

e-Government on Twitter: The Use of Twitter by the Saudi Authorities

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Abstract: Social media have proven to be convenient tools that can be used by government authorities to increase openness and transparency, gain a greater understanding of public opinions, promote the concept of eParticipation and give citizens a voice, as well as to reach many users at low cost. In addition, these social media have the unique feature of being able to update content frequently in real-time, in particular during emergencies, disasters, or special events. The purpose of this paper is to explore the adoption of Twitter by the government authorities in Saudi Arabia. It is a network analysis study seeking quantitative data. Ninety-three Saudi government authorities' Twitter accounts were examined using web-based analytical tools. The general findings of the study indicate that the level of maturity of using Twitter by Saudi public authorities in general has not matured yet. Also, it is indicated that there is a significant difference between the performances of these accounts as only a few of them produced 53% of the total tweets. Natural and interactive accounts are more likely to have more followers. In addition, there is a misunderstanding of the role of using this new medium, as some authorities have more than one account and the collaboration between these accounts is limited in terms of being connected to each other.

Keywords: eGovernment 2.0, Social Media, Twitter, Social Media Analytic, eGovernment, Saudi eGovernment

1. Introduction

The term 'eGovernment' was first used around 1990s by many governments around the world to describe the use of Information and Communication Technology (ICT) to promote the access to government information and services via the Internet. This is achieved by offering government information and services through an agency's website or, in a more advanced method, through a one-stop access eGovernment portal. Moreover, with modern technologies such as the second generation of Web technology (Web 2.0) and, in particular, social networking services sites (SNSs), eGovernment has more to do in order to promote the concept of eParticipation and giving citizens a voice, which is one of the main objectives of establishing eGovernment initiatives, as well as to facilitate delivery of their information. Social networking sites are web-based services with different functionalities and features that support connections between users to construct profiles and share content (Boyd, 2008). Interestingly, since the appearances of these sites, the government has recognized the importance of these new media and has begun to use them directly for multiple aims which can be informational, interactional, participatory and collaborative (Khan, Yoon and Park, 2013). This can be seen clearly from the number of government accounts on these networks, as well as the body of research related to the use of social networking platforms by the government. Although the history of these networking sites is relatively short, they have expanded rapidly to become the most popular online services among Internet users. Ease of use as a communication channel, accessibility - in particular via smart phones - and finally, immediate updating are the reasons behind their popularity (Panagiotopoulos and Sams, 2011; Panagiotopoulos and Sams, 2012; Williams et al 2013).

For government authorities, the potential opportunities provided by these networks include ease of communication and of delivering of government information and services, increased transparency, gaining a greater understanding of public opinion and the ability to feed content frequently in real-time (Doan et al 2011; Sivarajah, 2012; Arpit, 2012). Among these network services is Twitter, which is a microblogging service that allows users to share and exchange messages of up to 140 characters, and since its launch in 2006 it has gained more popularity among Internet users. Statistics show around 554,750,000 users on Twitter with about 135,000 new users every day and an average of 58 million tweets per day (Statisticbrain, 2012). Saudis are not exempt from this movement; in 2012, Riyadh, the capital city of Saudi Arabia, was ranked as the 10th most active city globally in terms of tweets (Semiocast, 2012). In addition, 2012 statistics show that Saudis are the fastest-growing group on Twitter (Al-Arabiya, 2012). In relation to eGovernment, Twitter has been considered as an opportunity for the government authorities to establish new communication channels with their diverse stakeholders. Potential advantages include understanding public opinion, information sharing, news and status

updating, in particular during emergencies and special events (Dona et al 2011; Panagiotopoulos and Sams, 2012; Williams et al., 2013).

