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**SOCIAL NETWORK SITES UTILIZED IN AGRICULTURAL  
EXTENSION SERVICES IN KINGDOM OF SAUDI ARABIA**

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**ABSTRACT**

The purposes of this research are to: i) Measure the degree of utilization of Social Networks (SNS) (Facebook, Twitter, Instagram, Google Plus, LinkedIn, Flickr, Tumblr, Hi5, Whatsapp, Snapchat, and Youtube) among agricultural extension personnel in Kingdom of Saudi Arabia (KSA), ii) Identify the role of SNSs in provision of extension services from the viewpoint of respondents, and iii) Recommend interventions needed to enhance the utilization of SNSs in provision of extension services. An online survey with 55 agricultural extension personnel represent 22% of the total number of extension personnel in KSA (250 personnel) was conducted in April-May 2016, frequencies and percentages were used for data presentation. Sample was young (82% are less than 45 years old) and rather highly educated (75% were have university degree or postgraduate studies). Results show that the majority of respondents (60%) have a medium level of SNS utilization, while the remaining 40% were divided equally between low and high levels of utility. More than two-fifths (46%) declared that they highly prefer using SNS in contacting farmers, and the same percentage indicated that SNS is highly facilitate their work circumstances. Most of respondents (85%), stated that SNSs have positive impact in facilitation of extension personnel communication capacities, most of them (96%) indicated the high and medium positive impact of SNSs in the extension employee's acquiring knowledge. Also, most of respondents (91%) stated that SNSs were helped them in achieving their work tasks with medium and highly base. Study recommends and concludes some interventions for better SNS-based extension services in KSA.

**Keywords:** *social media, online survey, agricultural extension, KSA.*

**INTRODUCTION**

Agricultural extension services in Kingdom of Saudi Arabia (KSA) are provided to growers through thirteen general agricultural administrations, twelve agricultural directorates, and 107 agricultural branches all over the kingdom (AlSaghan, 2011).

Agricultural extension describes the services that provide rural people with the access to knowledge and information they need to increase their productivity and improve their quality of life, it includes, but is not limited to, the transfer of knowledge generated by agricultural research using communication channels (NRI, 2014). Social network sites (SNSs) or social media have become essential necessities of present day life; they provide knowledge, communications, and a means for sharing (Al-Daraiseh *et. al.*, 2014; Diab & Abdel-Rahman, 2016).

By 2015, the internet users in the world reached about 3.4 billion users (46.4% of the total world population), Asia gained about 1.6 billion of them (40.2% of Asian population). The KSA have 18.3 million internet users represent 65.9% of the total number of nation's population (Internet World Stats, 2015). Since their appearance, Social Network Sites (SNSs) have attracted millions of users, many of whom have integrated these sites into their everyday practice. SNSs are computer-mediated instruments that allow individuals or organizations to create, share, or exchange information, career interests, ideas, and pictures/videos in virtual communities and networks (Boyd, and Ellison, 2008; Petersen & Johnston, 2015).

The first Arab social media report indicated that the SNSs impacted on Arab society as well as business and economy, these impacts include: connecting people together and shortening distances between them, instant platform to get news and information, aid in learning new things, offers entertainment features, allows for "cheap" means of communication, offers opportunities for job hunting and career growth, enables faster business growth and expansion, direct revenue generation through social media, improving corporate image, marketing and advertisement platform, talent hunt, and encourage consumer-centric and transparent approaches (TNS, 2015; AlShahry, 2012).

The e-government program indicated that Facebook, Twitter, and Youtube are most popular platforms in governmental institutions in KSA (Saudi Arabia e-government, 2015). Saudi Arabia had 2.4 million active Twitter users in 2014, making it the fastest growing Twitter nation in the world (BTI, 2016). Facebook's mobile users have increased more than 150%, Saudi's LinkedIn users have grown 30% since January 2012 (The social clinic, 2013). Dubai School of Government (2012) and Shoaib & Shoaib (2016) stated that Saudi Arabia is among the top Arab countries according social media users in terms of penetration and numbers. There are 90 million video views in Saudi per day (the highest number of YouTube views in the world per Internet user). Saudi Arabia leads the region with the most playbacks followed by Egypt, Morocco and UAE. YouTube uploads jumped 200% and views increased 260% in 2011 versus 2010.

