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Original Research

E-Government 2.0: Model of Users, Services, and Communication Styles: Focusing on Developing Countries

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Abstract

The public sector should be equipped with new communication technologies such as social media to improve the quality of services. Social media as a new channel of government services leads to the emergence of E-government 2.0 and the realization of E-democracy. Meanwhile, identifying the beneficiaries and users of the above-mentioned technology, as well as the variety of services which can be provided is highly significant. The present study aimed to explain the concept of E-government 2.0 and identify users and a variety of services that can be provided on social media in developing countries by focusing on information and communication technology offices. Therefore, the mixed research method was used to achieve the research objective. In the qualitative phase, library surveys and semi-structured interviews were used while and in the quantitative phase, the researcher-made questionnaire was used as a data collection tool. The results indicated that E-government 2.0 users are divided into two general groups of internal and external users while E-government 2.0 services are divided into five general categories including information services, financial-operational services, crisis management services, data services, and customized services. Conducting such a study was considered significant since E-government 2.0 literature paid less attention to the diversity of services and types of users. Using the results obtained from the study, it can be expected that managers and government sectors can plan and decide how to provide services to different groups of users. The result is the increased quality of services and the realization of e-democracy.

Keywords: E-government 2.0, Users, Services, communication style, social media

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Introduction

Changes in the field of information technology and the growing willingness of different individuals and groups to use new technologies have led governments towards taking advantage of new technologies. In fact, the public sector and government organizations should highly consider the use of the above-mentioned technology to provide more appropriate services and easier access for citizens. Today most of the developed countries attempt to take advantage of social media. For example, they used static email and websites for the first time about the year 2002 to conduct two-way IT-based interactions (Mergel, 2013). In fact, using social media in government is a technological innovation to involve citizens with different activities aimed at promoting democracy (Merger, 2013; Criado, Sandoval-Almazan, & Gil-Garcia, 2013). Thus, it will be able to change the perspective of the public sector and the existing bureaucracy. As a result, a new form of public sector service is formed called as E-government 2.0 that means providing government services on social media (Mergel, 2012; Mio, 2009; Chun, Shulman, Sandoval & Hovy,2010; Dadashzadeh, 2010) and can include various target groups and services depending on the area of service. One of the areas of public and private services provided by governments is the information and communication technology offices, known as government counters. Such offices present a variety of services that create a huge evolution in service if being equipped with E-government 2.0 services. Accordingly, providing government services based on social media or E-government 2.0 cannot be easily feasible. The lack of accurate identification of services and target groups is one of the important obstacles to its realization. Thus, the present study aimed to identify the target groups and the range of services which can be provided through social media by information technology offices to help governments with planning and deciding how to implement E-government 2.0 technology and its areas.

As a result, E-democracy can be realized on a large scale. Thus, the present study aims to answer the following questions:

- What groups use E-government 2.0 services to realize democracy?
- What services can be provided by E-government 2.0 to realize democracy?

In the following, the theoretical foundations, background, and theoretical framework of the study are reviewed. In addition, the data are reviewed and the results are presented by introducing the research method, as well as data collection and data analysis.

Theoretical foundations and research background

Web 2.0 as the second generation of the Web was introduced in 2004 by Tim O'Reilly as a readable and writable web. O'Reilly defined Web 2.0 as a business revolution in the computer industry, being created by the move towards the Internet platform and the efforts to understand the rules of success on this new platform (Choudhury, 2014). Web 2.0 provides everyone with the possibility of participating and collaborating so that users can read the information they need and also add new information to the Web. As a result, we will witness the emergence of a two-way interaction. In Web 2.0 or user-centric, more interaction can be observed between users but with less control compared to Web 1.0.

