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**The effectiveness of
Using Social media in
Government communication in UAE**

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- Social media have proven to be convenient tools that can be used by government entities to increase openness and publicity, gain a greater understanding of public opinions, promote participation, transparency and engagement, as well as to reach many users at low cost.
- The purpose of this paper is to explore the effectiveness of using social media by the government entities in UAE. It is a network analysis study seeking mainly quantitative data. 100 UAE government accounts, belong to (25) entities, were examined using web-based analytical tools.
- The general findings of the study indicate that the UAE government communication entities' accounts convey a rich picture of how these entities interact with their stakeholders on their social media. Most of them are performing an active role in terms of publicity, reach, marketing and transparency. However, the level of maturity of using social media in general has not matured yet and they are not effective to somewhat in communicating with the stakeholders in terms of participation and engagement. Also, it is indicated that there is a significant difference between the effectiveness of these entities in terms of reach, transparency and participation. In general, they do not utilize the full types, capacity and features of social media in their government communication. They are mainly depending on Tweeter and Facebook.

Key words: social media, Government Communication, effectiveness of social media

.1. Introduction:

- Nowadays, social media became a huge virtual community, with highly interactive and collaborative environment among its members, which led many governments to move from e-government services to social government; i.e. governments provide their services over social media (Khasawneh, R. & Abu-Shanab, E. (2013: 10-17)
- Using social media in e-government will enhance (1) the transparency, by releasing the information that citizens are always checking; (2) Participation by maintaining the citizens' engagement with their governments, and allowing citizens to express their opinions, experiences and wisdoms; (3) Collaboration, where citizens participate by creating the content of government topics and the government use and follow the content generated by citizens to fulfill government mission. (Dareen A. Mishaal & Emad Abu-Shanab (2015) Zavattaro, S. M., & Sementelli, A. J. (2014: 257-264)
- Generally, governments have a threefold social media strategy: push, pull, and networking. These strategies are often guided by the governments with social media policies and guidelines for properly using social media. While many government agencies are experimenting the use of social media, however very few recognize the differences between these strategies, utilize the whole capacity and types of social media and actively measure the impact of their digital interactions (Khasawneh, S., Jalghoum, Y., Harfoushi, O., & Obiedat, R. (2011: 568-582).
- The widespread recognition of the potential of social media technology for achieving public outcomes does not match our understanding about how and why specific tools are being used for specific purposes. (Lee, M., & Lee Elser, E. (2010: 3-4).
- in the same time, there has been little research to understand how and why these tools are becoming integrated in the public sector and it is not clear how successful and effective they are. (Mergel, I. (2010)
- Many governments have problems in their communication, due to low budget and because they put communication with stakeholders as a low priority. Also, governments use the traditional methods of communication such as newspapers, radio and television; this one-way communication reflects the low feedback of stakeholders to communicate with government, which leads to low participation from stakeholder's side. In addition, many governments have multiple deficiencies which include the low trust

in government, limited accountability, lack of transparency and low quality of service related to deficiencies in accessibility to the different services (Hofmann, S., Beverungen, D., Räckers, M., & Becker, J. (2013: 387-396).

- This paper proposes a framework for measuring the effectiveness of the government communication, and tests this framework which consists of sets of missions and indicators on different governmental social media platforms in UAE. The UAE presents a unique example of using social media in government communication. The eGovernment program in the UAE has achieved remarkable success in enabling the technology-based transformation of public services UNDESA (2012). However, this digital interaction needs to be analyzed and interpreted to understand to what extent they support government's mission.
- Since 2011, the UAE has produced guidelines for using social media to be integrated with the government communication. Although such policies and guidelines are useful for understanding the general principle of social media use in government, it remains unclear how each entity is working in cooperative efforts through social media based on those strategies and guidelines, and to what extent they improve on the delivery of citizen services using social media in conveying the entity's message and information, transparency, participation, engagement etc., and what is the most dominant role played by UAE government communication entities in using social media; Do they focus on disseminating information externally or promoting and marketing their entities or getting feedback on service quality or facilitating participation by citizens or external stakeholders or seeking more engagement from their stakeholders?

.2. LITERATURE REVIEW

- This paper explores the literature to better understand the environment of social media and its utilization in e-government communication effectiveness. The differences between the conventional media and social media, the importance of social media as a communication channel, and the reasons that lead governments to adopt it in their communication will be also investigated in the literature section. Also, some models of e-government based on social media will be reviewed and the strategies of governments adopted to communicate over the social media by UAE government entities. The paper seeks to set criteria for measuring the effectiveness of using social media in government communication based on the literature, and the practical uses of social media.

A. Government Communication between Conventional Media and Social Media

- The use of social media applications by government organizations can be called an extension of the current digitization efforts of government services as a new wave of the e-Government era. (Bertot, John C., Jaeger, P. T., & Grimes, J. M. (2010: 264–271). Unlike offline communication channels, social media offer the opportunity to interact directly with the public, but previous studies suggest that governments do not make comprehensive use of this potential (Hofmann, S., Beverungen, D., Räckers, M., & Becker, J. (2013: 387-396).
- In most cases, social media applications have not replaced existing offline or even e-Government services. On the contrary all social media applications are used to complement the existing communication mechanisms in government. (Khasawneh, S., Jalghoum, Y., Harfoushi, O., & Obiedat, R. (2011: 568-582), these deficiencies can lead to the public's regarding of government communication as little more than propaganda (Mergel, I. (2013). Social media applications are used to create additional channels for governments' interactions with its stakeholders (Bretschneider, S. I., & Mergel, I. (2010: 187–203).
- However, for communication to be effective, it is important not only that governments communicate with citizens, but also how they communicate and, in particular, how the citizens perceive the communication. Research has emphasized in stating that traditional 'offline' communication cannot be transferred directly to social media communication since interaction in social media is subject to certain patterns (Fisher Liu, B., & Horsley, J. S. (2007) , and the poor reputation of government communication can be attributed in part to the traditional use of one-way, 'offline' mass communication channels, which do not facilitate appreciable public feedback and which impede productive dialogue between the public and its government. (Hofmann, S., Beverungen, D., Räckers, M., & Becker, J. (2013: 387-396)

- Social media when activated very well will affect government's performance positively in tracking the opinions and mood of public, and instead of using traditional ways of collecting responses from public, governments can utilize such information for more effective decision making (Storck, M. (2011). However, communicating in social media does not guarantee successful and effective communication.

