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### **Paper:**

Alryalat, M., Rana, N., Sahu, G., Dwivedi, Y. & Tajvidi, M. (2017). Use of Social Media in Citizen-Centric Electronic Government Services. *International Journal of Electronic Government Research*, 13(3), 55-79.

<http://dx.doi.org/10.4018/IJEGR.2017070104>

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# Use of Social Media in Citizen-Centric Electronic Government Services: A Literature Analysis

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## ABSTRACT

*The evolution of social media platforms provides governments across the world with the potential to achieve objectives of improved communication and service provisions to citizens. A number of research studies have been published on social media and e-government in last few years. However, there has not been any literature review performed on citizen-centric social media and e-government research. Therefore, this study undertakes a literature review on such articles on social media and citizen-centric e-government services. This research uses 139 articles to perform the intended literature review. The keywords analysis of these articles indicates that Web 2.0, participation and open government/open data were some of the frequently used keywords in addition to the two major themes of e-government and social media on which all the articles were searched for. The analysis of research methods indicated that majority of the studies were analytical, conceptual, descriptive, or theoretical in nature. The theoretical analysis however indicated that there is a lack of theory-based research in this area. The review of literature indicated that research themes such as electronic participation, engagement, transparency, communication/interaction, trust, security and collaboration are some of the most frequently used categories under this area of research. A research framework has also been proposed from the key themes emerging from the review.*

**Keywords:** Electronic government, e-government, social media, literature review, engagement, participation, framework

## INTRODUCTION

Governments across the world are responsible to their citizens and society at large, as they are accountable for preserving the interests of the general public (Bonson et al., 2015). Driven by rising citizen prospects and the need for government innovation, social media has become a key component of electronic government (hereafter, e-government) in a very short period of time (Bertot et al., 2012). Given the substantial evidence to suggest a steady rise in the predominance of social media among citizens of all walks of life, government organisations

are now increasingly experimenting with social technology to communicate with their citizens (Chui et al., 2012; Goncalves et al., 2015). Such efforts and others have given rise to great anticipations in terms of reaching out to new audiences, building a relationship with constituents and other stakeholders, creating new patterns of communication, refining openness, transparency and participatory democracy, crowdsourcing solutions and innovation and above all lowering government costs (Kavanaugh et al., 2012; Picazo-Vela et al., 2012).

A number of studies (e.g. Cotterill and King, 2007; Dwivedi et al., 2017a; Kaigo and Okura, 2016; Mossberger et al., 2013) have analysed the role of social media in fostering the transparency of governments and strengthening the interaction between citizens, other relevant stakeholders and public administrations in the last decade. For example, Cotterill and King (2007) explored how UK local authorities and their partners work together in sub-regional e-government partnerships. Through a case study, the authors also found that social networks can have some impact on the adoption and implementation of e-government in the region. Similarly, Kaigo and Okura (2016) explored how various functions of government promote the civil society Facebook page engagement and how the dysfunctions in the government operations unintentionally discourage engagement.

Even though the research is about the role of social media in e-government is about a decade old, the comprehensive exploration of literature on the role of social media in e-government indicates that there are only a few studies (e.g. Alarabiat et al., 2016; Bertot et al., 2012; Boudjelida et al., 2016; Dwivedi et al., 2017a; Medaglia and Zheng, 2017) that have undertaken the literature review in this area. For example, Bertot et al. (2012) used an iterative strategy that involved conducting a literature review, content analysis and web-site analysis on multiple perspectives on government transparency efforts, the role of ICTs and social media in these efforts and the ability of the e-government initiatives to promote collaborative transparency. However, the focus of this paper is only restricted to fundamental initiatives, potential

influences and future challenges for collaborative e-government as a means of transparency. Moreover, Alarabiat et al. (2016) and Boudjelida et al. (2016) reviewed the literature related to citizens' electronic participation (or e-participation) in government activities. In other words, these literature reviews are also limited to the exploration of citizen's e-participation in government initiatives and only fractionally analyse the related literature where social media is preferably used over other online tools (e.g. online forums, governments' official websites and other online technologies). Drawing from an extensive review of government social media literature, Medaglia and Zheng (2017) mapped government social media research into six focus categories of context, user characteristics, user behavior, platform properties management and effects. Based on their analysis, they proposed a framework to establish relationships between the six focus categories. Similarly, However, no research has yet been undertaken to comprehensively analyse the overall literature on social media in citizen centric e-government perspective. Therefore, it is timely to perform the literature review for such research articles that have used all these key terminologies together. Considering this, the remaining parts of the study are structured as follows: The next section presents the literature search and analysis approach. The following section analyses a brief account of analysis of keywords, theories, models or frameworks and research methods from the existing studies on social media and e-government. The next section presents the publications as per years and outlets. The subsequent section presents the frequently occurring limitations on the existing research on e-government and social media. The following section analyses the available 139 studies as per their key research themes or categories and propose a framework based on emerging categories. This is followed by discussions and conclusion of the research toward the end. We acknowledge that we have already presented a conference paper (see Dwivedi et al., 2017a) on this topic in ICEGOV held in March 2017 in India but we have updated this paper with 24 new research articles published in 2017 on the theme of e-government and social media and have also

updated the existing paper with some more analysis and updates of the existing content including tables and have also added some more new analyses. For example, we have added a completely new section on publications according to year and outlets, limitations of existing research and development of a framework emerging from the available themes on e-government and social media research.

### **LITERATURE SEARCH AND ANALYSIS APPROACH**

We carefully reviewed a total of 139 research articles to undertake a comprehensive review of literature on the use of social media in e-government with regard to citizens. In order to reach on these selected articles, we performed a search in the Scopus database using the regularly appearing keywords such as ‘social media’ and ‘electronic government’ with their various other synonyms and abbreviations such as “social network”, “Facebook”, “Twitter”, “Instagram”, “YouTube”, “LinkedIn”, and “Web 2.0” (for social media) and “digital government”, “e-government”, and “e-governance” (for electronic government) along with “citizen” to understand how citizens associate themselves with e-government systems using social media. All these broader keywords were made to interconnect to each other using logical ‘AND’ operator. In order to make sure that we are not missing any relevant literature, we searched these keywords in the titles, abstracts and keywords sections in the articles not only in Scopus but also through Google Scholar.

The initial search fetched a total of 273 articles, which further scrutinised on the individual basis in order for them to be downloaded. We used Google Scholar to download all these articles. But, we could get hold of only 139 articles from the various sources. The other 134 articles could not be downloaded both because majority of them were either conference papers or book chapters and some of them due to the lack of their access rights. A list of successfully downloaded 139 articles made the foundation for the literature review in this paper. Out of these 139 articles, 72 were conference papers, 61 of them were articles from journals and only

six of them were found to be book chapters. In addition to synthesising these articles for literature review by exploring key theme and components and limitations, we also extracted some very basic information from them including keywords, different theories, models or frameworks used in such research and the analysis of their research methods analysis.

### **KEYWORDS, THEORIES/MODELS/Frameworks & RESEARCH METHODS**

In order to evaluate the most frequently used keywords, all the keywords from 139 studies were gathered. The keywords with the similar meaning were then merged together in one category to count the total number of occurrence of such similar words and they were mentioned explicitly in the table. Table 1 lists 13 more frequently used keywords along with their number of occurrences, which were used five or more times. ‘Electronic government’ in its different forms, which are either similar in meaning or abbreviations (see Table 1), was found as the most regularly occurring keywords, with almost research studies used it in some or the other forms. This could be due to the fact that e-government is a key concept around the current literature analysis. Social media or social network in general was found as the next most frequently used keyword with 71 articles used them in one or the other form whereas another 38 articles used the similar terminology called ‘Web 2.0’ or the specific terminology such as Twitter (N=7). This clearly indicates that majority of studies are using social media in one or the other form. ‘Participation’ (N=30) is the fourth most used keyword followed by ‘open government’ or ‘open data’ as 22 articles used this keyword. This was closely followed by other keywords such as citizen, civic or public engagement (N=13), information and communication technology or information technology (N=12), transparency (N=12), democracy or e-democracy (9) and engagement (N=10). Moreover, trust or trust in government and Internet were represented by six studies each whereas the other keyword collaboration was represented by five studies. We have not included some other keywords (N=17) such as communication, blogs, cloud computing, information management, municipalities, public

administration, social inclusion to name a few, which hold significance in e-government and social media research and have occurred four and less times. In addition, a large body of keywords (N=278) appear once and these aspects are worthy of further exploration.

Table 1. Most Frequently Used Keywords

Keyword(s)	#	Example Sources
Electronic Government   E-Government   E-Governance   Digital Government   Government 2.0   Smart Government   M-Government   E-Government Service	129	Alexopoulos et al. (2014), Bonson et al. (2012), Cappellari et al. (2017), Dwivedi et al. (2017a), Khtira et al. (2017), Tursunbayeva et al. (2017)
Social Media   Social Network	71	Bundin and Martynov (2016), Chatfield and Reddick (2015), Cho et al. (2012), Ganim and Kamruzzaman (2014), Mossberger et al. (2013)
Web 2.0	38	Alexopoulos et al. (2014), Pardo et al. (2011), Picazo-Vela et al. (2012), Pop et al. (2014)
Participation   (Electronic   Online   Citizen   Political) Participation	30	Chugunov et al. (2017), Dwivedi et al. (2017a), Porwol et al. (2015), Rojas et al. (2011), Spiliotopoulou et al. (2014)
Open Government   Open Data	22	Alexopoulos et al. (2014), Kacem et al. (2016), Srimuang et al. (2017)
(Citizen   Civic   Public) Engagement	13	Dixon (2010), Elvira et al. (2014), Levy et al. (2013)
Information and Communication Technology   Information Technology   ICT	12	Liu and Yuan (2015), Porumbescu (2016), Vicente and Novo (2014)
Transparency	12	Al-Jamal and Abu-Shanab (2016), Porumbescu (2017), Wigand (2011)
Democracy   E-Democracy	9	Dixon (2010), Ganim and Kamruzzaman (2014)
Twitter	7	Choudrie et al. (2017), Reddick et al. (2015)
Trust   Trust in Government	6	Bargh et al. (2014), Chatfield et al. (2015)
Internet	6	Liden and Larsson (2016), Missingham (2011)
Collaboration	5	Al-Jamal and Abu-Shanab (2016), Pardo et al. (2011)

[Legend: #: Frequencies of Keyword(s)]

Table 2 presents an account of the theories, models or frameworks used by the research on e-government and social media. The review of literature indicates that only a very few theories, models, or frameworks have been used across the existing studies on the topic of e-government and social media. For example, three studies used DeLone and McLean's IS success model (i.e. DeLone and McLean, 2003) to measure e-government systems success in different contexts. Moreover, nine studies used one theory each including e-government/perceived transparency/trust model (Song and Lee, 2015), e-government maturity model (Al-Jamal and Abu-Shanab, 2016), social networks/social identity/social representations theories (Bailey and Ngwenyama, 2011) theory of citizen-centric e-governance (Chatfield and Reddick, 2015), UTAUT (Al-Kaabi et al., 2017), framework for government social media research (Medaglia and Zheng, 2017), social media text analytics framework (Reddick et al., 2017), open

government data assessment model and expectation confirmation theory (Valaei and Baroto, 2017).

