed on the practical aspects of using Facebook. Their participation in the Facebook pages was monitored for the duration of the experiment (from February 2013 to January 2014) by examining the frequency with which they logged into their accounts and the nature of their contributions. The participants' level of uptake of social media was measured and their experience with using social media was evaluated by administering a questionnaire to all 49 participants. The majority of the participants had a positive experience when using social media for knowledge transfer purposes. The research found no association between age and social media usage; however, computer skills were significantly and positively associated with social media usage. Internet access was also associated with usage – those with wireless broadband internet connections in their family homes had the highest usage levels. The research presented in this paper illustrates that social media can be an effective tool for knowledge transfer in agricultural extension.

1. Introduction

There have been significant developments in recent years in the role and use of Information and Communication Technologies (ICTs) within society and this has also extended to the agricultural community. Recent research reports place great emphasis on the role of communications in the advancement of agriculture and agricultural extension services (Rao & Malhan, 2008; World Bank, 2011). The environment in which farmers operate is changing and this means that agricultural extension services also have to change and adapt the services they provide and the manner in which they provide those services. Traditional advisory approaches included farm visits, discussion groups, office and phone consultations and training courses (Teagasc, 2012). Macken-Walsh, High, and Horan (2011) argue that the role of advisory services for knowledge transfer is changing in a broader context where knowledge is debated rather than merely transferred from advisors to farmers. The introduction of ICTs

into advisory services is seen as important in facilitating this process. Social media offer an opportunity to provide a responsive and quick network for farmers and others involved in agriculture to gather and exchange information. Social media are becoming more popular around the world, especially among young farmers. In a recent survey in Ontario for instance, 73% of the respondents who were all agriculturalists rated social media as important to them and their businesses. Over two thirds of the respondents said that the main use for social media was for sharing or capturing knowledge and information (LeBoeuf, 2012).

In agricultural extension social media are relatively new and the potential yet to be realised. This paper addresses the core research question: is there a role for social media in agricultural extension and in the dissemination of agricultural information? In pursuit of this overall research question, the following research objectives were set for this paper:

To identify the opportunities and potential ways in which social media can be most appropriately used by extension to aid knowledge transfer to farmer users; and

To identify the barriers preventing farmers from adopting social media and analyze how these can be addressed.

The analysis presented in this paper focussed on developing group Facebook pages for use by extension discussion groups and monitoring and evaluating the experiences of these groups with the Facebook pages.

Theoretical background

Information and communication technology (ICT) is defined as technology that supports data and information processing, storage and analysis, as well as data and information transmission and communication, via the Internet and other means. The term ICT includes computer hardware and software, telecommunications technologies, online or offline digital information as well modern social networking, read and write interfaces on the internet and systems of file sharing (Dhakar, Singh, Sathwane, Niranjana, & Patel, 2013). The role of ICT as a medium for disseminating information in agricultural development has been acknowledged within existing literature (Asenso-Okyere & Mekonnen, 2012). ICTs can provide easier access to information which in turn can contribute to better informed decision making. Dethier and Effenberger (2012) add that with ICTs agricultural services can be supplied at a lower cost and higher quality of information can be provided.

It is widely accepted that the Internet confers benefits on its users in a variety of ways, ranging from simple information acquisition and purchasing goods and services, to interacting with a range of individuals and groups in the wider processes of governance. Rural citizens stand to gain more than most, since the use of the Internet reduces, if not removes, geographical barriers to such interaction (Warren, 2007). At the simplest level, the benefits of the internet and broadband are easier access, faster data transfer and more accurate relay of complex digital information (Rennie & Mason, 2005).

Evolution of the Internet and Social Media

There have been enormous advances in ICT in recent decades. Web 1.0 as it is now known was the earliest stage of the evolution of the World Wide Web whereby users could only view web pages but could not contribute to the content of the web pages. Web 2.0, in comparison, is much better oriented for social, political, and business users (Cormode & Krishnamurthy, 2008). Eijkman (2008) defines Web

2.0 as a trend of Internet services that promote users to collaboratively create, share and recreate knowledge from multiple sources. Web 2.0 has given rise to what has been termed 'social media' or Social Network Sites (SNS). Brogan (2010) explains that typically, social media are highly accessible (easy to get to) and scalable (can be used to reach large numbers). SNSs give individuals three major capabilities: firstly, the ability to construct a public or semi-public profile; secondly, the ability to identify a list of other users with whom a connection is shared and thirdly, the ability to view and track individual connections as well as those made by others within the system (Ellison, 2007).