B. Importance of Social Media in Governments

- Interestingly, since the appearances of social media, the government have recognized the importance of social media and have begun to use them directly for multiple aims which can be informational, promotional, interactional, participatory and collaborative. These aims could be explained as follows:
 1. Social media as source of information and publicity: Using social media in e-government could enable citizens to access information provided by their governments over social media and thus reducing the effort for searching for needed information (Camacho, R., & Kumar, M. (2012). Social media is almost real-time communication channels that governments can take advantage of by providing current information, such as news on upcoming events (Bertot, John C., Jaeger, P. T., & Grimes, J. M. (2010: 836–858), which could promote the governments' entities message and complement the other media's mission. Also, it can ease the delivering of government information and services, gaining a greater understanding of public opinion (Khan, G. Yoon, H. and Park, H. (2013) (Gustavo Henrique Maultasch Oliveira, Eric W. Welch (2013: 397–405). When governments use the favorite community channel for each stakeholder they will make the communication more comfortable rather than forcing citizens to visit the physical agency whenever they wanted to get a service or a piece of information. By performing this mission, social media will open the dialogues between the government and its citizens, which started by disseminating information to public via social media and by listening to citizen's opinions and feedback on such information. (Dareen A. Mishaal & Emad Abu-Shanab (2015) (Mergel, I. (2013 a). Mossberger, K., Wu, Y., & Crawford, J. (2013: 351-358).
 2. Social media as a part of marketing package. Social media offer various features that organizations can use to enrich the structure and appearance of their external communications. It could be integrated with other media to promote the entity's image. It allows one to integrate several forms of content, including text, pictures, videos, and content from other social media, increasing media richness (Daft, R. L., Lengel, R. H., & Trevino, L. K. (1987: 355–366). Public organizations can use these multi-media features to get citizens' attention and to improve the operational efficiency and accessibility of their services and promote the image of the organization.
 3. Social media as a tool for spreading the culture of transparency, through the releasing the information that stakeholders are always checking for, allowing citizens to be aware of what is happening inside these entities. Research indicated that transparency is significantly related to the advancement of e-government (Al-Dalou', R. & Abu-Shanab, E. (2013: 10-17).
 4. Social media as a catalyst for encouraging more participation by allowing citizens to express their opinions, experiences and wisdoms. Social media enables people to share the content between each other, to participate with their ideas and opinions, promote democratization, and to publish their generated content and publicizes it (Dareen & Abu-Shanab (2015). Social networks have the potential to provide a new platform for communication between citizens and government officials, or for deliberation and discussion among citizens. By soliciting ideas on social media, governments can gather diverse viewpoints and different types of expertise from citizens to craft more effective policy solutions (Noveck, 2009, 14, 38). Governments can use a survey to get feedback from citizens before any decision is taken, then pass this information to different government agencies for actions to be taken.
 5. Social media as a collaborative tool: The advent of social media and ubiquities of different ways to connect with different stakeholders helped governments not only to find a channel to disseminate information to public but also to engage public to participate in a political discourse. This way more time is saved and thus cost and effort for governments (Lee, G., & Kwak, Y. H. (2012: 492-503). The new forms of digital interaction create the potential to increase democratic engagement and reach online audiences who were not previously involved in policy making activities (31). The highest degree of collaboration with

government content is reached when citizens are proactively contributing their own content, download videos and documents to work with the content on third-party sites or contribute to and even start conversations. Also, collaboration is a major dimension of open government because the government asks other stakeholders to co-create or co-design one of the processes or services and its look like a collective process(Dareen & Abu-Shanab (2015), which is the high level engagement between government and citizens, where citizens participate by creating the content of government topics and the government use and follow the content generated by citizens to fulfill government mission (Zavattaro, S. M., & Sementelli, A. J. (2014: 257-264), and reveal all information and facts related to these entities' publicity.

C. Governments' uses of social media

- Research on government communication in social media and social media in general is limited at best. Most studies focus on particular application areas and refer to communication only peripherally. Brainard and McNutt (2010) analyzed the structure of the discussion between the police in Washington, D.C., and the public in online discussions forums and classify the interactions as informational, transactional, or collaborative, finding that most of the content is informational, although the platform allows more transactional and collaborative interactions. These findings suggest that communication between government and citizens has shifted to new communication channels but has retained its traditional form without exploiting the advantages of these new channels.
- 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. They also found a positive relation between the signup date and the number of tweets as well as the number of followers. 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. The study reveals that Twitter supported the process of citizen-government interactions. However, despite the positive findings, the study indicated that there is no clear plan or strategy for using Twitter for collaboration between these accounts.
- Mundy and Umer (2012: 502-511) over a two-month period studied the Twitter accounts of the ten most active councils in the UK from a quantitative aspect. 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.
- Dalakiouridou et al. (2012) studied 124 EU institutions listed in the European Union portal in terms of their use of social networking sites. 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.
- 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.
- Alasem (2015: 67-74) found that the level of maturity of using Twitter by Saudi public authorities in general has not matured yet, and there is a significant difference between the performances of these accounts as only a few of them produced 53% of the total tweets. He also found a huge gap between the Saudi authorities' accounts on Twitter. Natural and interactive accounts are more likely to have more followers. He stressed on what has been reported in the literature: government authorities should have a social media usage policy and strategy.
- Sara Hofmann et al (2013) explored how successfully local governments utilize social media for managing their external communication with citizens. Using a multi-method analysis of 15,941 posts and 19,290 comments on the Facebook pages of the 25 largest German cities. They found that, in particular, multimedia features like photos and videos contribute to the success of communication. They also saw a tendency for citizens to prefer topics related to leisure activities. However, they could not evaluate typical Facebook

communications behavior, such as appealing for co-design, F-transactions, or marketing services, as governments make such little use of it.