This is an exploratory network analysis study, not a content analysis, which uses quantitative data covering the aspects of the number of tweets (original, retweets, replies), number of followers/following, and Hashtag usage, attempts to answer the following questions: To what extent are Saudi government authorities using Twitter? What is the nature of their usage? And what are the factors (if any) that make Twitter accounts the most followed by users? The remainder of the paper is organised as follows: section two presents and discusses previous work, while the third section provides the research methodology used in this study. The fourth section presents key findings of the results, and discussion is presented in the fifth section. The last section summarizes the findings and poses additional challenges for future research. The study has limitations in terms of who is operating these accounts and how these accounts are managed. This is a hot topic in the literature that addresses the use of Twitter by government. Also, this is a network analysis study mainly seeking quantitative data. Finally, these accounts are not representative of all Saudi government accounts on Twitter. This is because there is no single place to consult that represents Twitter accounts for all Saudi government authorities.

2. Literature review

In a content analysis study of about 1,161 Twitter-focused papers, Williams et al. (2013) found that 2010 and 2011 had witnessed an increase in the number of Twitter-focused papers. This was expected, as the number of Twitter users had increased significantly in these two years, as reported by SemioCast (2012), which shows that the number of Twitter accounts reached half a billion globally. For example, in the United States of America, where the largest number of tweets are sent, about 32 million Twitter accounts were created between June 2012 and July 2012 (SemioCast, 2012). This shows how significantly Twitter has expanded. The study also indicates that different methods are used to study Twitter; these can be classified as two concepts: network analysis and content analysis. Network analysis involves network visualisation, number of tweets/retweets/replies, number of followers/following and account signup date, while content analysis concerns the nature of Twitter's short messages. Categories of Twitter messages can be conversational, pass along, news, status or spam, with each primary category divided into subcategories (Danah, 2010; Dann 2010; Honeycutt and Herring, 2009).

Regarding eGovernment, numerous studies have been conducted in the last two years to examine the use of Twitter by government, either by an individual (politician) or by government authorities. Panagiotopoulos and Sams (2012) in their two-stage study on the use of Twitter by the UK local government, found that over 296,000 tweets were collected from the accounts of 187 UK Local Authorities (LAs). In the first stage, which involves Twitter network analysis, the result shows that the majority (around 79%) of LAs in the UK had created Twitter accounts by 2009. They also found a positive relation between the signup date and the number of tweets as well as the number of followers. Regarding the structural analysis, the finding reveals that the average length of their tweets is 108 characters. This is exactly in line with what has been recommended for writing tweets in governmental accounts to allow other text to be added by other users when retweeting it (CDC, 2012). Another paper by Panagiotopoulos and Sams (2011) looks at the use of Twitter by the Greater London authorities, focusing on the use of Twitter during the August 2011 riots. Their finding shows that the majority of accounts were created in 2009 with 734, 1701, 349 as an average respectively for tweets, followers, and following. Regarding the riots, the study reveals that Twitter supported the concept of citizen-government interactions. However, despite the positive findings, the study indicates that there is no clear plan or strategy for using Twitter for collaboration between these accounts.

Mundy and Umer (2012) over a two month period studied the Twitter accounts of the ten most active councils in the UK from a quantitative aspect, including the number of tweets, and followers/following, with content analyses of sample tweets. Their result shows that these councils were followed up by 44,612 users, producing a total of 24,954 tweets. Moreover, the analysis of a tweets sample of 2,374 shows that Twitter was mainly used by these councils to post announcements. They concluded their study by pointing out that the use of Twitter has not yet matured and provided a set of recommendations, including understanding the nature of Twitter as a communication channel, as well as the importance of developing a social media policy.

At the European regional level, Dalakiouridou et al. (2012) studied 124 EU institutions listed in the European Union portal in terms of their use of social networking sites, mainly YouTube, Facebook, Twitter, Hyves, Flickr and Vimeo. The result shows that Twitter is the preferred method of communication with the European public and is used by these institutions for short notifications, link-sharing and cross-dissemination. Waters and Williams (2011) analysed 1,800 tweets posted by 60 US governmental Twitter accounts and found that the majority of these accounts use Twitter to post links. Khan, Yoon and Park (2013) examined the use of Twitter by 40 Korean and 32 US agencies, and the results indicated that Korean ministries were well-connected and that both Korean and US agencies used Twitter mostly for informational purposes. Moreover, a positive relation was found between the number of followers and the number of tweets within US agencies, but this was not the case in Korea.

