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“#Government” - Understanding Dissemination, Transparency, Participation, Collaboration and Engagement on Twitter for Citizens

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Abstract. This study tries to explore how social media had been used for public administration activities across the global by analysing the tweets tagged with “#government” and “#gov”. On the basis of the literature social media usage by public administration had been classified into five dimensions, namely information dissemination and broadcasting; open transparency; open participation; open collaboration; and ubiquitous engagement. The study collects 296,417 tweets (after cleaning, 174,204 tweets) tagged as “#government” and “#gov” as open government data (as data is available to everyone but managed by private organizations) and this study applies open government data activities and social media analytics to derive the insights. The article also explores how different usage of the social media is effecting sharing and liking of the tweets. The implications of these findings can be important to government of different countries. The article concludes by pointing that social media can be used by citizens for open participation which can subsequently facilitate information dissemination and ubiquitous engagement.

Keywords: Social Media; Government; Twitter; Information dissemination; Transparency; Citizen participation; Citizen collaboration; Ubiquitous engagement;

1 INTRODUCTION

Social media enables new forms of communication through text, images, audio and videos [4][5] to initiate awareness, participation, collaboration and engagement among

public [22]. Social media has the potential of increasing public participation by disseminating information among citizens [36]. Social media has the power of transforming relationship among governments and citizens [3]. Use of social media in public administration had increased citizen's satisfaction and trustworthiness [14][31][32]. Social media adoption for public administration depends on technology, environment and organizational factors [35]. Citizens can use social media for individual expression or for collaborative movement [20]. The transparency, participation and collaboration are three pillars of the open government [7]. Social media facilitates these pillars by increasing giving citizens the opportunities for journalism [8].

An open government maturity model for public engagement on social media had been presented in literature [20]. The model consists of five levels, initial conditioning, data transparency, open participation, open collaboration and ubiquitous engagement. The first level, initial conditioning level focuses on information broadcasting. The second level, data transparency focuses on sharing information related to government processes. Information shared openly brings transparency into the system. The third level, open participation focuses on gathering feedback, initiating interactive conversations among citizens. The fourth level, open collaboration focuses on co-creating value-added services and collaboration among citizens. The fifth and the highest level, ubiquitous engagement focuses on continuous public engagement between government and citizens.

Each level of the open government maturity model for public engagement focus on different usage. The usage of social media highlighted in the model: information broadcasting; releasing information related to processes and performance for transparency; gathering feedback and crowd sourcing; co-creating value-added services; and continuous public engagement. Social media had been used by government for different purposes: information dissemination, participation, feedback and collaboration [26].

Public sector, social media adoption has remained an under-researched domain [24][35] which is line with our observation by reviewing the prior literature. Therefore, in this study we will explore how a social media platform has been used for various purposes in public administration domain through prior literature (section 2.1 to section 2.5) and by exploring how “#government” and “#gov” had been used on Twitter. For this tweets tag with “#government” and “#gov” had been analysed, which had been extracted for five months, starting from 1st January 2018 for 151 days. On the basis of the literature, social media platform had been used for: (a) information dissemination and broadcasting; (b) bringing transparency in system; (c) open participation; (d) open collaboration; and (e) ubiquitous engagement; in public administration domain.

The existing studies in literature have used surveys and interviews to validate the same. However, surveys and interviews suffer from responses having biases like social desirability, optimism and selective perception. This study also tries to statistically validate whether the tweets sharing and liking on Twitter are getting effected by the social media usage (depicted by the hashtag within the tweet). However such biases of filling out survey instruments are minimized in our approach as user generated content [17] is mined for the theory building. In particular, the following research questions are explored in this study:

RQ1: How is “#government” and “#gov” being used on Twitter?

RQ2: How does the nature of social media usage by the government impact the content sharing in social media?

RQ3: How does the nature of social media usage by the government impact the content popularity in social media?

The remaining sections are organized as follows. Section 2 is dedicated to theoretical basis and hypothesis development. Section 3 explains the research approach adopted for the study. Section 4 and 5 presents the insights and discusses the finding respectively. Subsequently this is followed by a conclusion section which discusses the limitations of the study along with future research directions.

2 THEORETICAL BASIS AND HYPOTHESIS DEVELOPMENT

The section had been divided into the five sub-sections on the basis of the social media usage by the public administration: information dissemination and broadcasting; bringing transparency in system; open participation; open collaboration; and ubiquitous engagement [20][26].