Facebook is by far the largest online social network. As of the first quarter of 2018 it had 2.2 billion monthly active users worldwide (Facebook, 2018). People use Facebook to keep up with friends, upload photos, share links and videos, and learn more about the people they meet. Like other SNSs, Facebook enables users to create visible profiles (Hargittai, 2010). Connections formed through Facebook support relationships and connectivity in the offline world (Ellison, Steinfield, & Lampe, 2007).

Social Media usage for Extension Services

Social media is increasingly relevant for extension service delivery. Those who use social media for extension have the capability to significantly expand the impact of their programming efforts. The influence can impact in various ways such as sharing educational information, establishing new and improving existing communications and marketing both the programme and extension services. When using online extension education it reduces the need for offline contact as it supports and enhances relationships between clients and extension services. Professionals may benefit by using social media to interact with clients as it can meet the needs of a broader audience from diverse geographic location, social or economic backgrounds. Social media sites such as Facebook are a cost effective method of reaching out to new and traditional audiences (Mains, Jenkins-Howard, & Stephenson, 2013).

Extension professionals can post relevant educational articles and links to reliable information on Facebook groups and pages. A page or group can be created on Facebook; this can be used for extension professionals to provide the educational resources to their clientele. Information can be obtained from the group by creating a simple survey on the page which will be answered by the members and tabulate online in a quick and easy form rather than contacting each individual client. By using pages

or groups on Facebook it enables the professionals to reach a large number of clients with educational material that can address the needs of clients immediately (Mains et al., 2013).

The value of the relationships formed through Facebook can be called "social capital" which has been shown to form and grow individual and community capacity (Coleman, 1988). Potentially Facebook can be used to enhance the ability of extension by building relationships and forming networks with clientele (Mains et al., 2013). As the internet is becoming the leading system for knowledge, both as a container and as a worldwide podium for knowledge (Tapscott & Williams, 2010) it is vital that extension educators and instructors are equipped to meet the demands of this changing age. By using free online networking tools extension educators can grow their outreach.

Technology Adoption Factors

Studies in relation to ICT adoption have identified factors that influence ICT usage. These factors have been identified as: age, computer skills, access to computers and the Internet, acquaintance with the Internet, access to technical staff knowledgeable of ICT, research activities, perceptions of ICT, relative advantage, results demonstrate-ability, trial-ability, compatibility and ease of use. With regard to the farming community, personal and business characteristics strongly influence their adoption of computers and the Internet (Mittal & Mehar, 2016; Ali, 2012). Most research findings agree that farmers do not adopt new technologies because the technologies are too complex, are not easily divisible into manageable parts, are not compatible with farm and personal objectives, are not flexible enough, are not profitable or are too expensive (Howley, O Donoghue & Heanue, 2012). Prokopy, Floress, Klothor-Weinkauf, and Baumgart-Getz (2008) found that education levels, capital, income, farm size, access to information, positive environmental attitudes, environmental awareness and utilisation of social networks are more often positively, than negatively, associated with the adoption of best management practices. The most innovative, efficient and progressive farmers tend to be younger, have higher levels of education, are open to new ideas and are more likely to participate in learning groups. It is interesting to explore if similar barriers affect the adoption of ICT at farmer level. Traditionally the exchange of agricultural information was predominantly through industrial media including newspapers, television and magazines. However in recent years the awareness of technology and computer literacy has improved across all age groups

(Varner, 2012). Information is now more accessible than it has ever been with an enhanced variety of information formats and sources available. The interventions that are responsible for the occurrence of change and the adoption of new practices and technologies are the drivers that ensure that industries such as agriculture continually improve competitiveness and sustainability (Teagasc, 2012).

Farmers receive information from many people such as advisors, other farmers, sales people and researchers while farmers also receive information from many different sources such as websites, online articles, newspapers, agricultural magazines and most recently through social networking sites. By using social networking sites information can be disseminated to the farmers from all the different people whom they receive their information from but it can be seen from the one source. By using social networking sites information can be disseminated rapidly to a large audience and farmers can receive information instantly after it is published compared to other media. However, in more remote, less accessible rural communities, additional problems centre on the lack of connectivity (such as broadband) which can undermine the potential of social media in these areas (Walsh, 2010).

