

The Effect of Using Social Media in Governments: Framework of Communication Success

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Abstract— The vast emergence of social media with its characteristics and benefits opened doors for individuals and groups to connect utilizing this revolution. Social media became a huge virtual community, with highly interactive and collaborative environment among its members. Governments realized that more and more of their citizens are present over social networks, not over governments' websites. This paper takes Facebook as one of social media applications and builds a framework for measuring communication success over social networks. The model proposes that transparency, participation, collaboration and comfort will lead to communication success. Also, the model assumes that the posted topic will influence communication success. Finally, we propose indicators and metrics to measure factors proposed in the model.

Keywords— *government; social media; Transparency; participation; collaboration; comfortable; posted topic; communication success framework.*

I. INTRODUCTION

The ubiquity of the Internet is becoming an important phenomenon that changed the world. Internet influenced every aspect of private and public lives, and changed the nature of service towards a click and mortar instead of brick and mortar nature. Governments recognized the importance of Internet, and started to provide their services electronically over e-government websites. This initiative was to increase the performance of government services provided to different stakeholders (citizens, businesses and government itself) [14]. As the Internet evolved, the government also evolved in the same direction and witnessed a move from e-government services to social government; i.e. governments provide their services over social media such as Facebook, twitter, LinkedIn, and Flickr [13]. Social media is defined as "a group of Internet-based applications built on the ideological and technological foundations of Web 2.0 that allow for the creation and exchange of User Generated Content" [12]. Social media includes Facebook, Google plus, twitter, blogs, wikis and YouTube, where all of them are built based on web2.0 technology. Social networks are defined as "a networked platform, spanning all connected devices that encourage collaboration in terms of the creation, organization, linking and sharing of content" [23]. Web2.0 technologies have a set of capabilities grouped in the word **SLATES**, which enable the organization to search for employees to determine resources effectively and enable the

organization to link employees with customers, and authoring by enabling the employees and customers to collaborating in creating and sharing contents. Tagging also enables people to organize and filter the content, where these technologies enable the extensions by enabling the share of complex multi-media content and signals for the deployment of the changes over the content [8].

The main objective of this paper is to explore the benefit of social media for governments. For this purpose, we explored the available literature related to same topic and organized the work as follows: the first section of this paper will report the literature related to the social media and its contribution to e-government objectives The following section will describe the methodology, followed by conclusions and future work.

II. LITERATURE REVIEW

The main research question of this paper is *what are the factors that make governments successful in communicating with citizens and businesses using Facebook?* Based on this question this paper proposed a framework for government's communication success utilizing Facebook, and also proposed a set of measures and metrics for the model to be tested for different governmental Facebook pages.

a. Deficiencies of Traditional Government Communication

Hofmann, Beverungen, Räckers and Becker [11] argued that governments should provide information to their stakeholders

in a way to communicate with them. But 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.

Governments in the Arab world suffer from many challenges or deficiencies, some of them are internal and others are global or regional. 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 [6] [11]. Research indicated that Arab governments have deficiencies in their democracy and sometimes they lack such phenomenon at all. However, Islam as a religion adapted democracy through "Shura" (consultation) and ignored the autocratic style of governance [15] and Shura in the first Islamic era is compatible to the democracy in modern political life.

b. Social Media Detentions

The concept of social media nowadays became one of the hottest topics that attract consultants, experts, and researchers, where they can gain benefits from using it in their fields [12]. Social media changed the way developers and users are using the web; it shifted the domain from a self-content generation to a group-content generation, based on the level of participation and collaboration between them.

Margo asserted that social media takes its importance from its characteristics that include: participation, collaboration, empowerment, and time [18]. It enables people to participate and share the content between each other. Also, it enables users to collaborate by creating their own community to achieve their goal. Social media empowers users to participate with their ideas and opinions by enabling a platform to discuss their idea and opinions which in other words promote democratization. The time character in social media enables users to publish their generated content and publicize it to be seen by their friends at the same time of publishing, which enables others to participate instantly with their opinions and comments.

Snead classified social media into internal-based and external-based technology. The internal-based technology runs over the agency's server such as blogs and wikis updated based on the agency's needs. The external-based technology runs on servers of a third party, where the agency has no control over it, such as Facebook and twitter [25].