D. Government-Social Media Based Models

- Government-social media based models are frameworks produced by researchers to understand the importance and benefits of social media in e-government and endeavors to add more insights to them.
- Previous research is short on theoretical models and managerial insights into the effectiveness of governments' online communication strategies and techniques.
- The main research question of this paper is to what extent the government communication entities in UAE are using social media effectively to communicate. Based on this question this paper proposes a framework for measuring the effectiveness of the government communication. The proposed framework will be built on previous models of Government-social media based models.
- Chm and Luna (2012) proposed three models. The first model assumes that social media is a catalyst that transforms citizens, government and data. It discusses how social media interacts with these three dimensions. **Social Media-Based Citizen Engagement Model** focuses on social media used as a tool to enable users to express their opinions, emotions, behaviors and interactions. Governments can use such media to transform their citizen to participate in good governance and to enjoy democracy. **Social Media-Based Data Sharing Model focuses** on the data that a citizen generated using social media when he/she participated in a political topic. **Social Media-Based Real-Time Collaborative Government Model** focuses on the idea that using social media in e-government starts to enhance the communication between governments and citizens to be nearly in real time.
- Lee & Kwak [2012] proposed a model for open government that is based on public engagement. The model contains five levels, which is based on the benefits of social media that provide transparency, participation and collaboration by public engagement. The following is a description of each level: (1) Initial Condition, this level focuses on government podcasting information to public via government's official websites, with seldom use of social media or interactive tools. (2) Data transparency, actually is the first step of open government, where governments try to perform two important tasks, first is publish valuable and impact data, second is to publish data that is accurate, consistent and in a timely manner. (3) Open participation, this level focuses on enabling the public to participate and governments to take input from citizen's feedback, participation, discussion, and voting. (4) Open Collaboration, is the developed level of participation, where the government asks the citizen to play a role of co-creation, co-design for specific output. Here the task is more complex, and it looks like collective intelligent, so government may use shared document to engage the public in participation, asking the public to participate in designing application to government. (5) Ubiquitous Engagement, this level is built based on level 1 to level 4 by expanding the level to arrive to engagement status. In this level we can see public engagement become easier by using different accessing technologies such as smart phones, tablets, laptops and desktops.
- Mishaal & Abu-Shanab (2015) proposed a framework for investigating the success of communication between governments and other stakeholders utilizing social media. The framework is founded on a set of proposed factors that lead to communication success and they are: transparency, participation, collaboration, comfort, and the posted topic. (1) Transparency, governments should make the information as public assets, to enable their stakeholders be intellectual in governments discourse. (2) Participation, governments should enable stakeholders to participate in government topics by opening the dialogue between citizen and governments, by enabling their stakeholders to post on their pages or use surveys to collect information from stakeholders. (3) Collaboration, between governments and other stakeholders, collaboration enable government to benefit from stakeholders' experience, knowledge and opinions. (4) Comfort, the use of social media by governments in communicating with its stakeholders for publishing information, provision of services, or getting feedback from them attains the comfort level required from e-services. (5) Posted topic, government posted topics may affect the communication between government and its stakeholders. It is noticeable that some of the topics may increase the rate and intensity of

communication between the government and stakeholders and some of topics may not attract/encourage stakeholders to communicate.

- Mergel, (2013) proposed a framework for measuring social media interactions in the public sector contains from mission, goals, tactics, mechanisms, and outcomes. The main three missions are: transparency, participation and collaboration. The goals are: information education, engagement and cross-boundary action two way interactives. Mergel (2013a) distinguishes between three possible strategies for social media use: 1) representation; 2) engagement; and 3) networking. For representation, governments may seek a presence on many social media platforms, but they pursue a “push” strategy of broadcasting the agency's message. Indicators of such a strategy include the blocking of comments, and little investment in updating information. But, even governments that are more active pursue a centralized approach that disseminates press releases rather than inviting citizen participation. Engagement strategies (also described as “pull” or “push and listen”) solicit user-created content. There is some evidence online that governments are actively inviting feedback or contributions (for example, to share stories, to rank ideas, or to create applications). This may also include some response to citizen suggestions. Networking strategies rely upon extensive discussion among citizens, where government officials participate as one set of actors, but view discussion mainly as an opportunity to elicit insights from citizens. Governments that prioritize a networking strategy might pose topics for discussion and set ground rules for otherwise open dialogue. Both the engagement and networking approaches are participatory. The networking approach emphasizes dialogue, however, whereas engagement invites coproduction of content without necessarily engaging participants in dialogue. The one-way representation strategy is the most prevalent, and networking strategies are largely hypothetical, according to Mergel's (2013a) findings in her interviews at the federal level.

E. Social media and government communication in UAE

- The UAE is a federation of seven emirates with a federal government of over 50 entities, most of which provide public services, and a local government within each of the seven emirates (21). The eGovernment program in the UAE has achieved remarkable success in enabling the technology-based transformation of public services. According to [UNDESA], the UAE is ranked 6th globally in the eParticipation Index, 7th in the Online Service Index, and 28th in the eGovernment Development Index. (22)
- In March 2011, the United Arab Emirates eGovernment has officially released guidelines for social media usage in UAE government entities to manage their presence on social media websites and take actions on the social media related issues.
- As Ibrahim Elbadawi (2011) explained the reasons behind the issuing of the guidelines: (1) Social media is widely adopted among citizens of the UAE. UAE is among the top ten countries in the world in Facebook usage with 45% of its population has accounts on the most popular social networking site. In such a society with high presence on social media, government entities can't afford to ignore social media and insist to continue communicating with the public through traditional channels only, such an approach could lead us to a “government-society social media divide” which will negatively affect any government plans to move towards more citizen-centered services and hinder its progress towards successful adoption of Government 2.0 concepts and practices. (2) Government agencies and officials are increasingly establishing their presence on one or more social media sites. Government employees in the UAE consider social networking among the top technologies that could increase the level of collaboration across the government. (3) The social media presence of government entities need to be expanded and enriched: Although the social media guidelines document was released in 2011, many government entities in UAE have started their presence on social media few years before; However, the number of these government entities is still below what is needed. In addition, most of these entities need to go beyond establishing accounts on Facebook and Twitter.

3. Operationalizing communication effectiveness on Social Media Sites

- It is so difficult to measure communication effectiveness because it depends on the goal of communication via social media. However, using available and obvious measures such as: the number of likes, comments,

shares, replies, etc., will provide an indication of polarity of social media accounts and will provide also an indication of stakeholders' engagement with government's activities via social media.