Table 2. Theory/Model/Framework Analysis

Theory/Model/Framework	#	Source(s)
DeLone and McLean's IS Success Model	3	Kim and Sun (2012); Scott et al. (2011), Valaei and Baroto (2017)
E-Government/Perceived Transparency/Trust Model	1	Song and Lee (2015)
E-Government Maturity Model	1	Al-Jamal and Abu-Shanab (2016)
Social Networks/Social Identity/Social Representations Theories	1	Bailey and Ngwenyama (2011)
Theory of Citizen-Centric E-Governance	1	Chatfield and Reddick (2015)
Unified Theory of Acceptance and Use of Technology (UTAUT)	1	Al-Kaabi et al. (2017)
Framework for Government Social Media Research	1	Medaglia and Zheng (2017)
Social Media Text Analytics Framework	1	Reddick et al. (2017)
Open government data assessment model	1	Srimuang et al. (2017)
Expectation Confirmation Theory	1	Valaei and Baroto (2017)

In addition, some other studies (e.g. Chattfield et al., 2015; Park et al., 2014; Porumbescu, 2016) developed new models or frameworks considering the relevant constructs from various existing models. For example, Chattfield et al. (2015) developed a new model of citizen-centric e-governance in cross-border security cooperation by further integrating the key findings from the social-network analysis of tweet data and insights from the review of literature. Similarly, Park et al. (2014) proposed a comprehensive framework to examine the influence of perceived value on citizen satisfaction with the moderating impact of media synchronicity and patronage intention toward government social media services. Porumbescu (2016) developed a research model to examine how citizen's use of e-government websites and public sector social media accounts relates to their satisfaction and perceptions of public sector trustworthiness. Likewise, Medaglia and Zheng (2017) developed a government social media research framework through the constructs emerging in the literature review undertaken by them.

Table 3 presents a detailed account of various research methods used by studies on e-government and social media. The findings suggest that although a total of seven different research methods were recorded from our data analysis activities, the majority of studies within our results employed analytical/conceptual/descriptive/theoretical methods (N=69) (which



includes various related methods such as viewpoints, commentary, observations, design, conceptualisation etc.), survey (N=16), content analysis (N=15), case study (N=7), interviews (N=7), literature review (N=4) and experimental studies (N=2) (see Table 3). Prior studies have argued and demonstrated that more studies published in early stages of emergence are likely to be analytical/descriptive/conceptual/theoretical in nature (Avison et al., 2008; Dwivedi et al., 2009). Out of 139 studies six studies adopted mixed methods where interviews were conducted along with case study (i.e., in Cotterill and King, 2007) and experimental study (i.e., in Kaigo and Okura, 2016) in one instance each, survey questionnaire was used along the interview in another context (i.e., in Alexopolous et al., 2014), content analysis was performed along the case study (i.e., in Mossberger et al., 2013) and literature review (i.e., in Bertot et al., 2012) in one occurrence each and secondary data analysis was performed along with interviews in one study (i.e. Bergquist et al., 2017).

Table 3. Research Methods Employed (Categories adapted from: Dwivedi et al., 2009)

Research Method(s)	N	Example Source(s)
Analytical/Conceptual/Descriptive/Theoretical	69	Abdallah and Khalil (2009), Alarabiat and Soares (2016), Andersen and Medaglia (2012), Ayachi et al. (2015), Bargh et al. (2014), Bodker and Zander (2015), Buccafurri et al. (2012), Ceron and Negri (2016), Chesñevar et al. (2012), Elbadawi (2012), Ganapati (2011), Harrison et al. (2012), Harsh and Ichalkaranje (2015), Hit and Yu (2010), Hui and Hayllar (2010), Jaeger et al. (2012), Jesse (2016), Kacem et al. (2016), Kim and Kleinschmit (2012), Klischewaki (2014), kokkinakos et al. (2012), Kovac and Decman (2009), Lee et al. (2013), Levy et al. (2013), Liden and larsson (2016), Linders (2012), Liu and Yuan (2015), Loukis and Charalabidis (2015), Machova and Lnenicka (2015), Mambrey (2008), Masiero (2013), Mejabi and Fabgule (2014), Mikhail and Aleksei (2016), Missingham (2011), Muresan (2010), Nam (2012), Obi (2008), Onwudebelu et al. (2012), Ostergaard and Hvass (2008), Ouerghi (2014), Papatthanasiou et al. (2009), Pardo et al. (2011), Picazo-Vela et al. (2011), Picazo-Vela et al. (2012), Pop et al. (2014), Pop et al. (2015), Porwol et al. (2015), Prandini and Ramilli (2011), Rojas et al. (2011), Rong and Xu (2015), Sabucedo et al. (2011), Sáez-Martín et al. (2014), Sandoval-Almazan and Gil-Garcia (2012), Scott et al. (2011), Slaviero et al. (2010), Spiliotopoulou et al. (2014), Sun et al. (2015), Szkuta et al. (2014), Traunmuller (2010), Tsui et al. (2010a), Tsui et al. (2010b), Van Dijk & Winters-Van Beek (2009), Vicente and Novo (2014), Wan and Paris (2014), Warner (2011), Wigand (2011), Yang (2012), Yaseen et al. (2015), Zimmerman et al. (2014)
Survey	22	AlAnazi and Chatfield (2012), Al-Jamal and Abu-Shanab (2016), Al-Kaabi et al. (2017), Elvira et al. (2014), Ganim and Kamruzzaman (2014), Gomez (2017), Halpern (2012), Joshi and Rosenfield (2013), Kavanaugh et al. (2012), Khasawneh and

		Tarawneh (2016), Kim and sun (2012), Medaglia and Zhu (2017), Merino Medina and Muñoz Cañavate (2014), Oktem et al. (2014), Park et al. (2014), Porumbescu (2016), Porumbescu (2017), Reddick and Anthopoulos (2014), Reddick et al. (2015), Song and Lee (2015), Teran and Mancera (2017), Valaei and Baroto (2017)
Content Analysis	18	AlAnazi and Chatfield (2012), Bonson et al. (2012), Bonson et al. (2015), Brainard and McNutt (2010), Bundin and Martynov (2016), Cappellari et al. (2017), Chatfield and Reddick (2015), Chatfield et al. (2015), Chhabra et al. (2013), Cho et al. (2012), Cumbie and Kar (2014), Gao and Lee (2017), Grigoryeva et al. (2016), Hepburn (2014), Loukis et al. (2017), Mawela (2017), Picazo-Vela et al. (2017), Steinfeld and Lev-On (2015)
Case Study	12	Boughzala et al. (2015), Chatfield and Brajawidagda (2014), Choudrie et al. (2017), Cotterill and King (2007), Fink (2011), Hwang and Mohammad (2008), Khtira et al. (2017), Mossberger et al. (2013), Ranchordás (2017), Reddick et al. (2017a), Reddick et al. (2017b), Wandhöfer et al. (2013)
Interviews	9	Alexopoulos et al. (2014), Alzouma (2015), Ashby (2015), Bailey and Ngwenyama (2011), Bergquist et al. (2017), Chugunov et al. (2017), Cotterill and King (2007), Goncalves et al. (2015), Goncalves et al. (2015), Kaigo and Okura (2016), Srimuang et al. (2017)
Literature Reviews	7	Alarabiat et al (2016), Bertot et al. (2012), Boudjelida et al. (2016), Dixon (2010), Dwivedi et al. (2017a), Medaglia and Zheng (2017), Tursunbayeva et al. (2017)
Experimental Analysis	2	Kaigo and Okura (2016), Maciel et al. (2010)

[Legend: N: Count]

## PUBLICATION ACCORDING TO YEAR/OUTLETS

Table 4 presents the research articles published across the years and different outlets on the role of social media in engaging citizens with government. The findings indicate that the trend of research got published over the years from 2007 until now is not very consistent in terms of the number of articles published overall and across different outlets. For example, although the number of articles (N=24) published up until August 2017 is the highest across the years, the other year where the second highest number of articles published was 2014. The years 2012 and 2015 jointly were third highest with 20 articles published in each year. The year 2016 jointly stood with the year 2011 at fourth place. The other years where relatively less articles published in this area of research were 2010 with eight articles, 2013 with seven articles, 2009 and 2008 with four articles each and the year 2007 with least one article. The similar trend was found in terms of the publication of articles in different outlets such as journals, conference proceedings and book chapters. The more number of overall articles published in conferences

than journals also indicates that this field of research has just started growing and maturing up and there is a lot of further scope to publish research on this topic in the coming time.