Social media is a wide umbrella that includes many types based on their purpose and functions [6] and in the following fashion: 1) directories 2) communication channels 3) communities and rating sites, and 4) archiving and sharing sites. LinkedIn is an example of directories; its function is to type the resume listing and rating by clients and colleagues. Twitter and blogs are examples of communication channel,

which is used for publishing information and text in real time. Communities and rating sites such as Facebook are used for interaction in a closed site, and it is less formal. Finally, archiving and sharing sites such as YouTube, are used for saving, sharing and redistribution of documents, videos, and slides. Facebook, our focus in this paper, is a social network launched in the year 2004 for the students of Harvard University. Facebook enables users to interact with other users by changing their status, writing on the walls of other users, and sending personal messages. Facebook enables users to create their groups, join other groups, or like other pages. Also, it enables users to upload their photos and videos, and search for contacts and content [25] [26].

c. Importance of Social Media in Governments

The impact of social media on government has taken place from the year 2011, especially through the Arab spring, and it was responsible for changing the relationship between governments and citizens [27]. Social media enables the democracy to be shared internationally, enables the citizens to express their opinions, and the governments to get feedback from their citizens. Using social media channel between the government and its stakeholders 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. The popularity of social media and its characteristics enables citizens or any stakeholder to get more information that makes them more acquainted by governments' activities [20] [22] [23].

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 [26]. Other researchers indicated that most managers started to use the reports and insights generated from social network sites to prepare their reports instead of developing their own metrics or indicators to study the behavior of citizens and to get citizens' opinions by using social network, which is also more cost effective [20] [25]. Using social media in e-government will enable citizens to access information provided by their governments over social media and thus reducing the effort for searching for needed information [7].

The major benefits of using social media in e-government can be summarized in three benefits [19] [20]: 1) Transparency, which is the release the information that stakeholders are always checking for. 2) Participation is to maintain citizens engaged with their governments, by allowing citizens to express their opinions, experiences and wisdoms. 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. 3) Collaboration 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 [27]. This way more time is saved and thus cost and effort for governments [16].

Research indicated that transparency is significantly related to the advancement of e-government [5]. On the other hand, e-participation includes five levels where collaboration and empowerment are the highest levels of e-democracy [4].

d. Government and Social Media in Communication

Social media can be considered as an innovative technology for governments, which added to e-government extra benefits. Klischewski [15] argue that social media needs to maintain the relationship between citizens and their government; this needs self-discipline to effectively and consciously use such media in a free and open way. Also, it is important to shape the communication itself in a way to determine the information and collaboration requirements. Finally, it is important to shape the social media itself to guarantee the suitable use of such media in different political activities. Social media was adopted in U.S. federal government according to the guidance of Barak Obama to find ways to make the information open and public to all stakeholders. Such initiative included directions to increase transparency, participation and collaboration. The government disseminates the information to the public and thus information become available to all; this enables citizens to participate and collaborate with each other [21] [22].

It is realized from our experience in the Arab spring that citizens need a democracy because of the domination of autocratic leaders for long periods of time [15]. Citizens need to participate freely in public debates, need transparency and accountability to be emphasized more by governments. Al-Saggaf and Simmons claim that Arab countries are different from the western countries, where their citizens are engaged in political life and express their opinions in many ways [5]. The utilization of social media enhances the traditional way of communication between the government and their public. Because Arab governments have limited freedom for their citizens to express their dissatisfaction, the new evolvments in social media was the only way to communicate with governments. Social media opens a new political place for Arab citizens; it enables citizens to express their opinion in public debates and interact without any controls [14]. The adoption of social media in e-government has other determinants such as political context and culture [5]. The political context and culture will determine the nature of public participation.

e. 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. The first models assumes that social media is a catalyst that transforms citizens,

government and data [8]. 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 god 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. This data needs to be understood by citizens and governments. Also, it needs to be stored and processed to make it sensible and usable for making decisions, and to enable citizens to participate collaboratively with governments. *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 [16] proposed a maturity 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:

- *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.
- *Level 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.
- *Level 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.
- *Level 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.
- *Level 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.

f. Influencers of the Adoption of Social Media in e-Governments

The adoption of social media by governments is an innovative way to communicate with public in an informal way. Such method would not substitute the traditional channels of

communication but support them. Also, e-government was and still uses the one-direction of communication between the governments and the public [22]. Public organizations budget cannot afford the ever-evolving technology updates, and the increase in citizens' expectation. This makes governments start searching for innovative ways to deliver their services to citizens. 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 [17].

Mergel [21] discusses the influence that led governments to adopt social media in communicating with public, and found that governments are influenced by four factors: Firstly, they noticed that citizens are using social media. Governments noticed that citizens are using social media to retrieve information and news related to governments, instead of using the official government website. Secondly, the passive observation of agencies that used highly innovative techniques; the intention to adopt social media in government was surrounded with many fears of uncertainty to what extent social media will be accepted. In addition to that governments want to determine the most suitable media for communication. These factors lead governments to observe public and private agencies using social media in communication passively instead of directly communicating with them to understand their experience in this field. Governments try to understand, use and test social media to find the suitable and effective media for their departmental purposes and environment.