- Research's discussions of how to measure the effectiveness of communication on social media have resulted in some controversy. Whereas some research argues that even attempting to measure effectiveness in this environment is senseless (Bertot, John C., Jaeger, P. T., & Grimes, J. M. (2010: 264–271). others try to capture the effectiveness of social media campaigns by relating it to sales figures (34). Of course effectiveness is subject to the goals of social media communications, which can range from improved awareness to changing brand associations and performing conversions. In general, effectiveness is difficult to capture, as goals are often intangible (Daft, R. L., Lengel, R. H., & Trevino, L. K. (1987: 355–366). For governments, conceptualizing success is even more difficult than for private sector companies, as the governments' goals are seldom quantifiable in terms of sales figures and because privacy regulations limit the application of evaluation tools. (Gustavo Henrique, Maultasch Oliveira, Eric W. Welch (2013: 397–405). Therefore, adequate metrics for government impact in social media are lacking (Mergel, I. (2012: 281–292).
- This paper endeavors to measure the effectiveness of government communications on social media in terms of creating awareness of the entities' activities and information, marketing the entities' image, reinforcing positive attitudes toward the government, easing the access to the entities' information, adding extra platform for transparency, allowing the stakeholders to interact with the entities, participate in discussing the posts and tweets and empowering the engagement between the government and their citizens.
- To measure the effectiveness of social media in government communication, we have to set a matrix of missions with measurement indicators. Reviewing the literature, and examining the criteria and indicators which have been used by network analysis tools, could help in examining the aspects of effectiveness of the government entities in achieving the (six) missions, by using social media. Each mission can be traced by using adequate indicators. These missions can be identified as follows:
 - (1) Publicity & Communication and Access: social media mainly post information, news, events, etc. to inform and educate the citizens, to make it easy for their stakeholders to find what they are searching for. While, performing this task could lead to more accountability and trust, but it does not allow the government entity to utilize the potential of social media in engaging the citizens in its mission, due to the use of one-way push tactics.
 - (2) Marketing and Comfort: one of the main tasks of social media is to market the government entity and promote its image among their stakeholders, reinforce positive attitudes toward the government, and ease the access to the entities' information. However, restricting itself on performing that role, without real interactions with the stakeholders' requests and complains, could lead to negative impacts on the entity's image, due to the use of one-way push tactics.
 - (3) Reach: using social media by the governments entities allow them to reach more citizens than using any other media. While reaching many stakeholders could promote the mission of the entity, but it does not guarantee the acceptance and appreciation of the citizens of what social media trying to convey.
 - (4) Transparency means "provide information for citizens about what their government is doing." For the purpose of this study, transparency is therefore interpreted as broadcasting of government information via social media sites (Mergel, I. (2013); the main goal for this mission is informational, educational, to enabling the stakeholders to be intellectual in governments discourse, using the one-way push tactics.
 - (5) Participation: Participation should be accomplished by providing "increased opportunities to participate in policymaking and to provide their government with the benefits of their collective expertise and information." (Mergel, I. (2013). For the purpose of this study, citizens can engage in preparing policy-making decisions by providing their feedback through social media channels.

The main goal for this mission is participatory and, using the two-way pull tactics. Implanting this task could lead to more consultation, deliberation and satisfaction.

- (6) Collaboration and Engagement: Collaboration is defined as new forms to “solicit public feedback to assess and improve their level of collaboration and to identify new opportunities for cooperation.” For the purpose of this study, social media channels can therefore be used to increase exchanges with citizens or collaboratively work with government stakeholders on innovative ideas to fulfill the mission of government. Collaboration between government and citizens indicates a higher level of engagement in a reciprocated relationship by allowing the audiences to directly engage with government content and co-create government innovations (Mergel, I. (2013). The main goal for this mission is collaborative and, using the networking, co-design of services tactics. Implanting this task could lead to more community building, creation of issue networks.

.4. RESEARCH METHODOLOGY

- **The paper seeks to answer the following questions:**
 1. To what extent the government entities in UAE use the social media effectively?
 2. To what extent the government entities in UAE are effective in using social media in communicating with their stakeholders? What are the main roles of social media in government communication?
- A proposed framework has been used to conduct a comparative empirical study that compares UAE government entities’ social media features, strategies and techniques (quantitatively and qualitatively), by using web-based analytical tools such as quintly, zoom sphere, union metrics, etc., It has employed a wide range of webometric and social network analysis techniques for measuring the effectiveness of using social media.
- Using the UAE government portal, 25 entities have been selected, with the total of 100 social media accounts (25 Facebook pages, 25 twitters pages, 25 YouTube sites and 25 Instagram accounts). We found that some entities do not have either Facebook or twitter or YouTube or Instagram). The total of active accounts were (65).
- To examine the effectiveness of using social media by the UAE government communication entities, group of missions and indicators have been constructed based on the previous studies, and criteria used by web-based analytical software and websites.
- The study has investigated the following missions: publicity & communication, marketing, reach, transparency, participation, and collaboration & engagement over Facebook pages, twitter, Instagram and YouTube accounts of these entities, to measure the effectiveness of their governmental communication
- The study proposes the following: (1) The higher the publicity indicators used, the lower the communication effectiveness (2) The higher the marketing indicators used, the lower the communication effectiveness (3) The higher reach indicators used, the moderate the communication effectiveness (4) The higher the transparency indicators used, the moderate the communication effectiveness (5) The higher the participation indicators used, the higher the communication effectiveness (6) The higher the collaboration & engagement indicators used, the highest the communication effectiveness.
- To measure each mission of government communication, the total of the following indicators of each governmental Facebook, twitter, YouTube and Instagram will be determining and then will be compared as a group with other indicators of another mission (as shown in Table 1).
 - The indicators of publicity & communication & access are: admin posts, status, links, videos, photos, links to services & media & governments’ sites, government site enables Live stream, and posts that include calendar & events, survey & pool, publishing the page’s policy (Facebook), using read more, posting info background about the page, publishing reports and announcements, notes, up-to-date the content (Facebook), using applications completely on Facebook, and applications directing to gov. website and number of tweets, own tweets , YouTube videos and Instagram posts.
 - The marketing indicators are: admin posts/ status, links, videos, photos, shared quota, links to services & media & governments’ sites, government site enables Live stream, and posts that include calendar

- & events, survey & pool, publishing the page's policy (Facebook), using read more, posting info background about the entity, publishing reports and announcements, and visitors' reviews, notes, up-to-date (Facebook), using applications completely on Facebook, and applications directing to gov. website, conducting contests, number of tweets, own Tweets , YouTube videos and Instagram posts.
- The reach mission indicators are: number of fans (Facebook), audience change over the time, numbers of likes, comments, shares, interactions, reactions, replies, (Facebook), number of users posts, interactive rate, number of people talking about the entity, the speed of the response, government site enables their stakeholder to post, and to co-create, using applications completely on Facebook, and applications directing to gov. website, updating the page, visitors' publications & opinions & reviews, conducting contests, no. of followers (twitter), following, Twitter likes, lists, retweets, replies to users (Twitter), mentions, I-rate, response rate (twitter), numbers of contributors, estimated & potential reach, impressions, YouTube subscribers, YouTube views, YouTube views changing rate. YouTube likes and dislikes. YouTube comments. YouTube I-Rate. YouTube views subscribers rate, numbers of Instagram followers, following, likes, and comments (Instagram)
 - The transparency mission indicators are: admin posts/ status, links, videos, photos, numbers of interactions (Facebook), reactions, number of users posts (Facebook), I-rate (Facebook), response rate, no. of replies (Facebook), speed of response (Facebook), government site enables posts that include calendar events, government site enables posts that include survey & pool, government site enables their stakeholder to post, Government site enables their stakeholder to co-create, Page's policy (Facebook), reports and announcements, up-to-date (Facebook), visitors' publications & opinions & reviews, notes, no of tweets, own tweets, Replies to users (Twitter), response rate (twitter), contributors, YouTube videos, YouTube I-Rate, Instagram posts
 - The participation mission indicators are: number of fans (Facebook), audience change over the time, numbers of likes, comments, shares, replies, rate of interactions, reactions , I-rate (Facebook), response rate, number of people talking about the entity, the speed of response (Facebook), government site enables posts that include survey & pool, government site enables their stakeholder to post or to co-create, visitors' publications & opinions & reviews, contests (Facebook), no. of followers (twitter), following, numbers of twitter likes, lists, retweets, replies to users (Twitter), mentions, I-rate, response rate (twitter), impressions, YouTube subscribers, YouTube views, YouTube views changing rate, YouTube Likes , dislikes, comments ,YouTube I-Rate, YouTube views subscribers rate, numbers of Instagram Followers, Following, Instagram likes and comments
 - The collaboration & engagement mission indicators are: number of user posts (Facebook), response rate, number of people talking about the entity, n. of replies (Facebook), government site enables posts that include survey & pool, government site enables their stakeholder to post or to co-create, visitors' publications & opinions & Reviews, conducting contests (Facebook), number of replies to users (Twitter), response rate (Twitter), numbers of contributors.
 - This is an exploratory network analysis study, more than a content analysis, which uses quantitative data covering the aspects of the number of posts, tweets, followers, fans, interactions etc., using a multi-method approach.
 - The study has limitations in terms of seeking quantitative data, depending mainly on a network analysis and not conducting enough examination of the content itself and the posted topics.
 - The research design for this study goes through four phases.
 - The first phase is to identify which UAE government entities are using social media. We consulted the UAE National eGovernment Online Portal (<http://government.ae/>), which lists the links of the governmental entities in UAE. It divides the federal entities to ministries, authorities and institutions. the sampling unit is (13) ministries, (7) authorities and (5) institutions have been chosen, as main government entities, totaled (25) out of 57 have been listed. Not all of the entities have the whole types of social media, which have been chosen for analysis (Facebook, twitter, Instagram and YouTube accounts). While most of these entities have the four types, some of them is either have two or just