Table 4. Publications according to year/outlets

Year	JA/CP/BC	Frequency	Percent
2017	JA=13	24	17.3
	CP=11		
2014	JA=11	23	16.5
	CP=12		
	BC=1		
2015	JA=10	20	14.4
	CP=8		
	BC=2		
2012	CP=12	20	14.4
	JA=7		
	BC=1		
2016	JA=8	14	10.1
	CP=6		
2011	JA=5	14	10.1
	CP=9		
2010	JA=4	8	5.8
	CP=4		
2013	JA=3	7	5.0
	CP=4		
2009	JA=1	4	2.9
	CP=1		
	BC=2		
2008	JA=1	4	2.9
	CP=3		
2007	CP=1	1	0.7
Total	JA=61	139	100
	CP=72		
	BC=06		

[Legend: BC: Book Chapter, CP: Conference Proceedings, JA: Journal Articles]

## LIMITATIONS OF RESEARCH ON E-GOVERNMENT & SOCIAL MEDIA

Table 5 presents the limitations from articles on e-government and social media. The findings indicate that a large number of 106 articles did not explicitly acknowledged any limitation. Only 33 articles recognised their limitations, which are briefly presented in Table 5. Most frequently acknowledged limitations by various research studies were related to biased, non-random or non-representative data where studies have either used one of few cities, websites, tools (such as geographical information systems), case studies, keywords or journals to explore various types of data for further analysis. For example, Kim and Sun (2012) gathered data only in China whereas Mawela (2017) collected data only from large metropolitan and municipalities in South Africa. Likewise, Medaglia and Zheng (2017) performed a literature review but considering only top journal outlets. The second largest collection of studies was

related to small sample size where studies have included limited dataset (e.g. Chartfield and Reddick, 2015; Goncalves et al., 2015), limited samples of tweets analysed (e.g. Reddick et al., 2015) or small samples of Facebook post (e.g. Reddick et al., 2017a). Other studies have accepted their limitations (see Table 5) in terms of restricted generalizability (N=7), studies with exploratory findings, cross-sectional nature of data collection and short period of time used for data collection in three studies each. Moreover, few studies have acknowledged only one limitation each such as data gathered only through literature-based search (Hit and Yu, 2010), research only based on qualitative (Mawela, 2017), or quantitative (Reddick and Anthopoulos, 2014), or secondary data analysis (Yaseen et al., 2015) and student sample (Shah and Lim 2011) and so have not been included in Table 5.

Table 5. Limitations of existing research on e-government and social media

Limitation	#	Meaning	Source(s)
Biased or non-random sample or non-representative data	17	Non-random or non-representative data sample or sample based on only one or limited cities, websites, tools, cases, keywords, journals etc.	Brainard and McNutt (2010), Chatfield et al. (2015), Chesnevar et al. (2012), Dwivedi et al. (2017a), Ganapati (2011), Goncalves et al. (2015), Kim and Sun (2012), Mawela (2017), Medaglia and Zheng (2017), Medaglia and Zhu (2017), Park et al. (2014), Picazo-Vela et al. (2012), Porumbescu (2017), Reddick et al. (2017a), Reddick et al. (2017b), Shah and Lim (2011), Szkuta et al. (2014)
Small sample size	7	Limited dataset, sample size	Chatfield and Reddick (2015), Goncalves et al. (2015), Kaigo and Okura (2016), Kim and Kleinschmit (2012), Reddick and Anthopoulos (2014), Reddick et al. (2015), Reddick et al. (2017a)
Single task	7	Difficult to generalise the result	Bennett and Manoharan (2017), Bonson et al. (2017), Medaglia and Zhu (2017), Park et al. (2014), Porumbescu (2017), Reddick et al. (2017a), Song and Lee (2015)
Exploratory findings	3	Findings of the research is preliminary in nature	Bennett and Manoharan (2017), Bodker and Zander (2015), Reddick et al. (2015)
Cross-sectional study	3	One time snapshot data	Bonson et al. (2015), Mawela (2017), Porumbescu (2016)
Short-period of data collection	3	Data collected only in few weeks time	Chesnevar et al. (2012), Reddick et al. (2017b), Saez-Martin et al. (2014)

## LITERATURE ANALYSIS AS PER RESEARCH THEMES OR CATEGORIES

To perform literature analysis, we divided the research on social media and e-government for citizens into larger research themes highlighted by 139 studies undertook such research. In

doing so, we identified some more frequently appearing research themes such as participation (N=35), engagement (N=26), transparency (N=20), interaction or communication (N=13), trust (N=11), collaboration (N=10), democracy (N=6), open data practices or innovation (N=6) crowdsourcing (N=5) and security (N=5) and (see Table 6). The analyses of literature around these broader themes are although made segregated; they tend to be very much correlated and interdependent to each other. In addition, the research themes such as legitimacy (Bergquist et al., 2017; Ranchordas, 2017), adoption (Gao and Lee, 2017; Picazo-Vela et al., 2017) and accountability (Gomez, 2017; Tursunbayeva et al., 2017) have examined twice each. Moreover, there are six more themes including awareness (Cappellari et al., 2017), development (Choudrie et al., 2017), access to information (Gomez, 2017), adoption (Gao and Lee, 2017), organisational learning (Reddick et al., 2017a), decision making (Teran and Mancera, 2017) and continuance intentions (Valaei and Baroto, 2017) are such, which have been analysed only once each but indicate emerging trend in this area of research.

Table 6. Social Media in Relation to Key Research Themes/Categories

Research Theme/Category	N	Meaning/Interpretation	Sources
Electronic/Online Participation	35	Citizens' participation in e-government activities using social media for their empowerment and active role in government decision-making and problem solving	Alarabiat et al. (2016), Alarabiat and Soares (2016), Al-Jamal and Abu-Shanab (2016), Alzouma (2015), Ashby et al. (2015), Bailey and Ngwenyama (2011), Bodker and Zander (2015), Bonson et al. (2012), Boudjelida et al. (2016), Boughzala et al. (2015), Brainard and McNutt (2010), Buccafurri et al. (2012), Bundin and Martynov (2016), Chesnevar et al. (2012), Chugunov et al. (2017), Dwivedi et al. (2017a), Elvira et al. (2014), Ganapati (2011), Gomez (2017), Grigoryeva et al. (2016), Harrison et al. (2012), Hwang and Mohammad (2008), Joshi and Rosenfield (2013), Machova and Lnenicka (2015), Mambrey (2008), Mawela (2017), Muresan (2010), Porwol et al. (2015), Ranchordas (2017), Rojas et al. (2011), Sandoval-Almazan and Gil-Garcia (2012), Slaviero et al. (2010), Tursunbayeva et al. (2017), Vicente and Novo (2014), Wigand (2011)

Engagement	26	The content or information posted by governments on the social media can attract citizens' attention and engage them if the topics are of interest and significance. Such resources can result in citizens' social and political engagement to the government initiatives taken through online channels	Abdallah and Khalil (2009), Al-Kaabi et al. (2017), Ashby et al. (2015), Bennett and Manoharan (2017), Bodker and Zander (2015), Bonson et al. (2015), Bonson et al. (2017), Dwivedi et al. (2017a), Fink (2011), Goncalves et al. (2015), Halpern (2012), Hepburn (2014), Kaigo and Okura (2016), Kim and Kleinschmit (2012), Levy et al. (2013), Liden and Larsson (2016), Liu and Yuan (2015), Mawela (2017), Medaglia and Zheng (2017), Medaglia and Zhu (2017), Mejabi and Fabgule (2014), Missingham (2011), Mossberger et al. (2013), Pardo et al. (2011), Reddick et al. (2017b), Vicente and Novo (2014)
Transparency	20	Improved interaction with government using the social media services is the effective means to enhance citizens' perceptions of the government transparency in the government. Transparency can be ensured when governments do everything by taking their citizens into confidence and by having their opinions on every critical decision-making processes	Al-Jamal and Abu-Shanab (2016), Al-Kaabi et al. (2017), Bargh et al. (2014), Bergquist et al. (2017), Bertot et al. (2012), Bonson et al. (2012), Boughzala et al. (2015), Bundin and Martynov (2016), Dwivedi et al. (2017a), Ganim and Kamruzzaman (2014), Gomez (2017), Harrison et al. (2012), Joshi and Rosenfield (2013), Kacem et al. (2016), Pardo et al. (2011), Porumbescu (2017), Reddick et al. (2015), Song and Lee (2015), Tursunbayeva et al. (2017), Wigand (2011)
Communication/Interaction	13	It is a fundamental requirement for fostering transparency, participation, engagement and collaboration. Governments' effective and targeted communication through social media channels can foster citizens' awareness and trust on to government initiatives	Al-Jamal and Abu-Shanab (2016), Chatfield and Brajawidagda (2014), Ceron and Negri (2016), Chhabra et al. (2013), Cho et al. (2012), Ganim and Kamruzzaman (2014), Goncalves et al. (2015), Joshi and Rosenfield (2013), Kavanaugh et al. (2012), Park et al. (2014), Shah and Lim (2011), Tsui et al. (2010a), Tsui et al. (2010b)
Trust	11	Enhanced trust on the government is one of the perceived benefits of the social network use in e-government. Citizens increasing interaction with government using social media channels bring them closer to government and trust them	Chatfield et al. (2015), Khasawneh and Tarawneh (2016), Picazo-Vela et al. (2011), Picazo-Vela et al. (2012), Porumbescu (2016), Porumbescu (2017), Reddick et al. (2015), Shah and Lim (2011), Song and Lee (2015), Sun et al. (2015), Yaseen et al. (2015)
Collaboration	10	It indicates a cooperative relationship between government and citizens and between governmental agencies	Al-Jamal and Abu-Shanab (2016), Bennett and Manoharan (2017), Brainard and McNutt (2010), Hui and Hayllar (2010), Kacem et al. (2016), Kokkinakos et al. (2012), Pardo et al. (2011), Pop et al. (2015), Sandoval-Almazan and Gil-Garcia (2012), Traummuller (2010)