One of the consequences of the emergence of Web 2.0 is social media applications. No comprehensive definition exists on social media in the public sector; In general, social media can be defined as a group of technologies which help government organizations better interact with citizens and other organizations through Web2 (Criado, Sandoval-Almazan, & Gil-Garcia, 2013). Social media refers to a set of online tools for establishing social interactions (Bertot,, Jaeger, & Hansen, 2012). In fact, it is an environment which allows its users to share a variety of media such as text, audio, image, video, etc. based on the Internet. One of the significant points is that social media has enabled interactions among the users who are geographically far from each other so that they can interact, generate valuable information resources, and can share their personal opinions and ideas on the Internet (Bertot, et al., 2012, Pollach,2006). Thus, the significance of the above-mentioned technology is increasing every day. Thus, people from around the world can communicate with each other quickly and easily. Indeed, the emergence of social networks and virtual communities provides an opportunity for people to learn from each other and share their experiences (Elia, Margherita, & Taurino, 2009). The main features of social media are (Zheng & Zheng 2014):

- Participation: Social media encourages participation and feedback from everyone involved in a relationship.

- Openness: Most of the social media services provide the possibility of receiving feedback. In fact, social media provides a platform for voting, commenting, and sharing content for using citizens' information and knowledge.

- Conversation: Social media, unlike traditional media that acted as broadcast, provides two-way interactions.

- Society: Social media provides a platform for creating different associations and societies so that people can comment on their favorite topics.

- Connectedness: Social media expands its relationships using different links and allows various media to be combined as a whole.

Using social media due to its novelty can create unique value for citizens and other groups using government services. Indeed, the necessary environmental conditions should be provided for using social media and creating value. On the other hand, social media is regarded as a channel to increase government transparency and accountability, citizen trust, citizen interaction, and government efficiency (Moore, 1995). Thus, there are numerous reasons for the need to social media in the public sector. In the meantime, communication has been mentioned as the most critical factor of the need to social media. Social media enables governments to provide faster access to knowledge, resources, information, improve employee and customer connections and collaboration, and increase intra-organizational and extra-organizational relationships by providing the possibility of search for users (Chun, et al., 2010; Chun & Luna-Reyes,2012; Yi, Oh, & Kim, 2013). Thus, the advantages and disadvantages of social media should be used to improve government services as much as possible, resulting in the realization of E-government 2.0. E-Government 2.0 means using Web 2.0 technologies, especially social media to socialize government services, processes, and data (Chun, et al., 2010). In

addition, it means facilitating two-way interactions between government and its citizens. Furthermore, another study defined E-government 2.0 as the use of information technology fort socializing and making government services, processes, and data useful. Further, E-government 2.0 means using social media technologies and tools for the management of organizational processes. Accordingly, it can be stated that E-government 2.0 is a phenomenon which emerges as a result of using the features of Web 2.0, especially social media applications for providing services to citizens and other groups of customers.

Most of the studies on social media application in the public sector addressed the effects of using this technology while making the least reference to the diversity of users or the services which can be provided. In fact, most studies implicitly introduced users and services of E-government 2.0 without focusing on a specific area. Accordingly, the factors which can make the present study unique are the introduction of E-government 2.0 users and services by focusing on information and communication technology offices as government counters in developing countries, as well as the introduction of communication styles. As an example, Linder (2012) changed the status of E-services through social media and introduced a new classification of providing government services to citizens. Based on the results of the study, the approaches of interaction between citizens and government have changed because of the presence of social media so that the government's attitude towards citizens as a partner changes. Based on this study, three specific types of cooperation between government and citizens through social media were raised. This classification included sourcing citizen, government as a platform, and personal government. In fact, this study mentioned citizens as the main users of E-government 2.0 services. In another study by Nam (2012), sourcing citizen was introduced as a new model for providing E-government services. Based on the results obtained from this study, sourcing citizen can be regarded as a kind of the realization of E-government 2.0 through which citizens can present ideas, policies, solutions and create information and data social media. In this study, citizens were implicitly mentioned as the main users of E-government 2.0. In a study by Heaselgrave and Simmons (2016), researchers evaluated the reasons for the limited interaction between the government and Australian citizens through social media. In fact, the researchers used the in-depth interview method to evaluate which group of social media can facilitate the interactions between government and citizens. This study emphasized the significance of citizens as the main users of social media. Another study in the United Kingdom in 2015 analyzed the role of data obtained from social media to provide better customer services. The results of the above-mentioned study indicated that the data obtained through the use of social media by citizens are a highly valuable resource for governments and analyzing this data can create a new form of knowledge. In addition, communication and counseling services to citizens were introduced as the services which can be provided by E-government 2.0 (Moss, et al., 2015). A study in South Korea by Khan, swar and lee (2014) evaluated the risks and benefits of using social media for citizens and even governments. The results revealed that there are risks such as social risks, time risk, psychological risk, and security risk in this regard; In addition, the results showed that citizens are the main users of social media in the public sector and we can see faster communication, and provision of interactive services, and the development of access to information. Another study evaluated the use of social media by the government to solve critical situations. In the above-mentioned study, researchers studied social media data exchanged between government and citizens in the United States and concluded that government agencies