one type. The total of social accounts which have been examined was (65) accounts of Facebook, twitter, Instagram and YouTube. Some accounts were missing or inactive. The coding unit was a single post, and the considered period was from Nov 1, 2016, to Dec 23, 2016. The coding took place from Nov to Dec 2016.

- In the second phase, to collect data, several social media analytic tools were used; the quintly, available at: <https://www.quintly.com>, Zoomspher, <https://www.zoomsphere.com>, key hole available at: <http://keyhole.co>, and twitter reach which web-based dashboards are providing instant access to up-to-date and multi-year historical social media analysis and content. The data used in this study were collected between mid-November to mid-December 22th 2016. Each account was analyzed separately to provide quantitative metrics covering the proposed indicators. Six missions have been identified. Each mission includes several indicators by itself. Some indicators also have been merged with another factor or more, due to the fact that it is difficult to restrict it on one mission, for example, the numbers of comments, replies, shares can be referred to reach, transparency and participation missions, as shown in Table (1).
- In the third phase, examining the social media accounts to identify some features or indicators which network tools could not locate such as to what extent, the account provides background info, links to government portal, applications etc. A manual analysis has been conducted to collect quantitative and qualitative data.
- In the fourth phase, classifying the data according to proposed matrix to measure the effectiveness of using the social media and test the study propositions.
- In addition, the results were then used for further analysis to determine any correlations between the type of entities and the effectiveness of using social media. SPSS 20.0 was used to carry out the analysis.
- To get a deeper insight into the effectiveness communications on social media, in addition to measuring the effectiveness of a post by the frequency of the reactions it evoked, we also analyzed the way of presenting the features or the indicators. The study did not examine the content of the social media accounts. However, it analyzed the performance of these accounts using a manual review to examine some indicators such as posting notes, calendar, links, background information, etc. (shown in Table (1) and to answer some questions, such as; to what extent, they were interested in replying to their stakeholders, monitoring the comments, utilizing digital applications, etc.
- Most indicators data have been collected through using social network analysis tools; some of them were collected manually or through the data displayed on the accounts itself, which help in collecting more insights about how these accounts are dealing with their own posts and users' posts.

(Table 1: Coding scheme for governments' materials properties in Social Media)

Indicator	Code	Indicator	Code
Fans (Facebook)	(C)	Notes*	(A) (B) (D)
Fan's Change (Audience change over the time)	(C)	No of Followers (twitter)	(C)
N of likes (Facebook)	(C) (E)	No of tweets	(A) (B) (D)
N of comments (Facebook)	(C) (E)	Following	(C)
N of shares (Facebook)	(C) (D) (E)	Twitter Likes	(C) (E)
interactions/ Total (Facebook)	(C) (D) (E)	Twitter List	(C)
admin posts/ status	(A) (B)	AVG Likes	(C) (E)
admin posts/ Links	(A) (B) (D)	Retweets	(C) (E)
admin posts/ videos	(A) (B) (D)	AVG retweets**	(C) (E)
admin posts/ photos	(A) (B) (D)	Own Tweets	(A) (B) (D)
admin posts/ total**	(A) (B) (D)	Retweeted Tweets	(C) (E) (F)
Reactions (Facebook)	(C) (D) (E)	Replies to Users (Twitter)	(C) (D)(E) (F)
User Posts (Facebook)	(C) (E) (F)	Mentions	(C)
I-Rate (Facebook)	(C) (D) (E)	I-rate	(C) (E)
Response rate	(D) (E) (F)	Response rate (Twitter)	(C) (D) (F)
number of people talking about the entity	(C) (E) (F)	Contributors	(C) (F)
N of replies (Facebook)	(C) (D) (E) (F)	Estimated & potential reach	(C)
Links to services & media & Governments' sites*	(A) (B)	Impressions	(C)
Speed of response (Facebook)*	(C) (D) (E)	YouTube subscribers	(C) (E)
Government site enables Live Stream*	(A) (B)	YouTube Videos	(A) (B) (D)
Govt. site enables posts that include calendar & events*	(A) (B) (D)	YouTube Views	(C)
Govt site enables posts that include survey & pool	(A) (B) (D) (E) (F)	YouTube Views changing Rate	(C)
Govt. site enables their stakeholder to post*	(C) (D) (E) (F)	YouTube Likes	(C) (E)
Govt. site enables their stakeholder to co-create*	(C) (D) (E) (F)	YouTube Dislikes	(C) (E)
Page's policy (Facebook)*	(A) (B) (D)	YouTube Comments	(C) (E)
Read more (Facebook)*	(A) (B)	YouTube I-Rate	(C) (D) (E)
Background info (Facebook)*	(A) (B)	YouTube Views Subscribers rate	(C)
Reports and Announcements*	(A) (B) (D)	Instagram posts	(A) (B) (D)
Up-to-date (Facebook)*	(A) (B) (C) (D)	Followers	(C)
Applications completely on Facebook*	(A) (B) (C)	Following	(C) (E)
Applications directing to gov. website*	(A) (B) (C)	Average like**	(C) (E)
Visitors' publications & opinions & Reviews*	(B) (C) (D) (E) (F)	Average Comments**	(C) (E)
Contests (Facebook)	(B) (C) (E) (F)		