3. Methodology

The research design for this Twitter network analysis study goes through two phases. The first phase is to identify which Saudi government authorities are using Twitter. There were two options. The first option is to consult the SAUDI National eGovernment Portal's Twitter account @Saudiportal, which is an official account that lists Twitter accounts of 111 different Saudi government authorities in addition to two personal accounts of well-known people in the country: the Crown Prince of Saudi Arabia, Vice Custodian of the Two Holy Mosques, and the Minister of Commerce and Industry. However, the list did not contain all actual government authorities' Twitter accounts. For example, out of eleven Twitter accounts of ministries that can be found by browsing the ministries section of the Saudi National eGovernment Portal, only six are listed in the @Saudiportal. Similarly, out of twenty principalities and municipalities, there were only eleven Twitter accounts listed in the Portal's account. Therefore, the second option, which is to check the Saudi National eGovernment Portal, was adopted. This was done by looking at the government agency directory, which is divided into fourteen sections, each containing the websites of numerous government authorities. This directory contains almost all the various types of government website. The next step was to access each site's interface to see if the agency has a Twitter account. These steps were just to identify which government authorities have a Twitter account.

In the second phase, to collect data, two Twitter analytic tools were used, the Twitter Birthday available at: <http://twbirthday.com/> to identify the joining date, and the Topsy Pro analytics service, available at: <https://pro.topsy.com/>, which is a web-based dashboard providing instant access to up-to-date and multi-year historical social media analysis and content (Topsy, 2013). The data used in this study were collected between mid-November and mid-December 2013. Each account was analysed separately to provide quantitative metrics covering the aspects of: the number of tweets (original tweets, retweets and replies), the number of followers/following, signup date and the use of hashtags.

In addition, the results were then used for further analysis to determine any correlations for the signing up, number of tweets and the number of followers. Also, correlations for retweets, replies, participation in hashtags and the number of followers were conducted. SPSS 15.0 was used to carry out the analysis.

4. Results

Out of 176 government websites listed in the Saudi National eGovernment's directory section, 93 (53%) have a Twitter account, 72 (41%) do not, and the websites of 11 government authorities (6%) did not respond in time. Table 1 shows the date creation of the 93 Saudi government authorities. The first of these accounts was created on 3 May 2008 by the General Presidency of Two Holy Mosques and the most recent on 23 June 2013 by the Ministry of Transport.

Table 1 :Date of Creation of Twitter Accounts

Year	Number	%
2008	2	2%
2009	7	7%
2010	19	20%
2011	36	39%
2012	21	23%
2013	8	9%
Total	93	100%

These accounts had produced a total of 207,853 tweets, of which 89,838 (43%) were original, 7,333 (4%) retweets and 110,682 (53%) replies, with an average of 2,235, 966, 79, and 1,190 respectively for the total number of original tweets, retweets and replies. In addition, posting announcements, news updating and link-sharing were found to be the top uses of Twitter by those accounts, and the average length of their tweets is 83 characters. Furthermore, these accounts had 2,226,985 followers, with an average of 23,946 users. These accounts followed 3,498 users back, with an average of 37.6. Table 2 shows the top five Twitter accounts in terms of the number of tweets and followers.

Table 2: Top five accounts according to the number of tweets and number of followers

Top five accounts according to the total number of tweets			Top five accounts according to the number of followers		
Organisation	Number of Tweets	%	Organisation	Number of Followers	%
National Center for Assessment in Higher Education	62,441	30%	Ministry of Health	278,025	12%
Emara of Makkah Region	14,704	7%	National Center for Assessment in Higher Education	244,637	11%
Saudi Airlines	12,591	6%	Ministry of Commerce and Industry	201,220	9%
Ministry of Health	11,117	5.3%	Saudi Airlines	144,867	6%
King Saud University	9,492	4.7%	Ministry of Foreign Affairs	122,533	
Total	110,345	53%	Total	991,282	44%

The top account in terms of the number of total tweets was found to be the National Center for Assessment in Higher Education, which was created on 12th March 2011, followed by the Emara of Makkah Region’s account, created on 26th February 2011. In third place came the Saudi Airlines’ account, which was created on 25th July 2010. Fourth was the Ministry of Health account, created on 10th April 2011, and fifth came the King Saud University account, created on 12th January 2009.