2. Materials and methods

This research used an action research approach. Three complementary techniques were used; these consisted of the development and testing of a social media system (Facebook); paper based questionnaires and focus group discussions. The population for this research consisted of Irish farmers who were clients of Teagasc, the public extension service. The sample consisted of four extension discussion groups that were already in existence. There was an average of 16 members in each discussion group but only a total of 49 farmers participated in this research study as some farmer members did not wish to participate in the research study mainly due to the limitation of their perception of having weak computer skills.

Each participant of the four discussion groups completed a paper based pre research questionnaire in February and March 2013. The purpose of this was to identify the farmers' personal and demographic characteristics and their prior experience with ICT and social media.

Development of the group Facebook pages

Group Facebook pages were created (one for each of the discussion groups) in February and March 2013. These group Facebook pages were private pages meaning that only the members of the group

could access the content on these pages. Through Facebook each individual is required to “ask” to become a member of the group page which is accepted by the creator of the group page who is given the title of “administrator”. Members of the public who asked to join the group Facebook pages but were not discussion group members were not accepted and therefore were denied access. Only the discussion group members, their advisor and the researcher were the members of the group Facebook pages. Facebook training classes were delivered with each of the four discussion groups in March and April 2013 and all farmers participating in the research were invited to attend. These classes were used to set up each individual with a personal Facebook account and were shown how to access their group Facebook page. During the classes the farmers were also taught how to use Facebook by uploading comments, videos, pictures and website links.

These group Facebook pages were used throughout the research period as a platform for communication between the farmers and their advisor. The group Facebook pages had many different functions including; reminders or events, uploading photos, organising dates of meetings and social communication. Many technical topics were discussed such as grass growth, fertiliser usage, animal slaughter details and grain prices. The group Facebook pages enabled files, videos, photos and comments to be shared.

A paper based questionnaire was administered to all the farmers at the end of the research in January 2014 to assess their experiences and opinions on the usage of Facebook. Focus group discussions were also held with each group in January 2014. The purpose of the focus groups was to gain a deeper insight into the farmers’ opinions, success and usefulness of using Facebook.

Development of the Dependent Variable: Hierarchy of Participation on the Facebook pages

A search of the academic literature revealed that there was no previous research published with findings on hierarchies of participation on Facebook pages. Accordingly, in order to accurately measure participant activity on the group Facebook pages, a new system was devised as part of this research which ranked participant activity. This was achieved through establishing an expert panel of experienced agricultural extension agents who were familiar with this research and with the concept of social media. They reviewed the nature of each participant

contribution on the Facebook pages and categorised the contributions by the participants.

An index system was thus devised to measure the participation by all participating farmers on the group Facebook pages. This index system assessed the contribution by each participant based on its level of technical detail. Four categories were used in this index system: non-technical (social comments), semi educational contributions, technical contributions and highly technical contributions. The rationale for using these four categories was that the higher the level of technical detail of the information shared the more beneficial it would be. On the other hand it is important that some social interaction took place between the members as this introduced a “fun” element and encouraged them to revisit the Facebook pages and log on regularly to communicate with others. This is a cumulative index as each member received a score ranging from 0 to 10 for each instance that they visited the group Facebook page and the total score was accumulated as the research proceeded. The score allocated to each type of participation on the Facebook pages is presented in Table 1.

A post is anything that is shared on the group page such as written comments, website links, photos, videos, files e.g. Microsoft Word and PowerPoint. To “Like” a post means that the group member pressed the like button underneath a post. When a comment is liked it is published and can be seen on all the group members news feed.

To “create a post” means to generate a new post on the group page for all members to see and read. To create a post the member is required to click on the group page and write or share what they want with the group. To “comment” on a post means to write a response or to share a photo regarding the post that was shared with the group, therefore a comment could be an answer to a question asked in a post, to carry on a conversation with the member who posted and to give feedback on what was posted etc.

For each category of contribution, a distinction was made between the participants initiating and responding to a posting. Initiating a posting was judged to represent a higher level of participation than responding to an existing post; by creating a post it is that person who initiates the conversation and generates new items for others to read. This maintains the interest of the group. In contrast, commenting on a post is usually only a reaction to what another member has posted so therefore those who create a post deserve a higher score.

Table 1. Hierarchy of Participation on Group Facebook Pages

Score	Type of Participation
0	Does not log on
1	Logs in and sees a post but does not contribute
2	“Likes” a post
3	Comments on a post- not of technical use e.g. social
4	Creates a post - not of technical use e.g. social
5	Comments on a post- semi educational e.g. weather
6	Creates a post- semi educational e.g. weather
7	Comments on a post- technical use e.g. grass growth, milk yield etc.
8	Creates a post- technical use e.g. grass growth, milk yield etc.
9	Comments on a post- providing high technical information e.g. fertility results, rate of fertiliser applied etc.
10	Creates a post- providing high technical information e.g. fertility results, rate of fertiliser application etc.