could use the obtained information as a resource to improve services and communications for their customers. In fact, citizens as the users of public services provided by social media can take advantage of the crisis management services provided in this way and governments can use the obtained data to solve and control critical situations such as traffic, weather events, and even conditions such as earthquakes and floods(Kavanaugh, et al., 2012). Based on previous studies, most of the studies conducted in the field of E-government 2.0 have focused on the consequences or the effects which can be expected from social media on the control of critical situations. Previous studies paid no attention to the variety of services which can be provided or even different users of this new style of services, as well as the variety of communication styles, while they have been emphasized in the present study and can make the present study unique.

Method

The methodology of the present study was mixed. Theme analysis method and MXQDA 20 software were used in the qualitative part while factor analysis and Smart PLS 3 software were used in the quantitative part. Due to the applicability of the results in the present study, it was considered as a type of applied research in the field of government services. In addition, it was regarded as exploratory research in terms of nature developing the theoretical foundations of E-government 2.0. In addition, it was considered as descriptive or non-experimental research, in terms of data collection method. Due to the wide scope of government services, the score of this study focused on information and communication technology offices. In the qualitative part, the statistical population included the academic and organizational experts in the field of information technology, especially E-government. In addition, qualitative sampling methods such as purposeful and convenience sampling were used. Further, a sample of 15 individuals was considered at this step. In the quantitative part, the population included the experts and academics experts in the field of information technology, especially E-government in order to perform confirmatory factor analysis.

Due to the quantitative method selected at this step and the scope of population, the purposeful and convenience methods were used. It should be noted that 287 questionnaires were distributed as electronic and in person and 250 questionnaires were collected.

Findings

Qualitative part

In order to identify the users and services of E-government 2.0, the theme analysis method was used according to the method introduced by Brune and Clark (2006). It should be noted that none of the identified indicators were mentioned precisely with the terms introduced in the present study, but such indicators were discovered by examining the tacit and latent knowledge in documents and articles. Theme analysis according to the six steps of Brown and Clark is as follows: In the data familiarity step, the available resources were first evaluated several times aimed at complete mastery of the content. Then, the latent data patterns which were attractive to the researcher in the initial coding stage, were identified, including 21 initial codes for users and 56 initial codes for services.

After that, the detected codes were searched and a total of 16 selective codes for users and 31 selective codes for services were found after removing the incomplete or duplicate codes. Then, the basic codes which were identified in the previous step were classified and sorted in the form of four organizing codes for users and nine organizing codes for services. Finally, the themes were reviewed again to define the pervasive themes. As a result, two pervasive themes for users and four pervasive codes for services were identified, each one indicating an aspect of the studied data. tables 1 and table 2 show the basic, organized, and pervasive themes identified in relation to E-government 2.0 users and services.