Table 3 shows the correlations for the signup of all the 93 Twitter Saudi authorities’ accounts examined in this study, with the number of total tweets and followers. It has been argued that early signup accounts are expected to produce more tweets, as well as having more followers. Here, strong correlations were found which confirmed that accounts producing more tweets are more likely to have more followers, but it is not necessarily so that earlier signup data accounts are producing more tweets.

Table 3: Correlations for the date of creation of the 93 Twitter accounts, with the number of total tweets and followers

	Date of Creation	Tweets	Followers
Number of Tweets	-0.085	-	
Number of Followers	-0.127	.633(**)	-

**** Correlation is significant at the 0.01 level (2-tailed).**

However, as tweet refers to three ways of communicating, it could be replies or retweets, so further analysis was needed to identify which of these two components, along with participating in hashtags, attracted users to follow the top five Saudi authorities' accounts. Table 4 presents the top five accounts in terms of original tweets, retweets, replies, and use of hashtags.

Organization	Number of Original Tweets	% of their total tweets	Organization	Number of Retweets	% of their total tweets
Emara of Makkah Region	13,810	94%	Saudi eGovernment National Portal	931	21%
King Saud University	13,809	81%	Emara of Makkah Region	870	6%
Ministry of Health	4,846	44%	King Saud U. for Health Sciences	687	25%
King Abdulaziz University	3,898	70%	King Abdulaziz University	679	12%
Presidency of Meteorology and Environment	3,728	99%	Jeddah Province Municipality	589	10%
Top five accounts according to the number of Replies			Top five accounts according to the number of hashtags		
Organisation's Name	Number of Replies	% of their total tweets	Organization's Name	Number of #	
National Center for Assessment in Higher Education	58,410	93%	Saudi Commission for Tourism & Antiquities	# 277	
Saudi Airlines	10,096	80%	King Abdulaziz City for Science & Technology	# 211	
Saudi Credit and Savings Bank	6,371	88%	Emara of Makkah Region	# 186	
Ministry of Health	6,188	56%	High Commission for the Development of Arriyadh	# 101	
Ministry of Labor	4,429	81%	Ministry of Health	# 72	

Table 4: Top five accounts in terms of original tweets, retweets, replies, and use of hashtags.

Three out of the top five accounts in terms of total tweets were found to be in the top five in terms of original tweets. Similarly, one of the top five accounts in terms of tweets is found to be in second place of the top five retweets accounts. Finally, three accounts listed in the top five accounts in terms of high tweeting accounts were found in the top replies accounts. Regarding the participation in hashtags, it was clear that some accounts are more active than others. Table 5 shows the correlation for retweets, replies, and participation in hashtags of the top five accounts and number of followers. The result indicated that strong correlations were found between replies and the number of followers.

Table 5: Correlation for retweets, replies, and participation in hashtags of the top five accounts and number of followers

	Retweets	Replies	Hashtags	Followers
Replies	.176	-		
Hashtags	-.090	-.068	-	
Followers	.174	.583(**)	-.103	-

** Correlation is significant at the 0.01 level (2-tailed).

5. Discussion

The majority of the authorities' Twitter accounts were created in 2011 (39%), followed by 2012 and 2013 (23%). This may be linked to the revolutions in certain Arab countries which became known as the Arab Spring, starting in Tunisia in December 2010 (Magro, 2012). According to Globalwebindex (2013), Twitter was a vital tool in the Arab Spring and played a significant role in it. This is supported by Mansour (2012) who found that Twitter was widely used by the demonstrators in Egypt during the 25th January 2011 revolution to organize the protests. Hence, Twitter has become a popular online service among Saudis since that date. As addressed previously in 2012, Riyadh, the capital city of Saudi Arabia, was ranked the 10th most active city globally in terms of tweets and statistics of 2012, showing that Saudis are the fastest-growing group on Twitter. Thus, by increasing the number of Twitter users in the country, Saudi authorities have realized the importance of this new media and the advantages they can gain from it, and therefore they have started delivering services to their users via the network.