Democracy	6	It ensures that there are successful citizen e-participations in the government policy-making process	Buccafurri et al. (2012), Ganapati (2011), Hwang and Mohammad (2008), Mambrey (2008), Szkuta et al. (2014), Traunmuller (2010)
Open Data/Innovation Practices	6	Interaction with the e-government systems could be considered more effective only when the data provided through the government websites are open in nature and readily available to its users	AlAnazi and Chatfield (2012), Alexopoulos et al. (2014), Khtira et al. (2017), Pop et al. (2015), Loukis et al. (2017), Srimuang et al. (2017)
Crowdsourcing	5	The practice of obtaining information or input into a government initiative by enlisting the services of a large number of citizens through social media	Chatfield and Brajawidagda (2014), Linders (2012), Loukis and Charalabidis (2015), Spiliotopoulou et al. (2014), Warner (2011)
Security	5	Security is the defence of digital information and governments' IT assets against internal and external, malicious and accidental threats from hackers	Pop et al. (2014), Prandini and Ramilli (2011), Reddick and Anthopoulos (2014), Sun et al. (2015), Yaseen et al. (2015)

The analysis indicates that stakeholders' electronic or online participation has been the most extensively occurring theme across social media oriented e-government literature. It involves the use of information and communication technologies (ICTs) for supporting communication and interaction of individuals with other individuals, communities, public authorities and government at large (Bailey and Ngwenyama, 2011). Most of the studies (e.g. Alarabiat et al., 2016; Buccafurri et al., 2012; Dwivedi et al., 2017a; Elvira et al., 2014) discussing citizens' electronic participation have gauged that it is important for empowering citizens to have an effective role in governments' decision-making process and their problem solving. It is also considered as one of the core elements for transparency of governments with regards to their citizens (Boudjelida et al., 2016).

The review of literature also suggests that the use of Web 2.0 technologies is very useful for citizens' self-expression and participation in the government activities (Boughzala et al., 2015). In other words, the use of social media for promoting e-government activities enhances citizens' participation to use such systems (Bundin and Martynov, 2016). The majority of literature has clearly identified the importance of social media use in the public sector organisations and governments and found it as a powerful tool for public organisations and

governments to open up and enhance participation from the communities that they are representing (Elvira et al., 2014).

Some other studies have also highlighted the challenges associated with the individuals' e-participation with governments using the social network platforms. These include issues surrounding lack of digital literacy (Bailey and Ngwenyama, 2011) and active participation (e.g. Grigoryeva et al. 2016; Muresan, 2010; Vicente and Novo, 2014) in general and particularly among elderly users, ensuring the extent and kind of legitimate public participation through social media and e-government platforms (Harrison et al., 2012), inefficient online tools used for e-participation in fully opening dialogue between citizens and governments (Al-Jamal and Abu-Shanab, 2016; Alarabiat et al., 2016; Machova and Lnenicka, 2015), government's decision to remain rigid and unopened (Al-Jamal and Abu-Shanab, 2016), lack of citizens' understanding of political allegiance and loyalty in a democratic situation (Alzouma, 2015), unavailability or rare availability of social media links in local government websites (Sandoval-Almazan and Gil-Garcia, 2012) etc.

The second most explored research theme across the e-government and social media literature is 'engagement'. Some studies (e.g. Bonson et al., 2015) suggest that any content posted by governments on the social media can attract citizens' attention and engage them if the topics are of interest and significance to the local citizens. Other literature (e.g. Goncalves et al., 2015) reveals that government agencies increasingly look to leverage social media to improve the quality of government services to enable higher citizen engagement. Kaigo and Okura (2016) found social gatherings as more beneficial method for engagement that can further promote citizens' online engagement. Levy et al. (2013) accepted that existing and emerging ICTs (including social media) facilitate citizen engagement in local government decision-making process. Mejabi and Fabgule (2014) recommend that the government and citizens need to understand the benefits of citizen engagement for better governance, accountability and



economic development. Taking a case of Australian parliament and its engagement with citizens, Missingham (2011) reveals that engagement with electorates is important not just for visibility and election, but also for debate on policy and parliamentary issues. Vicente and Novo (2014) state that Internet-related resources play a key role in explaining political and social engagement among Internet users. Their findings also indicated that there is a positive link between the levels of development of e-government and citizen's engagement in citizens' consultation and petitions.

'Transparency' is the next level of research theme emerging from the social media oriented e-government literature. Al-Jamal and Abu-Shanab (2016) found that transparency has a positive impact on citizens' intention to use e-government website. A lack of transparency is said to make corruption less risky and more attractive, create informational advantage to privileged groups, incentivize opportunism and undermine cooperation and hinder trust and development (Bertot et al., 2012). Bonson et al. (2012) also acknowledged that the higher level of transparency as a way of improving citizens' trust in governments. Joshi and Rosenfield (2013) also talked about trust in members of parliament due to transparency in parliamentary websites. Accountability and transparency of the politicians and government workers can be ensured by the flow of information between them through all the developing activities (Ganim and Kamruzzaman, 2014). Harrison et al. (2012) point out that transparency is not an end citizen pursues for its own sake but they might desire their government to be transparent because the information and action of the government are at stake. The other literature talked about parliamentary transparency. Song and Lee (2015) concluded that improved interaction with government using the social media services is the effective means to enhance citizens' perceptions of the government transparency and their trust in the government. Tursunbayeva et al. (2017) described transparency as the use of social media such as Facebook, Twitter or

YouTube to post information about the organisation its ongoing activities (e.g. news, job openings, projects etc.).

The other more frequently explored research theme found in the literature of social media and e-government was ‘communication/interaction’ (see Table 6). Communication or interaction is a fundamental requirement for fostering transparency, participation, engagement and collaboration. Social media tools have improved the level of citizens’ interaction with the government, which is further supported by availability of information and its format (Al-Jamal and Abu-Shanab, 2016). The literature surrounding this theme has emphasised on the role of social media in strengthening the interactions of citizens and/or external stakeholders with politicians and bureaucrats (Joshi and Rosenfield, 2013). For example, Ceron and Negri (2016) accentuated how these interactions favour debates on social and political matters and positively affects citizens’ interest in political processes like elections, policy agenda setting and policy implementation. At one hand, the literature (e.g. Chatfield and Brajawidagda, 2014) highlights the critical importance of dissemination of government urgent information such as mitigating the impacts of natural hazards to the intended audience in the timely and actionable manner. On the other hand, some other literature (e.g. Cho et al., 2012) talks about the types of information that should be perceived to be valuable by the citizens at non-emergency times. Chhabra et al. (2013) examined the use of social networking by the traffic police in Delhi and found that the open online exchanges represented a new communicative paradigm in e-governance. It has also been stated that social media has been garnering significant attention as a medium for next generation communications (Park et al., 2014). The literature (e.g. Shah and Lim, 2011) has also revealed that government’s ineffective communication with citizens, lead to low levels of trust in the government. Hence, effective and targeted communication (preferably through social media) is considered essential to build citizens’ awareness, knowledge, perceptions and trust towards e-government services (Shah and Lim, 2011).

'Trust' and 'security' (see Table 6) are also among some of the most frequently used research themes explored across e-government and social media literature. For example, Chatfield et al.'s (2015) social network analysis provided evidence that citizens' distrust could potentially negatively impact bilateral security cooperation with foreign countries. Picazo-Vela et al. (2011, 2012) pointed out that enhanced trust on the government is one of the perceived benefits of the social network use in e-government. However, Picazo-Vela et al. (2012) also accepted that adoption of social media by the government confronts barriers related to privacy and security. Porumbescu (2016) found that the use of public sector social media accounts is positively related to satisfaction and perceptions of public sector trustworthiness. Shah and Lim (2011) believed that successful e-government adoption requires citizens to have high level of trust in both government and Internet. The authors suggested enhancing transparency on the government websites to gain citizens' trust. Song and Lee (2015) also supported the mediating role of government transparency in linking the use of e-government to trust in government.

A fair number of studies (see Table 6) have also highlighted the relevance of 'collaboration' in context of the role of social media in e-governance. It implies the cooperative relationship between government and citizens and between governmental agencies. When citizens are more collaborative, the government can be more responsive to urgent problems (Sandoval-Almazan and Gil-Garcia, 2012). Al-Jamal and Abu-Shanab (2016) concluded that collaboration has a positive influence on citizens' intention to use e-government website. The Jordanian government is planning to opening up their data to citizens to foster innovation and collaboration. The key difference between collaboration and participation is that collaboration means working together to achieve a common goal. On the other hand, participation is about communication and feedback (Al-Jamal and Abu-Shanab, 2016). Hui and Hayllar (2010) examined the way in which Web 2.0 and new practices in e-government might be creating new trends in collaborations between public and private sectors and citizens. They proposed public-

private-citizen collaboration (PC2) framework that would help government to add value in e-service provision and e-government based public engagement. A number of literature studies (e.g. Al-Jamal and Abu-Shanab, 2016; Harrison et al., 2012; Pardo et al., 2011; Wigand, 2011) have discussed collaboration in tandem with transparency and participation. Sandoval-Almazan and Gil-Garcia (2012) pointed out that government portals in Mexico are still largely information sources with only few services and interactions and almost no opportunities for participation, collaboration and information sharing among government and non-government actors. The authors proposed strategic use of government website to foster participation and collaboration. Traummuller (2010) claims that collaboration at large results in good practice exchange and knowledge collection.