2.1 Information Dissemination and Broadcasting

When public official post the information related to betterment of the society on social media platforms through their official registered accounts, citizens receives the information via the same channel. This is the way social media had been used for information dissemination and broadcasting purposes. The chance for further communication between officials and citizens is limited. Government had used social media for information dissemination and broadcasting purposes during natural disasters [16] and for health-care [13] and for improving living practices [33]. There was one study which had highlighted, that majority of messages on government microblogs were posted with self-promotion objective [43].

2.2 Open Transparency

The usage of social media by public administration comes under open transparency when public official post the information related to government processes and performances through their social media accounts and citizens receives the information via the same channel. The chance for further communication between officials and citizens is depending on the desires and needs of the public officials. Literature indicates government's usage for social media platforms for transparency is still in infancy stage [9]. This may because social media platforms has global reach. Therefore too much release of the information by governments for citizens on social media can bring transparency but at the same time it may be used by other parties as well, which in not in the favor of citizens well-being.

2.3 Open Participation

The usage of social media by public administration comes under open participation when government agencies build a social media platform for citizens to participate with the objective of gathering feedbacks on policies and for crowd sourcing information purposes. The government official does not interact on the platform just initiate the participation among the citizens. Open participation had been used by the government for understanding citizens communication patterns [16][39]; and the benefits of the same to the citizens [28].

2.4 Open Collaboration

The usage of social media by public administration comes under open collaboration when government agencies build a social platform for citizens to participate and collaborate together. The objective of building such a platform is to initiate collaborations among public administration and citizens [41] for creating innovations and value added services. Social media had been used for different purposes for this such as: innovation within governments [22][34] emergency management [27] and; for analyzing attitudinal and cognitive aspects of citizens interactions [24].

2.5 Ubiquitous Engagement

The usage of social media by public administration comes under ubiquitous engagement when government agencies focus on continuous engagement with public. Ubiquitous engagement increases transparency, participation and collaboration [20][30]. Governments of various countries have used social media for ubiquitous engagement for following scenarios such as: handling foreign-language user-generated content [7]; participation of users in political election campaigns [6]; interaction of health ministry and citizens on infectious disease outbreaks [40]. Literature also indicates governments are failing to engage citizens [3].

2.6 Research Question and Hypothesis

This study focuses on three research questions (RQ) and try to explore how “#government” and “#gov” being used on Twitter (RQ1), how tweets used for different social media usage being shared and liked on Twitter (RQ2 and RQ3). Therefore, to statistically validate RQ1 we propose the hypothesis H1, to statistically validate RQ2 we propose the H2, and to statistically validate RQ3 we propose the H3. For framing hypothesis of the study, the study assumes Twitter had been used for all five purposes, equally.

RQ1: How is “#government” and “#gov” being used on Twitter?

H1: There is no statistically significant difference among content related to dissemination, transparency, participation, collaboration and engagement.

Positive influence of citizen engagement on transparency, efficiency and participation [11]. Social media plays a key role during crises and conflicts [25]. The popularity of the tweets can be measured in terms of how many times a tweet is being shared through

its retweet count [1][37] and how many times a tweet had attracted users that they save it for their future usage by liking it, can be determine through like count of the tweet [29]. Therefore to determine how tweets appeal to the citizens for different social media usage, we propose RQ2 and RQ3, subsequently to statistically validate H2 and H3. Liking is passive support for a piece of content on social media, whereas retweet is active support for the content for facilitating its propagation within the network.

RQ2: How does the nature of social media usage by the government impact the content sharing in social media?

H2: There is no statistically significant difference on sharing of the tweets containing content related to dissemination, transparency, participation, collaboration and engagement.

Social media allows instant access and information dissemination across the globe [15]. Social media usage in low- and middle-income countries has increased exponentially in recent years due to technological advances. Word of mouth and social media equally influence Indians to use IoT [10]. Some scholars indicate social media is used as tool for propaganda and not for engagement purposes [38] whereas other scholars indicates social media activity is positively associated with citizen engagement [42]. Therefore RQ3 and H3 tries to explore liking of social media users towards different usage.

RQ3: How does the nature of social media usage by the government impact the content popularity in social media?

H3: There is no statistically significant difference in liking of the tweets containing hashtags related to dissemination, transparency, participation, collaboration and engagement.

Fig. 1 presents the conceptual concept investigated in the study. On one side hashtag usage category had been given, dissemination, transparency, participation, collaboration and engagement. On the other side social media measures such as hashtag frequency, tweet sharing and liking had been plotted. The proposed hypothesis, H1, H2 and H3 exploring relationship between the two had been pictorial presented in fig. 1.