At the end of the research all the farmers participating in the study attained a total participation score. This total score became an effective dependent variable which was used to analyse socio-demographic characteristics of the participants according to their level of participation on the group Facebook pages.

All quantitative data from the questionnaires were coded and analysed using the Statistical Package for the Social Sciences (SPSS).

3. Results and discussion

This section presents the results and analysis of the usage of the group Facebook pages to aid agricultural extension. The findings from the baseline survey profiling the respondents are first presented followed by the analysis of the participants' activity on Facebook.

Profile of Respondents

The 49 respondents who participated in the study ranged in age from less than 30 to over 60 years (the participants were asked their age category rather than their exact age). Only 4% of the respondents were 30 years old or less and 8% were 60 years old or over. The majority (85.7%) were engaged in farming on a fulltime basis.

Respondents were asked to evaluate their computer skills. It emerged that 88% rated their computer skills as average or below. None rated their computer skills as very strong. Over half (53%) stated that they previously had some computer training.

All of the respondents owned mobile phones but only 36.7% owned smartphones. Some 44 (90%) owned at least one computer, laptop or tablet in the family home, with some owning two devices. Of the five who did not own a computer, laptop or tablet, two owned smartphones which enabled them to access the internet while three respondents did not own any ICT device. Forty seven respondents (96%) had internet access in their family homes. The most

common type of internet connection was wireless broadband (by 66% of those with internet connections) followed by satellite (by a further 19%).

Only nine respondents (18.4%) held social media accounts prior to this research. All of these were under the age of 50 years. However, most of those who used social media prior to this research only used it on a monthly basis. The main reasons given by the forty respondents for not having these accounts included lack of time (by 42.5%), perceived inadequate computer skills (22.5%), lack of interest in social media (12.5%), no access to computers (10%) and not knowing the purpose of social media (10%).

Respondents' usage of group Facebook pages

For the group of 49 respondents the Facebook participation score ranged from 0 to 230. The lowest score attained was 0 which 21 respondents scored. Those respondents who scored 0 were set up with personal Facebook accounts by the facilitator and thus joined the group Facebook pages at the initial computer training class but never used the group Facebook pages subsequently. The mean score attained by all respondents was 36.4. The standard deviation of the participation scores was 56.2. The relationship between respondents' personal and ICT-related characteristics and their engagement with the group Facebook pages throughout the duration of the experimental period are summarised in Table 2.

Table 2. Relationship between characteristics of respondents and their engagement with the group Facebook pages

Respondent characteristic	Category with Highest Mean participation Score	Mean Facebook participation Score	Category with Lowest Mean participation Score	Mean Facebook participation Score	Level of Significance
Age	41-45 year olds (22%)	50.4	51-55 year olds (8%)	3.6	ns
Computer Skills	Average (49%)	58.6	Very Weak (14%)	3.6	P=0.006**
Smartphone Ownership	Owns a smartphone (37%)	55.7	Does not own a smartphone (63%)	25.3	ns
Highest Level of Education	Level 8 Qualification (10%)	92.8	Leaving cert (end of formal education) (16%)	10.1	P=0.042*
Type of internet connection in the family home	Wireless Broadband Internet (70%)	58.6	Mobile Broadband (9%)	10.7	ns

Age of participants and their Facebook usage

There was no statistically significant relationship (at 5% level) between the age of participants and their usage of the group Facebook pages even though two thirds of the participants over the age of 46 had an participation score of 0. The participant who achieved the highest score of 230 was aged 46-50. The age category of 41-45 had the highest mean score among all the groups.

Computer skills of participants and their Facebook usage

Participants were asked in the pre research questionnaire to rate their computer skills. Nearly half (49%) rated their computer skills as average. No respondents rated their computer skills as very strong. Of the nineteen respondents who rated their computer skills as very weak or weak, 63.1% attained an participation score of 0 indicating these respondents never used the group Facebook pages. The mean score of the respondents who considered their computer skills to be average was 58.6 compared to those who considered their computer skills to be strong who attained a mean score of 35.0. This suggest that while computer skills can play a role in the level of Facebook usage, once farmers have mediocre computer skills it is adequate for using Facebook.