(A) Publicity & Communication & Access (B) Marketing & Comfort (C) Reach (D) Transparency (E) Interactions & participation (F) Collaboration & Engagement

5. Data

- The automatically evaluated indicators/ features (posts, fans, followers, likes, shares, links, photos, videos, comments, replies, tweets, impressions etc.) contain data from the 25 entities that have Facebook, twitter, Instagram and YouTube accounts as of Nov and Dec 2016.
- The remaining indicators/ features (links to services, speed of the response, posting events, notes, announcements, etc.) had to be coded manually. (As shown in Table 2). For anonymity reasons, we combined the data of these entities together in some case and classified it to three categories in other case (entities based services, production and authority). Table 2 contains the aggregated results, the manual assessed categories are marked with an asterisk. Some indicators were not included in the combined factors which we created to compare between the entities regarding performing their missions (shown in table 2). It provides us extra indicators of to what extent these accounts are effective.
- The rows of Table 2 contain data from all entities with Facebook, twitter, Instagram and YouTube accounts in the columns "Total", "Mean", and "Standard deviation". The total Facebook indicators are (35), twitter (17), YouTube (9) and Instagram (5)
- The results show that most UAE government communication entities are using twitter, then Facebook, then Instagram and lastly YouTube. The total number of Facebook fans of the UAE government communication entities was 1926357, the mean number of fans was 77054, with a standard deviation of 161592, twitters followers was 2320187, the mean number of twitter followers was 92807, with a standard deviation of 150757, YouTube subscribers was 5757, the mean number of subscribers was 230, with a standard deviation of 880. Instagram Followers was 260014, the mean number of Instagram followers was 10400, with a standard deviation of 46886. While all of the entities have twitter accounts, some of them do not Facebook accounts and most of them they do not activate their Instagram accounts.
- Table (2) shows that the number of tweets is 162246, Instagram posts is 100365, using links in Facebook is 313, videos 769, photos 767, YouTube videos are 927, which confirms the above results of depending mainly on Tweeter to communicate with the stakeholders.
- The UAE government communication entities have reached many stakeholders; through shares 11786, Facebook likes 171876, twitter likes 8756, retweets 4523. The potential reach of Tweeter was 14540585, impressions 28405971 and mentions 2393, which reflects their interest in performing reach mission.
- The total numbers of indicators related to engagement with the stakeholders show less focus in performing this task, the number of user posts on Facebook was 129, replies to users in Tweeter was 470, and the total number of contributors in Tweeter was 842. The mean of response rate on YouTube was (4) in Instagram, (.16), on twitter (.0), and the same of Facebook, which shows the lack of attention giving to the engagement mission.
- Analyzing these accounts manually shows few interest in replying to fans' comments or questions on the Facebook, the slowness in responding to questions, the overwhelming of the entities' posts and tweets, not the stakeholders' contributions, the no use of applications available completely on Facebook, or applications directing to gov. website or live stream. Few of them have been posted notes, announcements, surveys, and contests.
- The manually analysis shows that these entities are mainly using one one-way push tactics with their stakeholders, focusing on conveying the entity's messages, promoting and marketing its identities and activities more than seeking stakeholders' participation and engagement.

(Table 2): The aggregated results of indicators used by social media of government's entities

Indictor	Sum	Mean	Std. Deviation	Indictor	Sum	Mean	Std. Deviation	Indictor	Sum	Mean	Std. Deviation
Fans	1926357.00	77054.2800	161592.06073	To create*	.00	.0000	.00000	Replies to users	470.00	18.8000	58.06605
Fans Change	26.84	1.0736	3.56181	Page Policy*	3.00	.1200	.33166	mentions	2393.00	95.7200	218.24709
Likes	171876.01	6875.0404	18458.25098	Background*	19.00	.7600	.43589	Tweeter_l_rate	.00	.0000	.00000
Page Like	1821645.00	72865.8000	163076.41182	Read more*	19.00	.7600	.43589	Tweeter R Rate	159.16	6.3664	22.59161
Comments	5946.00	237.8400	439.70034	Reports& announcements	20.00	.8000	.40825	Contributors	842.00	33.6800	26.89597
shares	11786.00	471.4400	1231.74223	Up-to-date	20.00	.8333	.38069	Potential reach	14540585.00	581623.4000	587462.57268
Interactions	184581.00	7383.2400	19985.29410	App	.00	.0000	.00000	impressions	28405971.00	1136238.8400	1503328.45035
statutes	560.00	22.4000	84.89601	Apps	1.00	.0417	.20412	YouTube subscriber	5757.00	230.2800	880.27943
links	313.00	12.5200	36.59932	Visitors' Reviews	760.00	31.6667	70.22304	YouTube videos	927.00	37.0800	84.49947
videos	769.00	30.7600	107.73126	Contests	1.00	.0417	.20412	YouTube views	2.50	.1000	.50000
photos	767.00	30.6800	33.02615	Notes	6.00	.2500	.44233	Views change	8.60	.3440	1.72000
Reactions	148934.00	5957.3600	18866.09747	Followers	2320187.00	92807.4800	150757.80114	YouTube likes	4.00	.1600	.80000
user Posts	129.00	5.1600	17.12620	Tweets	162246.00	6489.8400	8480.05839	YouTube dislikes	.00	.0000	.00000
Interactive rate	.03	.0010	.00353	Following	3557.00	142.2800	139.80687	YouTube comments	.00	.0000	.00000
Response Rate	.00	.0000	.00000	Tweets likes	8756.90	350.2760	946.87715	Y_l_rate	4.00	.1600	.80000
Share Quota*	.99	.0397	.08688	Lists	331.00	13.2400	62.88301	Y_views_sub	26.30	1.0520	5.26000
People talking about it*	12021.00	480.8400	1513.61826	AVG Likes	101.40	4.0560	3.58563	Instagram posts	100365.00	4014.6000	9809.66750
Replies*	3.00	.1200	.33166	Retweets	4523.10	180.9240	262.56224	Inst. followers	260014.00	10400.5600	46886.82227
Links to services*	23.00	.9200	.27689	AVG retweets	101.20	4.0480	4.84158	Inst following	719.60	28.7840	56.16012
Speed of response*	23.00	.9200	.27689	own tweets	1705.00	68.2000	78.76547	Inst_AVG_like	1239.80	49.5920	186.76980
Livestream*	1.00	.0400	.20000	Retweeted tweets	1015.00	40.6000	72.31759	Ins. AVG_comments	4.00	.1600	.55377
Survey*	3.00	.1200	.33166								