Regarding tweets, the finding indicated a huge gap between the Saudi authorities' accounts on Twitter. Five accounts produced about 53% of the total tweets (original, retweets and replies), 45% of the original tweets, and 51% of replies of all accounts. This gives an indication that some Saudi authorities' accounts on Twitter are more functional than others. Also, these five accounts were followed by about 44% of the total followers for all 93 accounts. Moreover, a significant correlation was found, accounts' tweets have more followers. Yet, no correlation was shown between the early creation of Twitter account data and the number of followers. For example, the first Saudi account on Twitter was created in May 2008 and has only 4,564 followers with a total of 240 tweets (196 original tweets, 25 retweets and 19 replies) ranked in 63rd place among the 93 accounts. This is opposite to what had been noticed in the study conducted by Panagiotopoulos and Sams (2012) on the UK local government. They reveal that Twitter accounts adopted earlier produce more tweets and have more followers.

On the other hand, as tweet is an umbrella term which can mean original tweet, retweet or reply, a further analysis along with participation in hashtags was performed to identify the top five Saudi authorities' accounts in terms of these three component activities. Klapper (2009) suggested that government accounts should be conversational to have more followers, and this is because Twitter is a two-way communication. Interestingly, the finding shows that four out of the top five accounts in terms of total tweets were found to be in the top five accounts in terms of original tweets. Similarly, three accounts were found to be in the top five accounts in terms of replies and one in the top five accounts of retweets activity. Therefore, a correlation test was performed to determine which one of the tweet components' activities (original tweets, retweets and replies) is significantly associated with the number of followers. The results show that replies were found to be significantly associated with the number of followers, whereas the retweet component, as well as participation in hashtags, had no relationship to the number of followers.

Another interesting observation discovered while conducting this study is that one Saudi authority has more than one account, such as the Institute of Public Administration, which has two unverified accounts: @IPA-KSA, which was created on 10th June 2012 with no tweets at all and 1,032 followers listed in the @Saudiportal account. The brief bio of this account indicates that it is the official account for the Institute. However, the @IPACconnect account, which can be accessed from the Institute's website homepage, was created on 17th September 2012 with 41 tweets and 168 followers. The question is which of these two accounts is the legitimate one? Moreover, some Saudi authorities have a Twitter account for the authority itself and another for official speakers of the authority, which is usually a personal account. The Ministry of Civil Services Twitter account was created on 17th June 2013, producing 129 Tweets with 22,142 followers, while the official speaker account of the ministry @A_khoneen was created on 3rd December 2011 with 6,145 tweets and 87,415 followers. Nevertheless, the positive side is that Twitter has become a new channel of communication among Saudi authorities, which can increase transparency and allow the public to participate in developing government electronic services. Moreover, it appears that Twitter is used mostly for informational purposes in general, except for those accounts dealing with health, education and travel.

6. Conclusion

Although these accounts are not representative of all Saudi authorities' accounts on Twitter, the use of the above methods was the only feasible way of conducting this study. The general findings of the study indicate that the level of maturity of using Twitter by Saudi public authorities in general has not matured yet. Also, it is indicated that there is a significant difference between the performances of these accounts as only a few of them produced 53% of the total tweets. Natural and interactive accounts are more likely to have more followers. Also, there is a misunderstanding of the role of using this new media as some have more than one account and others have an official account, as well as official speakers' accounts which have a negative effect. Also, the collaboration between these accounts is limited in terms of being connected to each other, as well as being listed in the SAUDI National eGovernment account on Twitter to make it easier for researchers and the authorities themselves to conduct in-depth research. These issues confirm what has been reported in the literature: government authorities should have a social media usage policy and strategy.

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