The studies have also discussed some other research themes such as ‘democracy’, ‘crowdsourcing’ and ‘open data practices’ (see Table 6). The literature (e.g. Buccafurri et al., 2012; Ganapati, 2011; Mambrey, 2008) on e-democracy indicates that it can be ensured only when there are successful citizen e-participations in the government policy-making process. E-Participation is considered to enhance the nature of representative democracy – as it directly links representatives and with voters (Traummuller, 2010). Although the concept of crowdsourcing has been pursued even before the advent of Internet, social media provides exceptional public sphere where multi-directional interactive conversations and information sharing occur between government and various stakeholders (Chatfield and Brajawidagda, 2014). Chatfield and Brajawidagda (2014) aimed to use Twitter mediated crowdsourcing to intimate citizens about the hazardous weather reports and found the value of government created hash tag to tie closely the government and volunteer citizens. Loukis and Charalabidis (2015) discussed the concepts of passive and active crowdsourcing where passive crowdsourcing was considered to exploit the content generated by users whereas active crowdsourcing is defined as stimulating the users’ content. Spiliotopoulou et al. (2014)

considered crowdsourcing, as a valuable tool for identifying the key issues perceived by citizens with regard to the specific social problem faced by the government and gathering interesting ideas and solutions for it. Moreover, it is cost effective and can generate inputs from a larger audience (Warner, 2011). Open data practices are also explored by some studies (see Table 6). They largely indicate that interacting with the e-government systems could be considered more effective only when the data provided through the government websites are open in nature and readily available to its users.

Mapping the existing research on electronic government and social media, we found that the different focus key categories have been examined independently and not in relationship with each other. Gaps in the existing research also indicate the need of focusing on under-investigated areas (Medaglia and Zheng, 2017). Joining these different dispersed dots, we develop a possible framework for e-government and social media that may provide the possibility of better use of e-government using the social media channels. For this, we consider some of the more relevant constructs from e-government and social media research such as participation, engagement, transparency, communication or interaction, trust, awareness and security and link them with the adoption of e-government through the social media channels to develop a framework for citizens' adoption of e-government and social media. We propose that constructs such as transparency, communication and awareness lead to better engagement and crowdsourcing, collaboration and security can positively influence citizens' participation to the e-government activities using social media channel. Furthermore, citizens' engagement and participation and lead to their trust in e-government using various social media channels and that will further allow them to adopt e-government initiatives taken by the corresponding governments. Figure 1 demonstrates the proposed framework using some of the key constructs emerging through the categories of e-government and social media research. In support of this proposed framework, we argue that adoption of e-government services cannot only be

measured through some of the leading and proposed theories and models prescribed in existing studies (e.g. Dwivedi et al., 2017b, Dwivedi et al., 2017c, Rana and Dwivedi, 2015; Rana et al., 2016; Rana et al., 2017) of IT and e-government adoption, but we also need to think about a framework that also comes through citizens' engagement and participation through these activities.

## **DISCUSSION**

The literature review of 139 studies on social media and e-government has highlighted a number of research themes. We will postulate implications emerging from these studies and analyse how they can be of further use to the government policy and decision makers to implement them for establishing a smother electronic democracy.

The largest number of studies has highlighted the relevance of social media in e-government and identified it as an important and powerful tool for the governments. Using e-participation, redistribution of power can be easily disseminated to the citizens who are usually not a part of government decision and policymaking and are usually excluded from the political and economic processes. Gathering consensus from citizens and their effective implementation indicates that the government is responsive to the interest of the public. However, there is considerable evidence available to suggest that it is not always successful (Harrison et al., 2012). The extent and type of public participation can play a very important role in generating consensus that could be considered for further implementation. The queries such as who participates, how participants exchange information and make decisions, and what is the basis for taking such suggestions on board and use them for decision making are important points to address before any such recommendation is accepted and implemented as policy by the government. Moreover, although the use of social media has fostered the public participation in government activities, it is still limited in the developing countries where digital literacy is an on-going challenge before the governments. The government should also ensure that only

legitimate account holders of social media platforms can raise their voices to the governments' call. The government should also make provisions to use efficient social media tools and their clear links in their websites to ensure more public participation. More importantly, to ensure more public participation, the governments should endeavour to minimise the digital divide gap and attract more of their constituents to take part in governments' activities through digital channels.

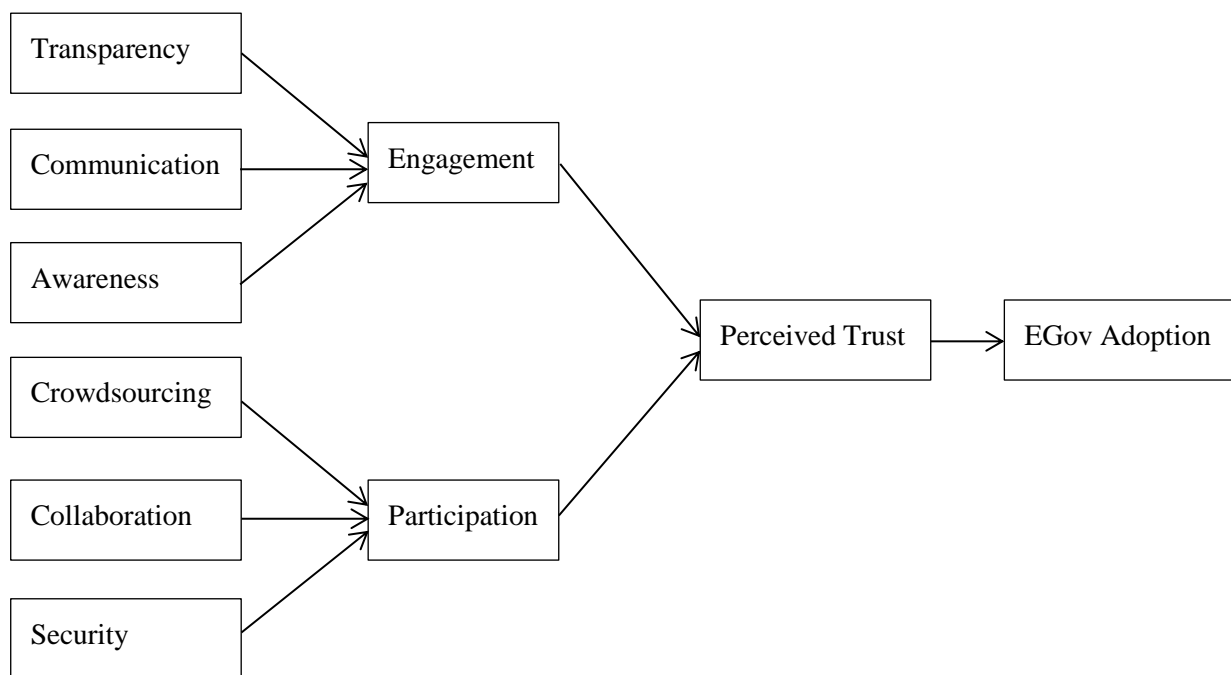


Figure 1. Proposed framework for e-government and social media research

To enhance citizens' engagement, the governments should try to gather consensus for the topics that they think would raise lots of interests and attentions from the public (Bonson et al., 2015). The other way to increase interests in citizens is to propagate the message across different available offline and online channels (e.g. newspapers, radio, television, emails etc.) such that it easily reaches out to masses and creates awareness and curiosity among them to take part in such online activities. Creating this awareness and building this capacity to use social media to make these happen should be taken up by the government functionaries, civil society and media (Mejabi and Fabgule, 2014). The local governments should also take citizens' opinions and concerns into account for increasing their engagement and participation in the government activities. The government can also monitor the citizens' constant engagement and

involvement with online activities through the likings of the post, sharing them and more importantly commenting on them (Bonson et al., 2015).

In order to promote transparency; the governments should widely adopt the open data practices. In other words, they should expose all their processes including bidding, contracting, processing of forms, public monitoring of activities and their employees, provide outlets of public suggestions regarding the level of their openness and allow the members of the public to track the progress of their own interactions with the government and provisions for listening to their voices and taking proper actions in case of any discrepancies and implementing crowdsourcing solutions and innovations (Bertot et al., 2012). The governments should promote this through their online channels in all possible ways as this could lead on to their trust building process at one hand and toward making their system corruption free on the other hand.

Communication, interaction or information sharing by the governments to their constituents and vice-versa is a precursor for instituting transparency, participation, engagement and collaboration. The governments should carefully analyse the types of information being disseminated to the larger audience of citizens and the valuable feedback received from them. The communication could be considered effective only in situations where the governments receive overwhelming responses for it regardless of whether the information shared is urgent or non-urgent. The bidirectional communication between government and citizens using social media channels makes the overall process trustworthy and can even lead to improved citizen participation. In order to get the optimal response from the citizens, the governments should make sure that the information shared is precise, effective and targeted to the right audience to fetch the optimal response from it (Shah and Lim, 2011).

Social networks have played a remarkable role in establishing citizens' trust on the government (Picazo-Vela et al., 2012). To trust the e-government related activities, the citizens should have



formed a trust on the government itself. For this, it is very much imperative that citizens are very much informed about the government plans and policies that are for their benefits. In other words, the governments should endeavour to establish their overall positive image in citizens' mind so that they can entrust their functioning through the online channels. There are two fundamental aspects that the governments should adhere to. Firstly, they should do all, which are citizen-centric and bring in lots of benefits to citizens. Secondly, the effective communication mechanism should be in place that facilitates a government to effectively disseminate the required information on timely manner and ensure that they are well received by the end users. Security is another very significant and trust-centric aspect, which the governments should give proper attention to. The e-government websites should be technically robust to provide adequate security provisions and citizens are made well aware of it through other different mechanisms.

Collaboration implies the cooperative relationship between government and citizens. When citizens are collaborative, the government can be more responsive to urgent problems (Al-Jamal and Abu-Shanab, 2016). For example, e-government systems could be further equipped with warning systems to detect problems, riots, or security threats so that citizens can use these tools to alert authorities. The e-government systems should be designed and made available through various social media channels in a way that citizens can easily intimate government for any online services failure or for even for discussing the public policy related issues (Sandoval-Almazan and Gil-Garcia, 2012). Furthermore, the governments as a whole are encouraged to promote crowdsourcing to have huge and genuine consensus around the issues faced by them. This could be possible only when they adopt the open data practices where information related to most of the issues faced by them in short-term or long-term basis could be dealt in with the citizens' opinions and with their own experts' views. The democracy in true sense can prevail only when governments can largely promote the e-government initiatives

through various social media channels and invite larger audience to participate in the government policy and decision making processes.