* counted Manually ** did not include in the combined factors

6. Effectiveness of government communication with regard of accomplishing their missions

6.1. Combined indicators and missions accomplished

- This section contains the results concerning the effectiveness of the UAE governments' entities posts properties on social media. We present the analysis of the effectiveness of using social media in performing their missions towards their entities; publicity, marketing, reach, transparency, participation and engagement. It has been evaluated in terms of total used of indicators, such as the frequency of posts, comments, shares, likes, posts, tweets, etc., of the four types of social media: Facebook, YouTube, twitter and Instagram accounts.
- In general, the results differ significantly among the entities in terms of missions accomplished we analyzed in depth, which we ascribe to the governments' differing social media strategies
- Table (3) shows that the UAE government entities were interested in performing the reach (Mean = 4062867), transparency (Mean = 2085988) and publicity mission, (Mean = 11079), then the marketing and participation missions. The least mission was the engagement (Mean =642). A big mean difference in terms of accomplishing the reach mission comparing to other missions. While the minimum of reach is (105317), it is (9) in terms of participation mission and 17 in engagement mission. Similarly to Mergel's findings (2013a), the one-way representation strategy is the most prevalent.
- As per of the higher used of the publicity, marketing, reach and transparency indicators, and the less use of the engagement indicators, we can conclude that the effectiveness of using social media by UAE government entities is moderate in general.

Table (3) Effectives of government posts with regard to mission accomplished

Mission	Total	Minimum	Maximum	Mean	Std. Deviation
Publicity	265917.00	150.00	49428.00	11079.8750	13581.41177
Marketing	266677.00	266.00	49428.00	11111.5417	13588.79054
Reach	97508811.34	105317.82	15089756.00	4062867.1393	4495150.04982
Transparency	50063735.59	69455.82	8035548.00	2085988.9831	2304770.34735
participation	215282.03	9.00	106514.00	8970.0848	21818.05879
Engagement	15425.19	17.00	7923.00	642.7161	1590.64890

6.1.1. Publicity & Communication & Access

- To assess the effectiveness of performing the publicity mission by the UAE government entities by using social media, many indicators have been analyzed such as posts, links, videos, photos, links to services & media & governments' sites, government site enables Live stream, government site enables posts that include calendar & events, publishing the page's policy (Facebook), number of tweets, YouTube videos and Instagram posts, etc. (Table 2) shows that they mainly used posts, likes, photos, and tweets. Many indicators or features were missing such as enabling posts on applications, live stream, including events, calendars, and notes or conducting surveys etc. They were not interested in posting their policies regarding posting on the accounts or providing adequate information about their entities. Some of them post inactive features or links and do not provide enough links to other services or sites. However most of them posted photos and videos, and post updated news which shows their official activities.

6.1.2. Marketing

- The most indicators or features which have been used by these entities to market the entities were using photos, videos, posts and tweets. Some of YouTube accounts either are not active or do not post enough videos. Most of the UAE government entities do not activate their Instagram accounts. Only one

account uses live stream. Few of them are conducting polls or surveys. Most of them do not post update events on their calendars. However, some of them post reviews from their users.

6.1.3. Reach

- The “reach” mission was the most accomplished mission. As Table (2) shows, the number of Facebook fans is 1926357, the number of twitter followers is 2320187, potential reach of Tweeter is 14540585, the impressions of Tweeter is 28405971 and Instagram followers is 260014. However, mean of fan’s change is 1.07, which means that the same stakeholders are using these accounts.

6.1.4. Transparency

- The UAE government communication entities have used several features and indicators of transparency through using their own social media. They mainly focus on sharing photos, videos, links, posts, and retweets. However, many indicators and features which could enhance the transparency were few or missing such as replies, speeding the response, allowing user to post, publishing more visitors’ reviews and post more reports, notes, announcements and providing their stakeholders with more update news and events. Also, publishing posts and tweets without quick response, reply, and comment could lead to negative impacts on the effectiveness of the use of social media.

6.1.5. Participation

- Allowing stakeholders to participate through comments, shares, posts, replies, retweets, tweets, to create posts, to like or dislike came in the fifth rank of UAE government communication entities’ interests or mission accomplished. The most noticeable indicator was “likes” in Facebook, with 6875 mean, and reactions (mean= 5957). However, the mean of people who are talking about the entities’ Facebook was 480, and visitors’ reviews was 31. However, most of these indicators reflect part of participation aspects.

6.1.6. Collaboration & Engagement

- The least accomplished mission by UAE government communication entities in their social media accounts was engaging their stakeholders in producing contents, posts, tweets, etc., with a mean = 642. It was noticeable the less interest in allowing users to post or create their own content, the slowness of responses and replies and the few numbers of contributors on tweeters. In spite of allowing stakeholders to post their own comments, some of these comments are not related to the posts itself and do not build on it to create series of replies and discussions and some of them should be filtered or removed.

.2. Effectiveness of government communication of using SM by types of entities

Table (4) ANOVA of missions and types of entities

	Sum	df	F	Sig.
Publicity	Between Groups	2	.340	.716
	Within Groups	21		
	Total	23		
Marketing	Between Groups	2	.341	.715
	Within Groups	21		
	Total	23		
Reach	Between Groups	2	10.275	.001
	Within Groups	21		
	Total	23		
Transparency	Between Groups	2	3.422	.052
	Within Groups	21		
	Total	23		

participation	Between Groups	2	10.133	.001
	Within Groups	21		
	Total	23		
Engagement	Between Groups	2	2.570	.100
	Within Groups	21		
	Total	23		

- Table 4 shows that there is a 95% confidence that the mean of reach, participation and transparency missions done by the UAE government communication entities by using social media differs than other missions. The services based entities are willing to be more reachable, participatory and transparent, then other entities. On the other hand, there is no difference between the entities in terms of performing on publicity, marketing and engagement. They are interested in conveying positive attitudes towards these entities and share the same level of less interest in accomplishing the engagement mission.