Thirdly, the interaction with peers in government agencies, where most governmental systems in the United States of America (USA) are highly centralized, and all headquarters are localized in one location; this enabled the social media director to create a community that enabled the peers to communicate face-to-face or create phone calls weekly in an informal way. Fourthly, formal guidance of lead agencies; the best source of guidance in using social media in public sector comes from major mistakes and the technological change or change in local behavior of specific social media platforms. The other source of guidance came from the president of USA for achieving the triple goals of transparency, participation and collaboration. Also, the existence of social media director in all governmental organization plays a driver factor to success such as adoption.

III. RESEARCH METHODOLOGY

This study 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. This study's major contribution is to sum the factors (based on the literature) and then provides measures and metrics for each factor in the proposed model. Figure 1 depicts our proposition for such environment and the relationships assumed.

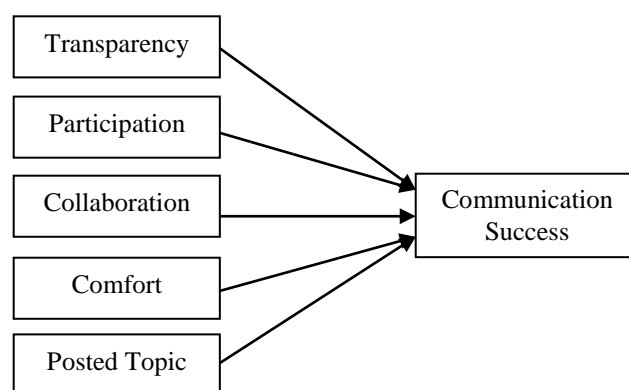


Figure 1. Framework for Government's Communication Success over Facebook

Transparency, governments should make the information as public assets, to enable their stakeholders be intellectual in governments discourse [21]. As we mentioned empirical test on the level of countries supported the relationship between the success of transparency and e-government level of development [1].

Participation, governments should enable stakeholders participate in government topics by opening the dialogue between citizen and governments [27] [4], by enabling their stakeholders to post on their pages or use surveys to collect information from stakeholders [19] [21]. Web 2.0 tools were extensively proposed by Abu-Shanab and Al-Dalou' to enrich and support all levels of e-participation, which leads to better communication and eventually the success of e-government [3].

Collaboration, between governments and other stakeholders, collaboration enable government to benefit from stakeholders experience, knowledge and opinions. Collaboration is one of the highest levels in participation [16] and a major dimension of open government [2] 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 [11].

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. 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 [7].

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.

Communication success, it is so difficult to measure because it depends on the goal of communication via social media. Using available and obvious measures like: the number of likes, comments, shares and reply will provide an indication of polarity of this page and will provide also an indication of stakeholders' engagement with government's activities via social media such as Facebook [11]. As mentioned, the examples of measures are related to Facebook (the focus of this paper), but other measures can be proposed for other types of social media.

a. Measures and Metrics

This section provides measures and metrics for the factors depicted in the previous model (in Figure 1). To measure communication success between a set of governmental Facebook pages we can take a set of samples like the Facebook pages of e-government websites for Arab countries. The focus of measures needs to investigate the following factors: transparency, participation, collaboration and comfort over Facebook pages. Table I to Table V lists the dimensions of each factor in our proposed model (summarized from the literature) and their associated measures.

Table I: Transparency measures and metrics

#	Measure	Metric
1	Number of published posts	Number of published posts ÷ maximum number of posts in sample
2	Number of posts that include calendar events	Number of posts that include calendar events ÷ maximum number of posts that include calendar in sample
3	Number of post that include multi-media:	
	Photos	Number of posts that include photos ÷ maximum number of posts that include photos in sample.
	Videos	Number of posts that include videos ÷ maximum number of posts that include videos in sample.
	Audios	Number of posts that include Audios ÷ maximum number of posts that include Audios in sample.
	Other social media posts	Number of posts that include social media ÷ maximum number of posts that include social media in sample.

Table II: Participation measures and metrics

#	Measure	Metric
1	Government website enables their stakeholder to post over the page	If the government enables its stakeholders to post, a value of 1 will be allocated, else will allocate zero.
2	Number of posts that include survey tool.	Number of posts that include survey tool ÷ maximum number of posts that include survey tool in sample.

Table III: Collaboration measures and metrics

#	Measure	Metric
1	Number of posts that request citizens to engage.	Number of posts that request citizens to engage ÷ maximum number of posts that include a request to engage in sample.
2	Number of posts that request from stakeholders to co-create	Number of posts that request co-creation (design) ÷ maximum number of posts that include co-creation in sample.