Relying on the previous quick discussion, it's obvious that determining SNSs utilized by agricultural extension personnel in order to enhance agricultural extension personnel's behaviour relevant to modern communication methods. From this starting point, the purposes of this research are to: i) Measure the degree of utilization of Social Networks Sites among agricultural extension personnel in KSA, ii) Identify the role of SNSs in provision of extension services from the

viewpoint of respondents, and iii) Recommend interventions needed to enhance the utilization of SNSs in provision of extension services.

### **MATERIALS AND METHODS**

The current study focuses in eleven social network sites in KSA, namely: 1) Facebook allows users to create their profiles, add other users as friends, exchange messages, post status updates and photos, share videos, use various apps, and users may join common-interest user groups, 2) Twitter enables users to send and read short 140- character messages called "tweets", 3) Instagram is an online mobile photo-sharing video- sharing, and social networking service, 4) Flickr help people make their photos available and organizing photos and video. 5) Hi5 had many features, such as friend networks, photo sharing, user groups, status updates, and gaming and entertainment, 6) Tumblr allows users to post multimedia and other content to a short-form blog.,7) WhatsApp allows users send text messages, documents, images, video or audio messages to other users, 8) Snapchat used for creating multimedia messages called "snaps"; snaps can consist of a photo or a short video, and can be edited to include filters and effects, text captions, and drawings, 9) You tube allows users to upload, view, rate, share, and comment on videos, 10) Google Plus: is an interest-based social network, and 11) Linkedin is a business-oriented social networking services, mainly used for professional networking.

An online survey with 55 agricultural extension personnel represent 22% of the total number of extension personnel in KSA (250 personnel) was conducted in April-May 2016. The survey was designed for achieving the study objectives. The survey included sets of questions to measure the study variables, as follows: 1) Age: measured by respondents' years of old, 2) Education: measured by respondents' official education degree, 3) Extension work experience: measured by number of years spent by respondents from starting current carrier till now, 4) Job Class: respondents were asked to indicate their job class in the organizational hierarchy, 5) level of SNSs' utility: respondents were asked to state whoever they use or not the eleven social network sites; scores were assigned to responses as yes = 2, no = 1. Accordingly responses combined to each respondent, the theoretical range reached 11 to 22 scores. Then responses were classified to three levels of SNSs utilization as follows: low utilization (11 – 14 scores), medium utilization (15 – 18 scores), and high utilization (19 – 22 scores). 6) Respondents preferences of SNSs to communicate with farmers, SNSs helping in acquiring knowledge, and role of SNSs in achieving work tasks: respondent were asked to indicate their opinions. Responses ranged from agreement to disagreement as follows: high = 3, medium = 2, low = 1, no = 0. Therefore, total number ranged from the minimum of 0 to the maximum of 3. Finally, frequencies and percentages were used for data presentation.

**RESULTS AND DISCUSSION**

Figures in table 1 represent the main characteristics of the respondents. Among the main findings is that majority (81%) are less than 45 years old, three-quarters (75%) have a university degree or post graduate degree. These results indicate that agricultural extension system in the KSA is still youthful and highly educated- this result is agreed with the official Saudi's demography data- that may help in fostering adoption and diffusion of modern technology (i. e. social media) within the organization. With regard to work experience, data show that majority of respondents (60%) have more than five years of work experience. The majority (85%) are located in a middle position of job class hierarchy (6<sup>th</sup> - 9<sup>th</sup> classes). This implies that extension employees are highly expertise and have the willingness to job promotion.

Table 1. Distribution of respondents according to their characteristics

Variable	Freq.	%	No.	Variable	Freq.	%
<u>Age</u>				Work experience		
24years old	1	1.82		< 5 years	22	40.00
25 - 35	6	10.91		5 -	18	32.73
35 - 45	38	69.09		10 -	7	12.73
45 – 55	10	18.18		15 -	7	12.73
<u>Job class</u>				20 and more	1	1.82
5 <sup>th</sup> class	3	5.5		Education		
6 <sup>th</sup> class	7	12.7		secondary	3	5.45
7 <sup>th</sup> class	9	16.4		Agricultural Diploma	11	20.00
8 <sup>th</sup> class	13	23.6		College	33	60.00
9 <sup>th</sup> class	18	32.7		Post graduate degree	8	14.55
10 <sup>th</sup> class	4	7.3				
11 <sup>th</sup> class	1	1.8				

\*Source: Study's survey

**Utilization of Social Networks Sites**

Figures in table 2 show scores of respondents’ utilization level of social network sites. The majority of respondents (60%) have a moderate level of utilization compared with 20% of them have high and low scores for each. This finding implies that the utilization of SNSs has unacceptable potentiality with extension employees, also the category of high level could be increased if the study were concentrated in limited number of sites.