7. Discussion

- The analyses reported above motivate a theoretical discussion with respect to general conclusions on our research questions stated in the introduction: how each entity is working in cooperative efforts through social media, and to what extent they improve on the delivery of citizen services using social media in conveying the entity's message and information, transparency, participation, engagement etc., and what is the most dominant role played by UAE government communication entities in using social media; Do they focus on disseminating information externally or promoting and marketing their entities or getting feedback on service quality or facilitating participation by citizens or external stakeholders or seeking more engagement from their stakeholders?
- The results of analyzing the UAE government communication entities' accounts convey a rich picture of how these entities interact with their stakeholders on their social media. Most of them are using twitter, then Facebook, then Instagram and lastly YouTube. The same result was reached by Alasem (2015) (Munday and Umer (2012). They tweet than posting on Facebook or YouTube or Instagram. While all of the entities have twitter accounts, some of them do not have Facebook accounts and most of them do not activate their Instagram accounts. They have reached many stakeholders; through shares, Facebook likes, twitter likes, and retweets.
- There is a significant difference among the entities in terms of missions accomplished. The UAE government entities were interested in performing the reach, transparency and publicity missions, then the marketing and participation. The least mission was the engagement, which conforms to Panagiotopoulos and Sam's' study (2012). A big mean difference in terms of reach mission comparing to other missions.
- Analyzing these accounts manually showed less interest in replying to fans' comments or questions on the Facebook, slowness in responding to questions, no use of applications available completely on Facebook, or applications directing to Gov. Website or live stream. Few of them have been posted notes, announcements, surveys, and contests and the overwhelming of the entities' posts and tweets, not the stakeholders'.
- While the UAE government communication entities differ in terms of reach, participation and transparency missions "mean". There is no difference between them in terms of performing on publicity, marketing and engagement missions. The services based entities are willing to be more reachable, participatory and transparent. They mainly depend They are currently focusing mostly on push techniques and use social media channels to provide information and marketing their own entities by having online presence and trying to reach many stakeholders.
- Many of the features published by government entities used posts, tweets, photos, videos, etc. to reach many stakeholders, but they do not focus on using other features, which could lead to more participation and engagement. While the used features could lead to more publicity and marketing the entities among the stakeholders, but most of them belong to the one-way push tactics, not pull or networking tactics which could create more participation and engagement. (Mergel, 2013).

- Many features on these accounts are not active, such as notes, calendars, links, applications, etc. some of them do not update their data and news. They publish the same materials and content which they publish on the conventional media or the website itself such as their press releases, publications, reports without realizing the social media need different content with different treatment.
- While Tweeter accounts are active in most entities, most of other accounts, especially in YouTube and Instagram are not active. Examining the comment, and share features in the Facebook does not show that there is enough interest in communicating, and replying to their users.
- In addition, they rarely make infrequent use of the specific data types offered by Facebook, such as calendars and events. Our findings are in line with previous research suggesting that governments often do not exploit the full potential of web 2.0 techniques (Brainard & McNutt, 2010; (Lee, M., & Lee Elser, E. (2010: 3–4) (Hofmann, et al., 2013), and the push strategies is predominated (Mossberger, et al, 2013:351-358)
- We operationalized the effectiveness of a feature/ post/ indicator in terms of the frequency and the polarity of the reactions (replies, comments, retweets, shares, etc., it evoked, as we defined the communication goals as publicizing the entity's information, creating awareness of its role and image, increasing the reach of social media to its stakeholders, transparency, participation and engagement. In general, this evaluation worked well, but other measures and levels of effectiveness should be applied to evaluate the communication effectiveness in terms of other goals. A concrete definition for each factor/ mission should be clearly distinguishable from other factors or missions. Some missions such as publicity and marketing could be combined together.

.8. CONCLUSIONS AND FUTURE WORK

The analysis of how UAE government communication entities use social media reveals that UAE government entities is using this new technology, effectively to some degree. Although social media offer potential that could overcome the defects of governments' traditional offline communication, this potential is not well-exploited by these entities. The analysis reflects that the online communication behavior of UAE government entities is based on disseminating information in a traditional way, without getting more engaged with their stakeholders. While there are interested in reaching more stakeholders, through transparency, marketing and publicity, they are less interested in efforts of using social media in empowering more participation and engagement.

In order to answer the question guiding the research concerning which communication behaviors of governments is effective on social media, we measured the effectiveness of communication in terms of the publicity, marketing, reach, transparency, participation and engagement.

We found that UAE government communication entities were interested in using one-way push tactics more than using pull and network tactics, the same conclusion reached by several international studies, applied on different governments. However, they should recognize the most important benefits of social media, which focus on engaging the citizens and allow them to participate in the decision making process.

The study has a number of limitations that lead to suggestions for further research. First, our sample size for the quantitative analysis, which consisted of almost more than half of government administrations. Nevertheless, we recommend enlarging the number of analyzed government accounts in future studies. Second, our methods may not be without bias. Using different network analysis tools could produce different data and results. It is better for the government to work on creating its own matrix for measuring the effectiveness and build its own analysis tools to be customized with their needs. Third, we did not apply sentiment analysis or qualitative analysis. An analysis of posted topics can be used to reveal what topics attract stakeholders and encourage the entities to focus on them.

The major contribution of this study was to propose a framework that included six major predictors/missions of e-government communication effectiveness and they are: publicity, marketing, reach,

transparency, participation, and collaboration & engagement. It benefited from the previous models, and added new mission such as publicity, and reach. The author also proposed a set of indicators to estimate each mission related to social media; some of these indicators were not used before by previous studies, such as impressions, potential reach, response rate, etc. The framework proposed here can be used to conduct a comparative empirical study that compare social media accounts in different countries. Future research, should conduct more content analysis; quantitatively and qualitatively to provide more in-depth examination of the content and the 'tone' of the conversation and the degree to which readers and commenters are 'engaged'. Another area of research should be focused on is the practitioners' perceptions of using social media in governmental communication and define the influencing factors on their roles. Furthermore, an analysis of citizens' attitudes and behaviors should reveal perceptions on the recipients' side. Finally, we suggest the development of sound theoretical models in order to measure communication effectiveness in social media that are especially designed for the needs of governments. Researchers should focus not only on how new capabilities are developed for academic purposes, but also for practical and social purposes by providing useful ideas for governments and the public.

Regarding the properties of social media effectiveness, we recommend that government: (1) consider utilize several social media to communicate with their stakeholders, especially the new generation, make sure that their accounts are active, and link them with their digital applications and sites. (2) Enhancing the published posts with multimedia features which could lead to attract more users to engaged and the latter should increase their chances of effectiveness. (3) considering the most effective missions of the social media, related to participation and engagement more than focusing on the publicity and marketing role of social media (4) While we encourage these entities to allow more users' posts and participation, but they should monitor these posts and correct any misleading opinion or untrue information (5) these government entities should use the advantages that social media offers more frequently, involving users through creating content, co-design, and promoting services.

In sum, these suggestions indicate that social media should be seen as a communication channel in addition to the governments' traditional channels like letters, press releases, and static websites. They need to rethink their role, as their traditional understanding of themselves as information and service providers (Sandoval-Almazan & Gil-Garcia, 2012) no longer fits the paradigms of the new media, and they need to professionalize their behavior in social media (Mergel, 2012).

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