3 RESEARCH METHODOLOGY

Literature indicates social media data can be used for predicting commercial (i.e. product sales and stocks exchange) and public (i.e. election outcome) [6] activities [18]. This study tries to explore how Twitter had been used for public administration activities across the global by analyzing the tweets tagged with “#government” and “#gov”. Social media (Twitter) data is stored and managed by the private organizations and not by the governments. Therefore to analyses the data for the study and derive insights, open government data use [44]; and capture, understand and present framework for social media analytics [12] had been used. Using the same we had tried to explore the RQ1, RQ2 and RQ3 and statistically validate H1, H2 and H3.

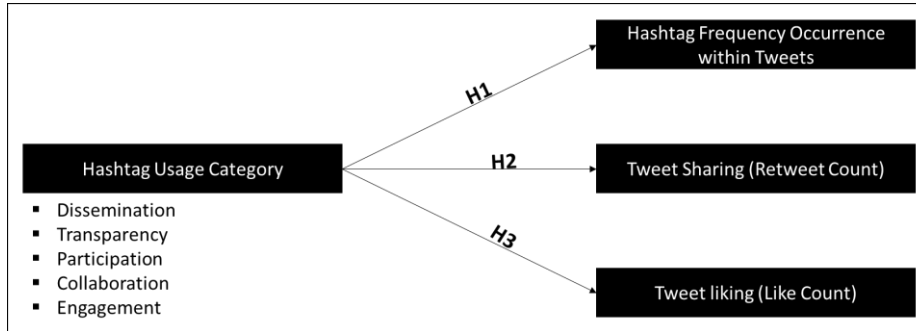


Fig. 1. Conceptual concept and investigation in the study

The “#government” and “#gov” had been used as the search terms for extracting social media data from Twitter. The data had been collected for 151 days starting from 1st January 2018. 296,417 tweets were collected along with 39 other attributes. 67% of the tweets in the sample were retweets. Therefore only unique tweets were extracted. In the sample there were around 174,204 unique tweets by 61,803 unique users. “#government” or “#gov” had been tagged with 49,659 other unique hashtags in the sample collected for the study. From these hashtags only top 100 hashtags had been considered for further analysis. Using content analysis [19] top 100 hashtags had been classified on the basis of the usage of the social media (inferred from the tweets containing these hashtags) into: (a) information dissemination and broadcasting; (b) for bringing transparency in the system; (c) open participation - gathering feedback and crowd sourcing; (d) collaboration; and (e) ubiquitous engagement. To statistically validate H1, one way anova was applied to hashtag usage category and hashtag frequency.

For each hashtag in top 100 list the tweets containing hashtag were searched. The summation of retweet count and like count for these tweets were computed and stored for each hashtag. To statistically validate H2, one way anova was applied to hashtag usage category and sum of retweet count. To statistically validate H3, one way anova was applied to hashtag usage category and sum of like count. Bar charts had been used to visualize data for frequency of the hashtags; tweets retweet ratio per hashtags for different social media usage; and tweets like ratio per hashtags for different social media usage with respect to government activities.

4 FINDING

Among top 100 hashtags, 59 hashtags had been used for information dissemination and broadcasting purposes; 5 hashtags had been used for bringing transparency in the system; 9 hashtags had been used for open participation; 7 hashtags had been used for open collaboration; and 20 hashtags had been used for ubiquitous engagement. Among information dissemination and broadcasting popular hashtags are given in fig. 2(a). News and media channel (popular #bbc and #cnn among other hashtags) are extensively reporting news related to governments. Employment issues had been considered a lot with “#government” and “#gov”, therefore, #job, #hiring, #corporatocracy, #careerarc

are in top hashtags used for information dissemination and broadcasting. The sample depicts tweets are showcasing how new technologies such as #blockchain and #ai can be used within public administration are being shared. As the new wave of digitalization is running across public administration it is giving rise to cyber security therefore #cybersecurity is occurring among top hashtags within information and dissemination hashtags.