Table 2. Distribution of respondents’ level of utilization of social network sites

Range		Mean	S. D.	High (19 – 22 scores)		Moderate (15 – 18 scores)		Low (11 – 14 scores)	
Min.	Max.			Freq.	%	Freq.	%	Freq.	%
13	21	16.44	2.39	11	20	33	60	11	20

\*Source: Study’s survey

Results in table 3 show that WhatsApp, Twitter, and Facebook are the most popular sites, on the other hand, Flickr, Tumblr, and Hi5 are less preferred sites. Most of respondents (86%) are subscribed in WhatsApp, almost 55% (or 6 out of 11) of users stated that WhatsApp is the most preferred site for them; this indicated that WhatsApp is now the leading social media platforms in Saudi Arabia.

In respect of Twitter, findings in table 3 show that majority of respondents (69%) are Twitter users. Near to fifth (16%) of SNSs users indicated Twitter as the almost preferred site for them. With respect to Facebook, findings in table 3 show that half of respondents (50%) are subscribers in such platform, of each 7 subscribers there is 1 stated that Facebook is the most preferred site for him. The progress of WhatsApp, Twitter, and Facebook are agreed with the previous studies related to the Saudi’s social media penetration and numbers, and may attributed to ease of use and mobile-based of such platforms.

Regarding the less preferred network sites, finding in table 3 revealed that majority of respondents (72. 7%, 70. 8%, and 78. 2%) were none users of Flickr, Tumblr, and Hi5 respectively. These sites also received the low preference behavior of respondents, since none of them stated any of these platforms as top preferred SNS.

Table 3. Distribution of respondents' ranking of social network sites utilization

Response SNSs		Use	Rank of preference											Not use	Score
			1	2	3	4	5	6	7	8	9	10	11		
Whats App	%	85.5	54.6	10.9	7.3	9.1	1.8	0.0	0.0	0.0	1.8	0.0	0.0	14.6	10.1
	Freq	47	30	6	4	5	1	0	0	0	1	0	0	8	
Twitter	%	69.1	16.4	32.7	18.2	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	30.9	9.9
	Freq	38	9	18	10	0	1	0	0	0	0	0	0	17	
Facebook	%	49.1	11.6	9.1	14.6	5.5	3.6	0.0	1.8	0.0	0.0	0.0	0.0	50.9	9.4
	Freq	27	8	5	8	3	2	0	1	0	0	0	0	28	
Google Plus	%	43.6	1.8	10.9	9.1	14.6	0.0	5.5	1.8	0.0	0.0	0.0	0.0	56.4	8.5
	Freq	24	1	6	5	8	0	3	1	0	0	0	0	31	
Instagram	%	61.8	7.3	7.3	16.4	10.9	9.1	7.3	1.8	1.8	0.0	0.0	0.0	38.2	8.3
	Freq	34	4	4	9	6	5	4	1	1	0	0	0	21	
Youtube	%	78.2	1.8	16.4	16.4	16.4	7.3	5.5	7.3	1.8	1.8	3.6	0.0	21.8	7.7
	Freq	43	1	9	9	9	4	3	4	1	1	2	0	12	
Linked In	%	29.1	1.8	3.6	1.8	3.6	12.7	0.0	1.8	1.8	1.8	0.0	0.0	70.9	7.3
	Freq	16	1	2	1	2	7	0	1	1	1	0	0	39	
Snapchat	%	49.1	1.8	3.6	3.6	14.6	9.1	5.5	1.8	0.0	5.5	3.6	0.0	20.9	6.8
	Freq	27	1	2	2	8	5	3	1	0	3	2	0	28	
Flicker	%	27.3	0.0	5.5	0.0	3.6	3.6	9.1	0.0	3.6	1.8	0.0	0.0	72.7	6.7
	Freq	15	0	3	0	2	2	5	0	2	1	0	0	40	
Tumblr	%	29.1	0.0	0.0	3.6	0.0	5.5	3.6	9.1	1.8	3.6	1.8	0.0	70.9	5.5
	Freq	16	0	0	2	0	3	2	5	1	2	1	0	39	
Hi5	%	21.8	0.0	0.0	1.8	1.8	0.0	5.5	1.8	9.1	0.0	1.8	0.0	78.2	5.2
	Freq	12	0	0	1	1	0	3	1	5	0	1	0	43	