The respondents were asked in the post research questionnaire if they had previously taken any IT-related training. Of the forty nine respondents, twenty six stated that they previously had computer training compared to twenty three who had never done so. There was no statistically significant difference (at 5% level) in the mean participation scores between the respondents who had taken

computer training previously and those who had never taken computer training ($p=0.617$). Furthermore, there was no statistically significant difference (at 5% level) between the Facebook participation scores of respondents who had a Facebook account prior to the research and those who set up their Facebook account for the first time at the beginning of this research.

Ownership of ICT devices

The respondents were asked in the pre research questionnaire what devices they owned for accessing the internet. These results together with the associated mean participation scores are presented in Table 3.

All of the forty nine respondents owned a mobile phone, while 36.7% owned a smartphone. There was no statistically significant difference (at 5% level) between the mean scores of those who owned and did not own smartphones ($p=0.067$), a trend did appear as those who owned smartphones ($n=18$) had a higher Facebook participation score.

Level of Education

Some 57.1% of the respondents had completed a Level 6 qualification or higher. A trend emerged whereby those with a Level 8 qualification had a much higher mean score than those with lower levels of education. However it is not a consistent pattern and no statistically significant association was observed.

Internet access in the family home

Forty seven out of the forty nine respondents had internet access in their family homes. These were asked about their type of internet connections. The

results are presented in Table 4 together with the associated Facebook participation scores.

While there was no statistically significant difference (at 5% level) between the Facebook participation scores of respondents with different types of internet connections, the results show that wireless broadband was the most common method to access the internet amongst the respondents. Those who used wireless broadband had the highest mean Facebook Participation score of 58.7. In the study area wireless broadband network connection speed ranged from 24MB to 200MB depending on the service provider. Mobile broadband users had the lowest mean score of 10.7. Mobile broadband was used by only four respondents in this research. Mobile broadband has slow internet speeds due to small bandwidth. Three respondents used dial up to access the internet and these had the second lowest mean participation score. Broadband via satellite was used by nine respondents.

In the post research questionnaire respondents with low participation scores were asked to explain the reasons why they had not used the group Facebook page during the research period. This question was answered by nineteen respondents in total. Seven felt that their computer skills were too weak to access the group Facebook page while four stated that they had no interest in joining the group Facebook page. Another reason stated by four was that they did not understand the purpose of the group Facebook page. These respondents had not attended the Facebook training class which was held for their group. Two of the farmers felt that they did not have enough time to access Facebook regularly.

Respondents' experiences in using group Facebook pages

Respondents were asked if they found the group Facebook page beneficial. Of the forty nine participants, 49% found it beneficial, another 49% stated that they did not use the group Facebook page and one participant did not find the group Facebook page beneficial. The respondents were also asked

which features on the group Facebook pagesthey found useful. The results are summarised in Table 5.

The results showed that the respondents found the discussions with the group the most useful feature on the group Facebook page. Documents were uploaded on the group Facebook pages weekly, this feature was also very popular among the respondents.

The respondents were asked if they experienced any problems when accessing the group Facebook pages. It is significant that the majority reported that they did not experience any problem. However, five respondents believed their computer skills were very weak and that it was inhibiting them from deriving the full benefits from the group Facebook pages. Another two reported that they had to seek help from members of their family to use Facebook as they had no previous experience in using it. A further two thought their internet speed was slow in their family homes and that many of the documents uploaded to Facebook could not be viewed as they were unable to open them.

The post research questionnaire included the question: "Would you like your discussion group to continue to use Facebook in the future?"The responses to this question were very positive with 85% of respondents confirming that they would like their discussion group to continue using Facebook in the future. The main reasons for this offered by respondents included that they liked the regular transfer of information, that Facebook allows more information be made easily available and that by using Facebook there was better dissemination of information.

When asked if they would recommend other discussion groups to use Facebook, a mostly positive attitude prevailed; 82% would recommend other discussion groups to use Facebook. The reasons for their recommendation included that it is an easy way to access more information and that it is a good way to keep in contact with the other discussion group members.

Table 3. Ownership of ICT devices by respondents and Facebook participation score.

Device	Ownership	No. of Respondents	Mean Facebook Participation Score	Significance 95% Level
Smartphone	Owned device	18	55.7	0.067
	Did not own device	31	25.3	
Computer	Owned device	32	40.8	0.467
	Did not own device	17	28.3	
Laptop	Owned device	25	37.6	0.889
	Did not own device	24	35.3	
Tablet	Owned device	7	56.0	0.328
	Did not own device	42	33.0	

Table 4. The distribution of respondents by type of internet connection and the Facebook participation score.