Table 1. Users of e-government2.0

Pervasive themes	Organized themes	Basic themes
External Users	Citizen	Citizen to Citizen (C2C)
		Citizen to Government (C2G)
		Citizen to Business (C2B)
		Citizen to Employer (C2E)
	Business	Business to Government (B2G)
		Business to Business (B2B)
		Business to Citizen (B2C)
		Business to Employer (B2E)
Internal users	Government	Government to Government (G2G)
		Government to Citizen (G2C)
		Government to Business (G2B)
		Government to Employer (G2E)
	Employer	Employer to Employer(E2E)
		Employer to Citizen (E2C)
		Employer to Government (E2G)
		Employer to Business(E2B)

Table 2. Services of e-government2.0

Pervasive themes	Organized themes	Basic themes
Informational services	Data based	Provide personal information and data
		Provide information about the product
		Provide statistics and information related to the service
	Knowledge based	Holding training courses
		Share Content
		knowledge creation
Communicational services	Interaction based	Get feedback
		Create space for interaction
		Holding question and answer sessions
	Participation based	Provide electronic products
		Co-production of content

Pervasive themes	Organized themes	Basic themes
		Conducting surveys and voting
		Assessment of Products and Services
Custom services	Order based	Receive an order from the customer
		Provide customized services and products
		Provide service dashboard
	Consultation based	Presentation of the Governmental Advisory
		Tips on how to get services
		Handle complaints and announcements
Operational-financial services	Crisis based	Identify problems and crises
		Predicting the upcoming government crises
		Awareness of citizens in crisis situations
		Get feedback to resolve crises
	Cost based	Payment of service fee
		Providing banking services
		Providing investment services
		Buy electronic tickets
	Operation based	Issuance, renewal or revocation of licenses
		Confirmation of quality control and documentation
		Accepting service change requests
		Registration of training learners and exams

Based on the results obtained from the theme analysis, the network of user themes and E-government services 2.0 is depicted in figure 1 and figure 2.