\*Source: Study's survey

### Social media and Agricultural extension

Respondents were asked to indicate the degree they prefer to use SNSs in communication with farmers, most of respondents (85.45%) stated that they highly and medium prefer social media in communication with target groups (table 4). Due to the distance between farms, foreign farm workers, the administrative responsibilities of extension personnel, and the large amount of area to be served by each personnel, extension personnel prefer social media platforms to communicate with farmers and farm owners regardless time, distance, effort or cost. Respondents also were asked to indicate how SNSs helped them in acquiring knowledge and information, results in table 4 show that most of respondents (96.37%) indicated that SNSs have helped them in acquiring knowledge and information. The social network sites play a vital role in exchange knowledge and information between individuals and organizations. With regard to the role of social media in achieving work tasks, findings in table 4 revealed that most of respondents (90.9%) stated

that SNSs were helped them in achieving their work tasks with medium and highly effect. Because social media are wonderful windows of communication, creating strong friendships, discover the local leaders and retrieve conversations between farmers and extension personnel.

Table 4. Role of social network sites in provision of extension services

Categories Item	Mean	S. D.	Highly		Medium		Low		No	
			No	%	No	%	No	%	No	%
I prefer it to contacting with farmers	2.31	0.72	25	45.45	22	40	8	14.55	0	0.00
It helped in acquiring knowledge	2.47	0.63	29	52.73	24	43.64	1	1.82	1	1.82
It helped in achieving work tasks	2.33	0.75	25	45.45	25	45.45	3	5.45	2	3.64

\*Source: Study's survey

### Enhancing the utilization of SNSs in provision of extension services

Findings in table 5 indicated eight recommendations for better SNS-based extension services in KSA. The most frequent recommendation were: Providing the extension personnel with smart devices and web accessibility (55%), this implies that extension personnel use their own smart devices and personal internet access to communicate with farmers through personal social media profiles, they recommend that official internet access and smart devices should be offered from them from the department of extension. They also stated the lack of trainings concerning social media, the emergence communication channels in advisory services, so the continuance internal and external trainings for staff relevant to electronic extension have the second needed intervention stated by near half (44% of respondents). However, establishing linkages among various stakeholders in agricultural sector became in the third position and indicated by more than one-fifth (22%) of respondents.

Table 5. Interventions needed to utilize SNSs in provision of agricultural extension services

No.	Interventions	No.	%
1.	Providing the extension personnel with smart devices and web accessibility	30	54.55
2.	Continuance internal and external trainings for staff relevant to electronic extension	24	43.64
3.	Establishing linkages among various stakeholders in agricultural sector	12	21.82
4.	Competitive incentives for personnel	8	14.55
5.	Convenient transportation means for extension personnel	8	14.55
6.	Establishing database for farmers, activities, and extension service	7	12.73
7.	Building multimedia (audio/video) agricultural recommendations ready for share	7	12.73
8.	Publishing pages, groups, accounts, and channels for agricultural extension services	6	10.91

\*Source: Study's survey

### CONCLUSION

This study highlighted the significance of social network sites for agricultural extension and advisory services, since the social network sites has changed the way we think, talk, watch TV, listen to music, search potential employer and employee and sometimes start a revolution. The social media in KSA is perceived as having numerous positive aspects that enhance the provision of agricultural extension, business profitability and exchange knowledge and information. Some of needed interventions could be summarized as follows:

1. Many efforts are required (from training department of the ministry) to increase the awareness and skills of farmers, researchers, and extension workers regarding the potential role of social media in provision of extension and advisory services through training programs.
2. Since, young people and teenagers (futuristic farmers, extension workers, researcher, and investors) are the most subscribers of social media, extension services could influence on their agricultural socialization.
3. In order to enhance agricultural extension personnel's behaviour relevant to modern communication methods, efforts should be directed towards providing them with tools relevant to deal with electronic extension such as smart devices and internet access.
4. A series of reform interventions are necessary to integration of digital tools (i. e. smart devices, mobile applications, and social media) into agricultural extension communication channels.
5. One of reform alternatives could be based on social networking services, by creating official pages, groups, or accounts in Whatsapp, Twitter and Facebook to facilitate recommendation transfer and needs identification, and



A web-based forum for agricultural extension and advisory services could be established to bring all stakeholders together (research and development, extension providers, agricultural industry, decision makers, farmers, investors, and traders etc.), this forum could start virtually (on-line) as a pre-step to bring it into reality.

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