Internet Connection	No. of Respondents	Mean Facebook Participation Score
Broadband via wireless	31	58.7
Broadband via satellite	9	44.8
Mobile broadband	4	10.7
Dial up	3	17.5

Table 5. Respondents' opinions on the usefulness of the features on the group Facebook pages.

Feature	Respondent opinion on feature	Respondents	
		Number	Percentage
Discussions with the group on the group Facebook page	Useful for me	23	67.7%
	No opinion	10	29.4%
	Not useful for me	1	2.9%
Documents/files uploaded on the group Facebook page such as technical notes	Useful for me	22	64.7%
	No opinion	10	29.4%
	Not useful for me	2	5.9%
Advice given from the advisor on the group Facebook page	Useful for me	21	61.8%
	No opinion	12	35.3%
	Not useful for me	1	2.9%
Reminders of events posted on the group Facebook page	Useful for me	19	55.9%
	No opinion	13	38.2%
	Not useful for me	2	5.9%
Link to relevant agricultural websites posted on the group Facebook page	Useful for me	18	53.0%
	No opinion	13	38.2%
	Not useful for me	3	8.8%

The key findings from this research indicated that the majority of farmers had a positive experience when using social media for knowledge transfer purposes. Social media had been used by 18% of the farmers prior to this research experiment. The reasons they gave for not previously adopting social media included lack of time and interest, perceived inadequate computer skills, unawareness of the purpose of social media, no access to a computer or internet and some participants requiring assistance from their spouse or children when using social media. It was surprising that this research found no association between age and social media usage. It would have been expected that the younger participants would have used social media considerably more. However, computer skills were significantly positively associated with social media usage. Internet access was also associated with usage – those with wireless broadband internet connections in their family homes had the highest usage.

Several benefits were identified with using social media by the farmers in this study: group messaging can eliminate many repetitive questions being asked by farmers and students from their extension agents. Communication through social media is instant, convenient and cheap once in an area where internet connection is available. When using social media it allows users to communicate in

a group context which encourages peer to peer learning. These benefits are reaffirmed by the fact that they vast majority of users (96% of the farmers) reported that they found the group Facebook pages useful to them.

There are many potential methods for using social media with the farmers for agricultural extension purposes. They can be used as a communication tool and a platform to share information between extension agents and farmers and between farmers. By extension agents sharing information with groups of farmers through social media it is an inexpensive and fast way to deliver information compared to traditional mass media. Using social media to share information is particularly useful when users need the information urgently. Two forms of learning are encouraged; farmers learning from their advisor as well as farmers learning from each other (peer to peer learning). Kilpatrick (1997) found that when farmers interact with one another it can have a big influence on their decision to make changes. By farmers using social media it encourages them to interact with each other which may not occur when using other communication platforms.

Early adopters of innovations are well known to profit most and after time others have no choice but to follow in order to survive. This was also

the experience with this research where the majority of the group members used the social media page and the extension agent posted content to the group on a regular basis. However towards the end of the research the farmers who had not used social media previously began to use it to view the content uploaded as they felt that they were missing out on the information by not using social media as this was the only location that the content was made available. Very few users experienced problems in using social media during this research. The most common problem with the farmers was weak computer skills. Those who had previously completed a computer course or training had a higher usage of social media.

The role of the extension agents is essential in the successful running of social media as regular updates are required to maintain the enthusiasm of users. It is essential that extension agents access the social media sites on a daily basis to check for any questions or queries posted by the farmers. Otherwise, the users get impatient and use other forms of communication to contact the extension agents. Another observation made was that some farmers were very enthusiastic about using social media and these helped to encourage the less enthusiastic members of their groups.

4. Conclusion and Recommendations

The findings from the research presented in this paper illustrate the potential of social media in agricultural extension. According to Kaplan and Haenlein (2010) social media give its users a voice and it is up to them how powerful they make it. This is very relevant in the case of the farmers' usage of social media as it may be used only to view the content uploaded by others, comment on the content uploaded by others or produce the content, it is up to each individual users' own preference. All of the students and the younger farmers involved in this research were part of what Tapscott (2009) defined as the 'Net Generation', as many have grown up surrounded by computers and technologies and some find it easy to express their thoughts in an online environment. Therefore this generation may feel more comfortable and may prefer to ask questions using social media platforms rather than face to face. The 'Net Generation' expects things to happen fast and responses to be made immediately. Extension must recognise and respond to this new reality if it is to remain relevant to the next generation of clients.

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