Table IV: Comfort measures and metrics

#	Measure	Metric
1	Presences of link to e-government website	if the a link exist, a value of 1 will be allocated, else will take zero
2	Number of posts that include a link to e-government website	1- (Number of posts with a link to e-government website ÷ maximum number of posts that include link to government website in sample).
3	Number of posts that have a link to external website.	1- (Number of posts with a link to external website ÷ maximum number of posts that include link to external website in sample).
4	Number of posts that include application started on Facebook and redirected to e-government website	1-(Number of posts that include posts with application started on Facebook and redirected to e-government web site ÷ maximum number of post that include application redirected to e-government website in sample).
5	Number of posts that include application started and completed in Facebook page	Number of posts that include application started and completed in Facebook page ÷ maximum number of posts that include application started and completed in Facebook website in sample

Table V: Communication success measures and metrics

#	Measures	Metric
1	Like	Total likes for each Facebook page ÷ total followers for each Facebook page
2	Comment	Total comments for each Facebook page ÷ total followers for each Facebook page
3	Share	Total shares for each Facebook page ÷ total followers for each Facebook page
4	Reply	Total Replies for each Facebook page ÷ total

	followers for each Facebook page
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b. Measurement

To measure each governmental Facebook page based on the previous tables a thorough inspection of each e-government page on Facebook should be done. As an example, take the transparency measure, first, the total posts of each governmental Facebook page should determine and then divided by the maximum total post in a sample. Then the posts that include calendar event should be estimated and divided by the maximum posts that include calendar events in sample. Also, each multimedia type should be estimated and divided by the maximum post in the sample according to the corresponding type as determined previously.

The next step is to calculate a total measure for transparency construct. Each governmental Facebook page will get an index for transparency by calculating all metrics of transparency and divide by 6 (the number of transparency measures).

To measure the communication success for transparency we take the posts, likes, comments, shares and reply on posts that have the characteristic of transparency that should be counted for each Facebook page and divide by the total followers for each Facebook page.

For example, to calculate the communication success on transparency we take the communication on total posts which is the total (likes, comments, shares, and replies) and divide by the total followers. The following step is to take the communication on total calendar events which is the total (Likes, comments, shares and replies) and divide by the total followers. Also, the communication on total posts that include multimedia which is the total likes, comments, shares and replies) divided by the total followers. To get the communication success over the transparency index it will include the likes, comments, shares and replies) divided by total followers for all transparency measures.

Similarly, when calculating the transparency index and their communication success of the entire sample we can notice that the higher the transparency index, the higher the communication success.

Proposition 1: The higher the transparency index, the higher the communication success

The previous calculations should be conducted for participation and collaboration and get indices for them. So the participation index will be calculated based on all the participation metrics/2 (as we proposed 2 measures). Similar calculations can be done for collaboration index. The following propositions are stated:

Proposition 2: The higher the participation index, the higher the communication success

Proposition 3: The higher the collaboration index, the higher the communication success

On the other hand, the comfort metrics should be calculated in a different way because the comfort of using Facebook should include all the texts and content in the same post without directing the stakeholders into different locations. Based on that, the last metric of comfort is calculated in a different way; because all the content is in the same Facebook page.

Also, about the posted topic (which did not include a table of measures for it); this study did not provide measures and metrics because it can be calculated by classifying the posted topics by governments over Facebook, and find the frequency for each topic and the level of communication for each topic then notice if some topics has higher communication than others. Using this measure may get a good indicator about the most important topics for stakeholders and encourage governments to focus on the most attractive and important topics. The following propositions are stated:

Proposition 4: The higher the level of comfort index, the higher the communication success

III. CONCLUSIONS AND FUTURE WORK

This study explored the literature to better understand the environment of social media and its utilization in e-government communication success. The importance of social media as a communication channel, and the reasons that lead governments to adopt it in their communication are also investigated in the literature section. Also, some models of e-government based on social media are reviewed and the strategies of governments adopted to communicate over the social media.

The major contribution of this study was to propose a framework that included five major predictors of e-government communication success and they are: transparency, participation, collaboration, comfort, and posted topic. The authors also proposed a set of measures and metrics to estimate each factor and conclude to an index for each factor and related to Facebook tools and applications.

These measures and metrics may be used in the future in classifying governmental official Facebook pages based on transparency, participation, collaboration and comfort. Also, an index for each page can be estimated. Finally, the framework proposed here can be used to conduct a comparative empirical study that compare governmental Facebook pages, and also measure an absolute index. Posted topics can be used to uncover what are the topics that attract stakeholders to encourage governments to focus on them.

Researchers are encouraged to apply this method and empirically test our propositions on e-government websites founded on social media. Also, future research can reflect back on our proposed model (if we need other factors to predict communication success), and our proposed measures and metrics (to validate and improve for other researchers.)

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