This literature review has contributed to the existing knowledge about the role of social media in e-government in citizens' context. Although there are four reviews (i.e., Alarabiat et al., 2016; Bertot et al., 2012; Boudjelida et al., 2016; Dixon, 2010) available on this topic, they have touched upon the different aspects. For example, Alarabiat et al. (2010) and Boudjelida et al. (2016) reviewed literature related to e-participation with a reference to social media whereas Bertot et al. (2012) reviewed it with regard to government transparency and accountability. Moreover, Dixon (2010) examined the literature on the use of Web 2.0 technologies in e-government. In other words, none of the prior research has attempted to undertake a comprehensive review of the combined literature on the social media and e-government. Therefore, this review is a theoretical contribution toward capturing the wider knowledge on these topics. Further, the keywords and research methods based analyses, investigation of the available literature on their use of theories, models and frameworks, publications according to year and outlets, limitations of existing research on e-government and social media provide and developing a research framework from the emerging themes of the existing research have added contribution to the knowledge in terms of understanding this topic in a more relevant and timely manner. Such knowledge also provides the gaps in this area of research, which was not known earlier. Lastly, the categorisation of the research themes (e.g. participation, engagement, collaboration, transparency etc.) opens further avenues of research into these specific areas. We took this categorisation a step further to develop a proposed framework for e-government adoption considering some of the emerging themes including transparency, communication, awareness, engagement, crowdsourcing, collaboration, security, participation, trust and e-government adoption as the key constructs of the framework.

## **CONCLUSION**

This study has undertaken a comprehensive review of literature on the role of social media on e-government in citizens' context. The review was performed considering 139 articles on this topic. The review of literature revealed a number of frequently occurring research themes including electronic participation, engagement, transparency, communication/interaction, trust, collaboration, democracy, crowdsourcing, security and open data practices. Moreover, the keyword and methodological analyses and exploration on theories, models and frameworks by these studies open further avenues of research in this area. The implications deriving from the literature will be helpful for any governments in terms of effectively implementing their e-government systems and propagating them through the appropriate social media platforms for their optimal diffusion and use by the end users. The year-wise publications of e-government and social media research would provide the trend of research published on this theme over the year and different outlets. The limitations of existing research on e-government and social media have indicated that majority of studies have not acknowledged any limitations. However, the key limitations for those limited studies that have acknowledged it are largely related to biased or skewed sample, small sample size, exploratory findings, cross-sectional research and short timespan for collecting data.

Like any other research studies, this study is not without limitations. Firstly, the keywords analysis fetched us 273 articles, but we could get access of 139 articles only. Majority of the articles, which could not be accessed, were from conference proceedings and book chapters. Secondly, our research activities were limited to occurrences of three keywords (i.e., e-government, social media and citizen) in their various forms in the article title, abstract and keywords. We fully acknowledge that there may be some studies that lack these keywords and can still be related to the main theme of this research. Lastly, the proposed framework from the emerging themes from the existing research has not been validated using the primary data. The

future research can take some correcting measures to make sure that these limitations could be minimised.

### **Acknowledgement**

This is to acknowledge that we have presented the earlier version of this paper in ICEGOV'2017 held at Hotel Ashok, New Delhi, India. This is the extended version of the paper by including latest literature with extending the horizon of our analysis to unveil some more facts about e-government and social media research.

### **References**

- Abdallah, S. and Khalil, A. (2009). Web 2.0 And E-Governments: An Exploration Of Potentials & Realities In The Arab World. In *Proceeding of European and Mediterranean Conference on Information Systems, (Crowne Plaza Hotel, Izmir, July, 2009)*, 13-14.
- Al-Jamal, M. and Abu-Shanab, E. (2016). The influence of open government on e-government website: the case of Jordan. *International Journal of Electronic Governance*, 82, pp.159-179.
- Al-Kaabi, R.E.E.M., Ebrahim, B., Al-Wejdany, S.H.A.H.R.A.B.A.N., Mohammed, J., & Ali, F. (2017). Developing a theoretical model for Bahraini citizen's intention to adopt web 2.0 in e-government of kingdom of Bahrain. *Journal of Theoretical & Applied Information Technology*, 95(12), 2866-2877.
- Alanazi, J. M., & Chatfield, A. T. (2012). Sharing government-owned data with the public: A cross-country analysis of open data practice in the Middle East. *Paper presented at the 18th Americas Conference on Information Systems 2012, (AMCIS 2012)*, 1, 335-344.
- Alarabiat, A. and Soares, D.S. (2016). Electronic Participation through Social Media. In *Proceedings of the 9th International Conference on Theory and Practice of Electronic Governance* pp. 191-194. ACM.
- Alarabiat, A., Soares, D.S. and Estevez, E. (2016). Electronic Participation with a Special Reference to Social Media-A Literature Review. In *International Conference on Electronic Participation* pp. 41-52. Springer International Publishing.
- Alexopoulos, C., Zuiderwijk, A., Charapabidis, Y., Loukis, E. and Janssen, M. (2014). Designing a second generation of open data platforms: Integrating open data and social media. In *International Conference on Electronic Government* pp. 230-241. Springer Berlin Heidelberg.
- Alzouma, G. (2015). 'The opportunity exists. Why don't they seize it?' Political In Competence and the Potential of ICTs for Good Governance in Niger Republic. *Stability: International Journal of Security and Development*, 4,1.
- Ashby, S., Vieira, T., Hanna, J., Abreu, F., Oakley, I., & Campos, P. (2015). Citizen X: Designing for holistic community engagement. Paper presented at the *ACM International Conference Proceeding Series*, 28, 178-181. doi:10.1145/2808435.2808438
- Avison, D.E., Dwivedi, Y.K., Fitzgerald, G. and Powell, P. (2008). The beginnings of a new era: time to reflect on 17 years of the ISJ. *Information Systems Journal*, 18,1, 5-21.
- Ayachi, R., Boukhris, I., Mellouli, S., Amor, N.B. and Elouedi, Z. (2015). Proactive and reactive e-government services recommendation. *Universal Access in the Information Society*, pp.1-17.
- Bailey, A., & Ngwenyama, O. (2011). The challenge of e-participation in the digital city: Exploring generational influences among community telecentre users. *Telematics and Informatics*, 283, 204-214.
- Bargh, M. S., Meijer, R., Choenni, S., & Conradie, P. (2014). Privacy protection in data sharing: Towards feedback based solutions. Paper presented at the *ACM International Conference Proceeding Series, (2014-January 28-36)*. doi:10.1145/2691195.2691279
- Bennett, L. V., & Manoharan, A. P. (2017). The Use of Social Media Policies by US Municipalities. *International Journal of Public Administration*, 40(4), 317-328.
- Bergquist, M., Ljungberg, J., Remneland, B., & Rolandsson, B. (2017). from e-government to e-governance: social media and public authorities legitimacy work. ECIS 2017 Proceedings, Portugal.

- Bertot, J. C., Jaeger, P. T., & Grimes, J. M. (2012). Promoting transparency and accountability through ICTs, social media, and collaborative e-government. *Transforming Government: People, Process and Policy*, 6,1, 78-91. doi:10.1108/17506161211214831.
- Bodker, S., & Zander, P. O. (2015). Participation in design between public sector and local communities. Paper presented at the *ACM International Conference Proceeding Series, (27-30-June-2015)*,49-58. doi:10.1145/2768545.2768546.
- Bonson, E., Royo, S., & Ratkai, M. (2017). Facebook practices in Western European municipalities: An empirical analysis of activity and citizens' engagement. *Administration & Society*, 49(3), 320-347.
- Bonsón, E., Royo, S., & Ratkai, M. (2015). Citizens' engagement on local governments' facebook sites. an empirical analysis: The impact of different media and content types in Western Europe. *Government Information Quarterly*, 32,1, 52-62. doi:10.1016/j.giq.2014.11.001
- Bonson, E., Torres, L., Royo, S., & Flores, F. (2012). Local e-government 2.0: Social media and corporate transparency in municipalities. *Government Information Quarterly*, 29(2), 123-132. doi:10.1016/j.giq.2011.10.001.
- Boudjelida, A., Mellouli, S., & Lee, J. (2016). Electronic citizens participation: Systematic review. Paper presented at the *ACM International Conference Proceeding Series, (01-03-March-2016)*, 31-39. doi:10.1145/2910019.2910097
- Boughzala, I., Janssen, M., & Assar, S. (2015). E-government 2.0: Back to reality, a 2.0 application to vet. *Case studies in E-government 2.0: Changing citizen relationships*,1-14. doi:10.1007/978-3-319-08081-9\_1.
- Brainard, L. A., & McNutt, J. G. (2010). Virtual government-citizen relations: Informational, transactional, or collaborative? *Administration and Society*, 42(7), 836-858.
- Buccafurri, F., Fotia, L. and Lax, G. (2012). Allowing continuous evaluation of citizen opinions through social networks. In *International Conference on Electronic Government and the Information Systems Perspective* , 242-25, Springer Berlin Heidelberg.
- Bundin, M., & Martynov, A. (2016). Use of social media by the federal government in Russia. Paper presented at the *ACM International Conference Proceeding Series,(March-2016)*, 394-395.
- Cappellari, P., Chun, S., & Perelman, M. (2017, June). A Tool for Automatic Assessment and Awareness of Privacy Disclosure. In *Proceedings of the 18th Annual International Conference on Digital Government Research*, 586-587.
- Ceron, A., & Negri, F. (2016). The “Social side” of public policy: Monitoring online public opinion and its mobilization during the policy cycle. *Policy and Internet*, 8(2), 131-147.
- Chatfield, A. T., & Brajawidagda, U. (2014). Crowdsourcing hazardous weather reports from citizens via twittersphere under the short warning lead times of EF5 intensity tornado conditions. Paper presented at the *Proceedings of the Annual Hawaii International Conference on System Sciences*, 2231-2241.
- Chatfield, A. T., & Reddick, C. G. (2015). Understanding risk communication gaps through E-government website and twitter hashtag content analyses: The case of indonesia's mt. sinabung eruption. *Journal of Homeland Security and Emergency Management*, 12(2), 351-385.
- Chatfield, A. T., Reddick, C. G., & Brajawidagda, U. (2015). Government surveillance disclosures, bilateral trust and indonesia-australia cross-border security cooperation: Social network analysis of twitter data. *Government Information Quarterly*, 32,2, 118-128.
- Chesnevar, C., Maguitman, A., Esteve, E., & Brena, R. (2012). Integrating argumentation technologies and context-based search for intelligent processing of citizens' opinion in social media. Paper presented at the *ACM International Conference Proceeding Series*, 166-169.
- Chhabra, S., Pal, J., & Goel, D. (2013). Action will be taken: Delhi traffic police@fb. Paper presented at the *Proceedings of the 3rd ACM Symposium on Computing for Development, (DEV 2013)*.
- Cho, V. Y., Esfahbod, B., & Mansouri, M. (2012). City of New York on twitter: @NYCGov. Paper presented at the *ACM International Conference Proceeding Series*, 274-275.
- Choudrie, J., Zamani, E., & Al-Bulushi, A. (2017). Are Online Social Networks, Leading to a ‘Better World in the Omani Public Sector? A Qualitative Study. In *International Conference on Social Implications of Computers in Developing Countries*, 669-680, Springer, Cham.
- Chugunov, A. V., Kabanov, Y., & Misnikov, Y. (2017). Citizens versus the Government or Citizens with the Government: a Tale of Two e-Participation Portals in One City-a Case Study of St.