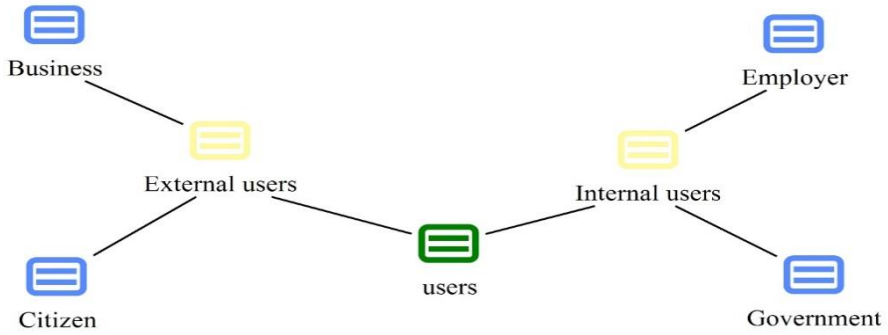

Figure 1. Users of e-government 2.0

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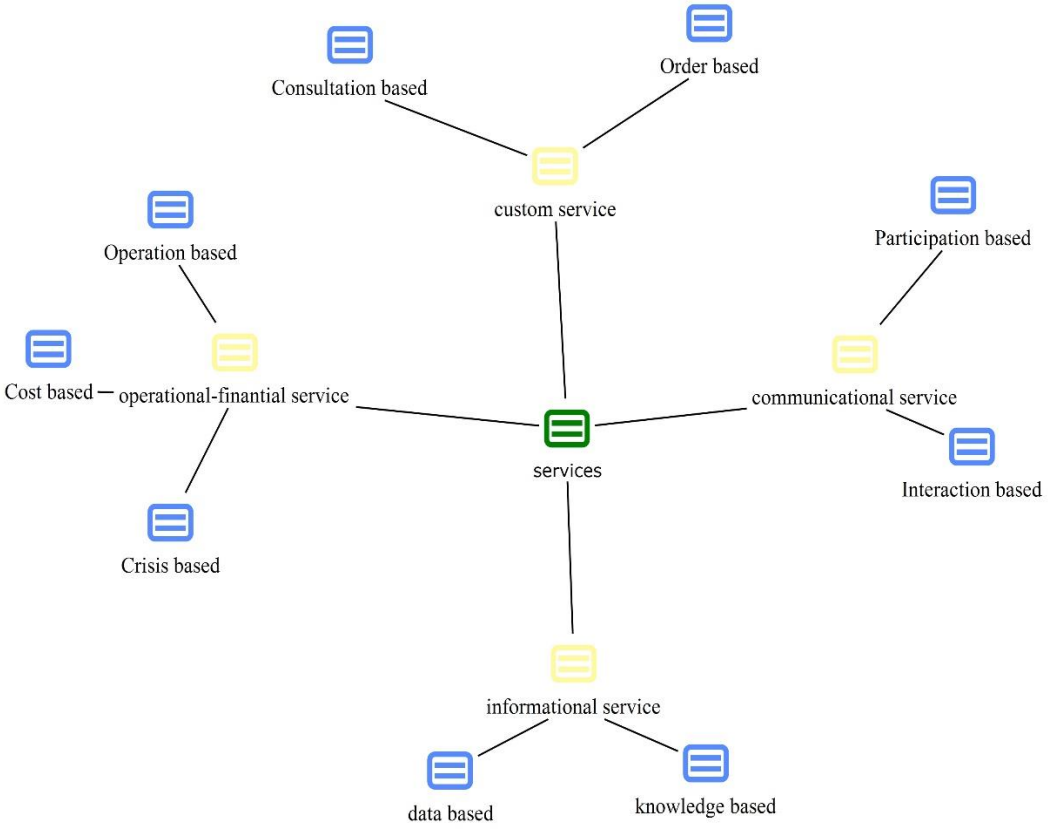

Figure 2. services of e-government 2.0

Quantitative part

In order to examine the significance of path coefficients, the open sampling method was used in case of 5000 samples, as recommended in the partial least squares method. The results obtained from the first to second order structural model in Table 3 and the second to third order structural model in Table 4 indicate that the model has good validity. It should be noted that if the significance coefficient T is above 1.96, it shows a significant relationship at the confidence level ($P < 0.05$). If the T coefficient is more than 2.58, it indicates a significant relationship at the confidence level ($P < 0.01$) and if the T coefficient is more than 3.23, it indicates a significant relationship at the confidence level ($P < 0.001$). The significance of path coefficients reveals only the correctness of the relations and fails to show the intensity of the relationship between the constructs. Considering the path coefficients indicated in as in table 3 and table 4, which are higher than 2.85, it can be stated that the relations are 99% correct at the confidence level.

Table 3. Structural model of the first to second order path

First to the second path		Factor load	T value	Determination coefficient
First order	Second order			
Users of e-government 2.0	Internal users	0.939	107.176	0.881
	External users	0.936	97.415	0.876
Services of e-government 2.0	Informational services	0.877	48.96	0.769
	Communicational services	0.855	47.18	0.730
	Custom services	0.651	12.98	0.424
	Operational-financial services	0.874	48.40	0.764

Table 4. Structural model of the second to third order path

First to the second path		Factor load	T value	Determination coefficient
Second order	Third order			
Internal users	Government	0.865	44.889	0.748
	Employer	0.856	48.059	0.733
External users	Citizen	0.881	50.158	0.775
	Business	0.809	26.200	0.655
Informational services	Data based	0.955	159.71	0.911
	Knowledge based	0.839	38.94	0.704
Communicational services	Interaction based	0.940	127.62	0.884
	Participation based	0.972	53.35	0.761
Custom services	Order based	0.958	160.82	0.918
	Consultation based	0.947	108.52	0.897
Operational-financial services	Crisis based	0.908	55.06	0.824
	Cost based	0.938	94.04	0.880
	Operation based	0.920	67.79	0.847

In addition, the coefficient of determination shows the effect of the exogenous variable on the endogenous variable. This criterion can reduce errors in the measurement model and increase the variance between construct and indices, being controlled only in PLS. Chin (1998) introduces three values of 0.19, 0.33 and 0.67 as weak, average, and strong values for the intensity of the relation. The value of the coefficient of determination obtained from Tables 3 and 4 shows that the exogenous variables have a strong effect on endogenous variables. As a result, the final research model can be regarded based on Fig. 3. In this figure, the types of users, services, and communication styles expected from the provision of E-government 2.0 services can be observed.