- Petersburg, Russia. In *Proceedings of the 10th International Conference on Theory and Practice of Electronic Governance*, 70-77.
- Chui, M., Manyika, J., Bughin, J., Dobbs, R., Roxburgh, C., Sarrazin, H., Sands, G. and Westergren, M. (2012). The social economy: Unlocking value and productivity through social technologies. *McKinsey Global Institute*, 4.
- Cotterill, S. and King, S. (2007). Public sector partnerships to deliver local e-government: a social network study. In *International Conference on Electronic Government*, 240-251, Springer Berlin Heidelberg.
- Delone, W.H. and McLean, E.R. (2003). The DeLone and McLean model of information systems success: a ten-year update. *Journal of Management Information Systems*, 19(4), 9-30.
- Dixon, B. E. (2010). Towards e-government 2.0: An assessment of where e-government 2.0 is and where it is headed. *Public Administration and Management*, 15(2), 418-454.
- Dwivedi, Y.K., Lal, B., Mustafee, N. and Williams, M.D. (2009). Profiling a decade of Information Systems Frontiers' research. *Information Systems Frontiers*, 11(1), 87-102.
- Dwivedi, Y. K., Rana, N. P., Tajvidi, M., Lal, B., Sahu, G. P., & Gupta, A. (2017a). Exploring the Role of Social Media in e-Government: an Analysis of Emerging Literature. In *Proceedings of the 10th International Conference on Theory and Practice of Electronic Governance*, 97-106.
- Dwivedi, Y.K., Rana, N.P., Jeyaraj, A., Clement, M., and Williams, M.D. (2017b). Re-examining the Unified Theory of Acceptance and Use of Technology (UTAUT): Towards a Revised Theoretical Model. *Information Systems Frontiers*, DOI: 10.1007/s10796-017-9774-y.
- Dwivedi, Y.K., Rana, N.P., and Janssen, M., Lal, B., Williams, M.D., and Clement, M. (2017c). An Empirical Validation of a Unified Model of Electronic Government Adoption (UMEGA). *Government Information Quarterly*, 34(2), 211-230.
- Elvira, N.I.C.A., Popescu, G.H., Nicolaescu, E. and Constantin, V.D. (2014). The Effectiveness of Social Media Implementation at Local Government Levels. *Transylvanian Review of Administrative Sciences*, 10,SI, 152-166.
- Fink, D. (2011). Road safety 2.0: A case of transforming government's approach to road safety by engaging citizens through web 2.0. *Journal of Cases on Information Technology*, 13(3), 21-38.
- Ganapati, S. (2011). Uses of public participation geographic information systems applications in E-government. *Public Administration Review*, 71(3), 425-434.
- Ganim, M. A. M., & Kamruzzaman, M. (2014). E-governance using social network: A model for strong democratic environment in Bangladesh. Paper presented at the *16th Int'l Conf. Computer and Information Technology, (ICCIT 2013)*, 218-223.
- Gao, X., & Lee, J. (2017). E-Government Services and Social Media Adoption: Experience of Small Local Governments in Nebraska. In *Proceedings of the 18th Annual International Conference on Digital Government Research*, 584-585.
- Gomez, E. A. R. (2017). Perceptions About the Concept and Benefits of Open Government in Local Governments in Spain. In *Proceedings of the 10th International Conference on Theory and Practice of Electronic Governance*, 594-597.
- Goncalves, J., Liu, Y., Xiao, B., Chaudhry, S., Hosio, S., & Kostakos, V. (2015). Increasing the reach of government social media: A case study in modeling government-citizen interaction on Facebook. *Policy and Internet*, 7,1, 80-102.
- Grigoryeva, I., Vidiasova, L., & Zhuk, D. (2016). Seniors' inclusion into e-governance: Social media, e-services, e-petitions usage. Paper presented at the *ACM International Conference Proceeding Series*, , (01-03-March-2016), 173-176.
- Halpern, D., Rozaidi, N. A., & Ki, S. (2012). Towards a social network e-government agenda?: Measuring participation 2.0 in the Arab world. Paper presented at the *ACM International Conference Proceeding Series*, 223-231.
- Harrison, T. M., Guerrero, S., Burke, G. B., Cook, M., Cresswell, A., Helbig, N., . . . Pardo, T. (2012). Open government and e-government: Democratic challenges from a public value perspective. *Information Polity*, 17(2), 83-97.
- Hepburn, P. (2014). Local democracy in a digital age: Lessons for local government from the Manchester congestion charge referendum. *Local Government Studies*, 40(1), 82-101.
- Hui, G., & Hayllar, M. R. (2010). Creating public value in e-government: A public-private-citizen collaboration framework in web 2.0. *Australian Journal of Public Administration*, 69,SUPPL.

- Hwang, J., & Mohammed, A. B. (2008). Approaching e-democracy: A case study analysis from Jordan. *Paper presented at the Proceedings - 3rd International Conference on Convergence and Hybrid Information Technology*, (ICCIT 2008), 2, 932-939.
- Joshi, D., & Rosenfield, E. (2013). MP transparency, communication links and social media: A comparative assessment of 184 parliamentary websites. *Journal of Legislative Studies*, 19(4), 526-545.
- Kacem, A., Belkaroui, R., Jemal, D., Ghorbel, H., Faiz, R., & Abid, I. H. (2016). Towards improving e-government services using social media-based citizen's profile investigation. Paper presented at the ACM International Conference Proceeding Series, (March-2016), 187-190.
- Kaigo, M., & Okura, S. (2016). Exploring fluctuations in citizen engagement on a local government Facebook page in Japan. *Telematics and Informatics*, 33(2), 584-595.
- Kavanaugh, A. L., Fox, E. A., Sheetz, S. D., Yang, S., Li, L. T., Shoemaker, D. J., Xie, L. (2012). Social media use by government: From the routine to the critical. *Government Information Quarterly*, 29(4), 480-491.
- Khasawneh, R. T., & Tarawneh, M. M. (2016). Citizens' attitudes towards e-government presence on social networks e-government 2.0: An empirical study. *Paper presented at the 2016 7th International Conference on Information and Communication Systems*, (ICICS 2016), 45-49.
- Khtira, R., Elasri, B., & Rhanoui, M. (2017). From Data to Big Data: Moroccan Public Sector. In *Proceedings of the 2nd international Conference on Big Data, Cloud and Applications*, 34, 99-109.
- Kim, B.J. and Kleinschmit, S.W. (2012). A logistic multilevel model for civic engagement and community group impact in the digital age. In *Proceedings of the 6th International Conference on Theory and Practice of Electronic Governance* pp. 34-37.
- Kim, K., & Sun, W. (2012). Assessing citizen service platform system success in government 2.0. Paper presented at the *Proceedings - 2012 IEEE Symposium on Robotics and Applications*, (ISRA 2012), 396-399.
- Kokkinakos, P., Koussouris, S., Panopoulos, D., Askounis, D., Ramfos, A., Georgousopoulos, C., & Wittern, E. (2012). Citizens collaboration and co-creation in public service delivery: The COCKPIT project. *International Journal of Electronic Government Research*, 8(3), 44-62.
- Levy, A., Bagby, J. W., & Trauth, E. M. (2013). E-government evolution in small municipalities in Pennsylvania in web 2.0 social environment: A poster. *Paper presented at the ACM International Conference Proceeding Series*, 273-274.
- Liden, G., & Larsson, A. O. (2016). From 1.0 to 2.0: Swedish municipalities online. *Journal of Information Technology and Politics*, 1-13.
- Linders, D. (2012). From e-government to we-government: Defining a typology for citizen coproduction in the age of social media. *Government Information Quarterly*, 29(4), 446-454.
- Liu, S. M., & Yuan, Q. (2015). The evolution of information and communication technology in public administration. *Public Administration and Development*, 35,2, 140-151.
- Loukis, E., & Charalabidis, Y. (2015). Active and passive crowdsourcing in government. *Policy practice and digital science: Integrating complex systems, social simulation and public administration in policy research*, 261-289.
- Máchová, R., & Lněnička, M. (2015). Reframing E-government development indices with respect to new trends in ICT. *Review of Economic Perspectives*, 15(4), 383-411.
- Maciel, C., Roque, L., & Garcia, A. C. B. (2010). Interaction and communication resources in collaborative e-democratic environments: The democratic citizenship community. *Information Polity*, 15(1-2), 73-88.
- Mambrey, P. (2008). From participation to e-participation: The German case. Paper presented at the *ACM International Conference Proceeding Series*, 35(1), 355-360.
- Mawela, T. (2017). Exploring the role of social media in the G2C relationship: A South African perspective. *Information Development*, 33(2), 117-132.
- Medaglia, R., & Zheng, L. (2017). Mapping government social media research and moving it forward: A framework and a research agenda. *Government Information Quarterly*, DOI: 10.1016/j.giq.2017.06.001.
- Medaglia, R., & Zhu, D. (2017). Public deliberation on government-managed social media: A study on Weibo users in China. *Government Information Quarterly*, DOI: 10.1016/j.giq.2017.05.003.

- Mejabi, O. V., & Fabgule, J. O. (2014). Engaging citizens through social media - how state governors in Nigeria are doing. Paper presented at the ACM International Conference Proceeding Series, (2014-January), 85-88.
- Missingham, R. (2011). E-parliament: Opening the door. *Government Information Quarterly*, 28(3), 426-434.
- Mossberger, K., Wu, Y., & Crawford, J. (2013). Connecting citizens and local governments? social media and interactivity in major U.S. cities. *Government Information Quarterly*, 30(4), 351-358.
- Mureşan, M. (2010). E-governance-a challenge for the regional sustainable development in Romania. In *International Conference on Electronic Government*, 238-250, Springer Berlin Heidelberg.
- Pardo, T., Cook, M., & Hrdinová, J. (2011). Investing in open government: Applying lessons from research and practice. Paper presented at the *ACM International Conference Proceeding Series*, 367-368.
- Park, M. J., Choi, H., & Rho, J. J. (2014). Citizen patronage behavior of government social media services: Extended perspective of perceived value with the moderating effect of media synchronicity. *Information Development*, 32(3), 293-312.
- Picazo-Vela, S., Gutiérrez-Martínez, I., & Luna-Reyes, L. F. (2011). Social media in the public sector: Perceived benefits, costs and strategic alternatives. Paper presented at the *ACM International Conference Proceeding Series*, 198-203.
- Picazo-Vela, S., I. Gutierrez-Martinez, and L.F. Luna-Reyes. (2012). Understanding Risks, Benefits, and Strategic Alternatives of Social Media Applications in the Public Sector. *Government Information Quarterly*, 29(4), 504-511.
- Picazo-Vela, S., Sandoval-Almazan, R., Puron-Cid, G., Luna-Reyes, D. E., Luna-Reyes, L. F., Gil-Garcia, J. R., & Hernandez-Juarez, L. (2017). The Role of Social Media Sites on Social Movements against Policy Changes. In *Proceedings of the 18th Annual International Conference on Digital Government Research*, 588-589.
- Pop, D., Echeverria, A. and Vidagany, J.V. (2014, Integrating Social Media and Open Data in a Cloud-Based Platform for Public Sector Advertising. In *International Conference on Web Information Systems Engineering* (October, 2014), 105-116. Springer International Publishing.
- Pop, D., Moumtzi, V. and Farinos, J. (2014). The good, the bad and the beauty of advertisement for public sector services. In *Proceedings of the 14th European Conference on e-Government: (ECEG 2014)*, 210, Academic Conferences Limited.
- Porumbescu, G. A. (2016). Linking public sector social media and e-government website use to trust in government. *Government Information Quarterly*, 33(2), 291-304.
- Porumbescu, G. (2015). Linking transparency to trust in government and voice. *The American Review of Public Administration*, 47(5), 520-537.
- Porwol, L., Hassan, I., Ojo, A. and Breslin, J. (2015). A Knowledge Extraction and Management Component to Support Spontaneous Participation. In *International Conference on Electronic Participation*, 68-80, Springer International Publishing.
- Prandini, M., & Ramilli, M. (2011). Security considerations about the adoption of web 2.0 technologies in sensitive e-government processes. *Paper presented at the ACM International Conference Proceeding Series*, 285-288.
- Rana, N.P., and Dwivedi, Y.K. (2015). Citizen's adoption of an e-government system: Validating extended social cognitive theory (SCT). *Government Information Quarterly*, 32(2), 172-181.
- Rana, N.P., Dwivedi, Y.K., Lal, B., Williams, M.D., and Clement, M. (2017). Citizens' Adoption of an Electronic Government System: Toward a Unified View. *Information Systems Frontiers*, 19(3), 549-568.
- Ranchordas, S. (2016). Digital Agoras: Democratic Legitimacy, Online Participation and Uber's Petitions. *The Theory and Practice of Legislation*, 5(1), 31-54.
- Reddick, C. G., Chatfield, A. T., & Jaramillo, P. A. (2015). Public opinion on national security agency surveillance programs: A multi-method approach. *Government Information Quarterly*, 32(2), 129-141.
- Reddick, C., & Anthopoulos, L. (2014). Interactions with e-government, new digital media and traditional channel choices: Citizen-initiated factors. *Transforming Government: People, Process and Policy*, 8(3), 398-419.



- Reddick, C. G., Chatfield, A. T., & Ojo, A. (2017a). A social media text analytics framework for double-loop learning for citizen-centric public services: A case study of a local government Facebook use. *Government Information Quarterly*, 34(1), 110-125.
- Reddick, C., Chatfield, A. T., & Brajawidagda, U. (2017b). Increasing Policy Success through the Use of Social Media Cross-Channels for Citizen Political Engagement. In *Proceedings of the 50th Hawaii International Conference on System Sciences*, 2845-2854.
- Rojas, J. M., Ruiz, C. J., & Farfan, C. (2011). E-participation and e-governance at web 2.0 in local governments of Colombia. Paper presented at the *ACM International Conference Proceeding Series*, 301-304.
- Sandoval-Almazan, R., & Gil-Garcia, J. R. (2012). Are government Internet portals evolving towards more interaction, participation, and collaboration? Revisiting the rhetoric of e-government among municipalities. *Government Information Quarterly*, 29, DOI: 10.1016/j.giq.2011.09.004.
- Scott, M., DeLone, W., & Golden, W. (2011). IT quality and e-government net benefits: A citizen perspective. Paper presented at the *19th European Conference on Information Systems, (ECIS 2011)*.
- Shah, B. P., & Lim, N. (2011). Using social media to increase e-government adoption in developing countries. Paper presented at the *ACM International Conference Proceeding Series*, 205-213. doi:10.1145/2072069.2072103
- Slaviero, C., Maciel, C., Alencar, F. B., Santana, E. C., & Souza, P. C. (2010). Designing a platform to facilitate the development of virtual e-participation environments. Paper presented at the *ACM International Conference Proceeding Series*, 385-386. doi:10.1145/1930321.1930408
- Song, C., & Lee, J. (2015). Citizens use of social media in government, perceived transparency, and trust in government. *Public Performance and Management Review*, 39(2), 430-453.
- Spiliotopoulou, L., Charalabidis, Y., Loukis, E. N., & Diamantopoulou, V. (2014). A framework for advanced social media exploitation in government for crowdsourcing. *Transforming Government: People, Process and Policy*, 8,4, 545-568.
- Srimuang, C., Cooharajanane, N., Tanlamai, U., & Chandrachai, A. (2017). Open government data assessment model: An indicator development in Thailand. *2017 19th International Conference on Advanced Communication Technology*, 341-347.
- Sun, P.L., Ku, C.Y. and Shih, D.H. (2015). An implementation framework for E-Government 2.0. *Telematics and Informatics*, 32(3), 504-520.
- Szkuta, K., Pizzicannella, R. and Osimo, D. (2014). Collaborative approaches to public sector innovation: A scoping study. *Telecommunications Policy*, 38(5), 558-567.
- Teran, L. and Mancera, J. (2017), Dynamic Profiles Using Sentiment Analysis for VAA's Recommendation Design. *Procedia Computer Science*, 384-393.
- Traunmüller, R. (2010). Web 2.0 creates a new government. In *International Conference on Electronic Government and the Information Systems Perspective*, 77-83, Springer Berlin Heidelberg.
- Tsui, H.D., Lee, C.Y. and Yao, C.B. (2010). Creating a Web 2.0 government: Views and perspectives. *2010 2nd International Conference on Networking and Digital Society (ICNDS)*, 1, 648-651.
- Tsui, H.D., Lee, C.Y. and Yao, C.B. (2010). E-government, politics and web 2.0. Paper presented at the *NISS2010 - 4th International Conference on New Trends in Information Science and Service Science*, 687-691.
- Tursunbayeva, A., Franco, M., & Pagliari, C. (2017). Use of social media for e-Government in the public health sector: A systematic review of published studies. *Government Information Quarterly*, DOI: 10.1016/j.giq.2017.04.001.
- Valaei, N., & Baroto, M. B. (2017). Modelling continuance intention of citizens in government Facebook page: A complementary PLS approach. *Computers in Human Behavior*, 73, 224-237.
- Vicente, M. R., & Novo, A. (2014). An empirical analysis of e-participation: The role of social networks and e-government over citizens' online engagement. *Government Information Quarterly*, 31(3), 379-387.
- Warner, J. (2011). Next steps in e-government crowdsourcing. In *Proceedings of the 12th Annual International Digital Government Research Conference: Digital Government Innovation in Challenging Times*, 177-181.

- Wigand, F.D.L. (2010). A Framework for Citizen-Centric Government Websites. *E-Government Website Development: Future Trends and Strategic Models: Future Trends and Strategic Models*, 20.
- Yaseen, H., Dingley, K., & Adams, C. (2015). The government's role in raising awareness towards e-commerce adoption: The case of Jordan. Paper presented at the *Proceedings of the European Conference on e-Government, ECEG, (2015-January)*, 316-323.