Conclusion

Evaluating the concept of E-government 2.0 and providing a model of related users and services can be useful for government planners and managers to plan for the use of this technology and also identify target groups and scope of services provided by social media technology. Accordingly, the present study provided the model of E-government 2.0 users and services. This model attempted to evaluate the scope of services which can be provided, the target groups in using E-government 2.0 to achieve E-democracy, and the increased quality of services, especially in developing countries. As a result, the public sector can focus on the services which can be provided to target groups and plan accordingly to prevent wasting extra time and money and to easily manage the situations in times of crises. In this study, first the main concepts and the significance providing services in the context of social media were evaluated. Then, the special place of research and its necessity were identified by reviewing the studies related to the research objective. In addition, the present study attempted to evaluate the population using a mixed research method using semi-structured interview data collection tools. In the qualitative and questionnaire parts, a broader view and deeper understanding of various types of users, communication styles and services can be provided through the phenomenon of E-government 2.0 with a focus on information and communication offices in developing countries. The results obtained from the study indicated that E-government 2.0 users can be divided into two general groups of internal users and external users, each one including different subsections and communication styles as follows: 1. Internal users, including governments with G2B communication styles (communication of governments and providing services to businesses), G2C (providing government services to citizens on social media), G2G (providing services and interactions by central governments for local governments or even establishing political communications with other countries) and G2E (providing services by governments for government agencies and their employees) and government agencies with communication styles such as E2E (for communicating between employees and managers in different government agencies or organizations together), and E2G (providing services by organizations to governments). 2. External users including citizens with two communication styles of C2C (citizens' communication with each other under a platform provided by E-government 2.0) and C2G (providing services and transferring information by citizens to the government and changing the citizen from consumer to producer or partner of governments) and businesses with B2G communication styles (providing services and communicating by businesses to governments and acting as a partner of governments), and B2B (providing interaction and services by different businesses in the context provided by E-government 2.0 with each other). Meanwhile, the results obtained from this dimension are in line with the studies conducted by Linder (2012), Chun and Luna- Reyes (2012) and Luna (2018) in a number of variables. In addition, the results of the study at the section of identifying the services which can be provided by E-government 2.0 showed that the services can be divided into four main categories, each one including some sub-sections which are: Information services include the data-based factors and merely the services related to the transfer of information and data are provided, as well as the knowledge-based factors, including the services which lead to the creation and development of knowledge. Communication services, including the interaction-based factors, i.e. the services on which asynchronous two-way communication and feedback are based, as well as cooperation-based factors as the services in which participation in government policy-making and decision-making are

based on feedback. Customized services which include order-based factors as the services which aim at the specific needs of customers and consulting-based factors as the services during which consulting and questions and answers are performed to increase the quality of service. Operational-financial services, including crisis management factors, i.e. the services which are provided to identify, control, prevent or solve crises, cost-based factors as the services through which economic activity is performed. In addition, operations-based factors include the services which provide specific services to government agencies to serve different groups.

In terms of services, this study is consistent with the studies conducted by Luna (2018), and Guo, et al. (2016). The main result of the present study is providing the possibility of planning and facilitating the decision-making process to use social media in providing government services so that it is possible to prevent wasting time and money and provide opportunities for managing the forthcoming crises by identifying the target groups and services. The proposed model covers different dimensions and provides appropriate indicators for determining the gap from the desired situation so that appropriate measures can be taken for moving towards the realization of E-democracy. Thus, it can be stated that if governments and government sectors want to be in line with advances in information technology and services, especially not in person, the use of social media technology should be a priority that can be facilitated through the model of E-government 2.0 users and services.

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