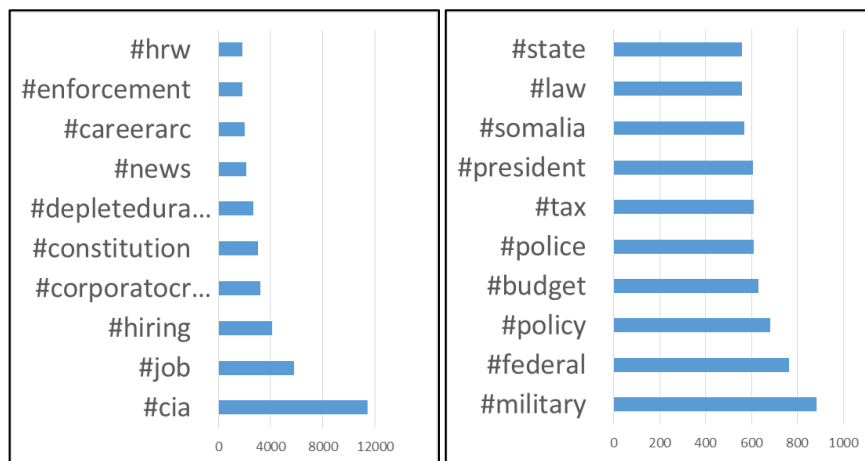


Fig. 2. (a) Information and dissemination top hashtags tagged with “government” / “gov”; (b) Ubiquitous engagement top hashtags tagged with “government” / “gov”

The popular hashtags for open transparency in sample were #justice (4793); #humanity (4551); #thaarjustice (4428); #evidence (1814); and #truth (750). The popular hashtags for open participation were related to intra and inter party’s communication in different geographical locations which included the hashtags #communist, #democrat, #congress, #bjp and many more. The sample contains the hashtags related to popular political campaigns (i.e. #maga). The tweets indicates users were discussing about “#brexit” as a global event on Twitter. The healthcare policies had been discussed on Twitter a lot in context with public administration. The sample had included the hashtags related to countries like #uk, #usa / #us / #america, #india, #iraq, #russia and #china. Among ubiquitous engagement popular hashtags are given in fig. 2(b). The sample signifies the ubiquitous engagement between public administration and citizens is going around the issues related to military, police, government policies and law, budget and tax. The null hypothesis is rejected if $p < .05$. The hypothesis above H1, H2 and H3 are null hypothesis. Therefore if the value of p is lesser than .05, than we will reject the hypothesis.

H1: There is no statistically significant difference on tagging “#government” and “#gov” with other hashtags related to dissemination, transparency, participation, collaboration and engagement hashtags.

For H1, an analysis of variance showed that the effect of social media usage for government activities tagged with “#government” and “#gov” was significantly different,

$F(4,95)=2.868$, $p = .027$, therefore H1 is rejected. So we can conclude that the mean tweets varies according to social media usage. It seems government hashtags are being used more for information and dissemination purposes followed by ubiquitous engagement.

H2: There is no statistically significant difference on sharing of the tweets containing hashtags related to dissemination, transparency, participation, collaboration and engagement hashtags tagged along “#government” and “#gov”.

For H2, an analysis of variance showed that sharing (retweet count) of the tweets were significantly affected by the social media usage (i.e. dissemination, transparency, participation, collaboration and engagement), $F(4,95) = 3.759$, $p = .007$. Therefore H2, is rejected. So we can conclude tweets posted for different social media usage effects sharing of the tweets among users. Fig. 3(a) depicts the hashtags related to open participation has highest retweet ratio per hashtag followed by engagement, collaboration, dissemination and least transparency.

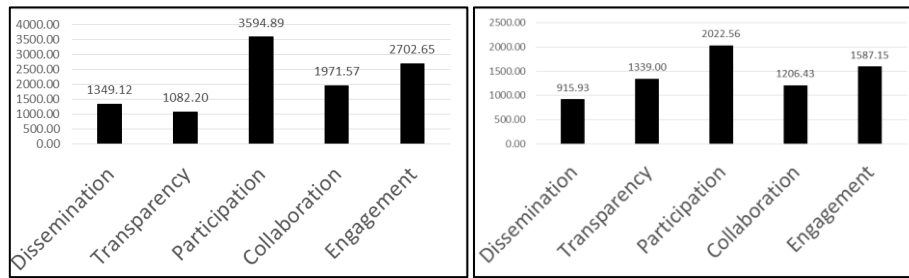


Fig. 3. (a) Tweets retweet ratio per hashtags for different social media usage; (b) Tweets like ratio per hashtags for different social media usage

H3: There is no statistically significant difference in liking of the tweets containing hashtags related to dissemination, transparency, participation, collaboration and engagement hashtags tagged along with “#government” and “#gov”.

For H3, an analysis of variance showed that sharing of the tweets were affected by the social media usage (i.e. dissemination, transparency, participation, collaboration and engagement), $F(4,95) = 3.430$, $p = .012$. Therefore H3, is rejected. So we can conclude tweets posted for different social media usage effects liking of the tweets by users. Fig. 3(b) depicts the hashtags related to open participation has highest like ratio per hashtag followed by engagement, transparency, collaboration, and least dissemination.

5 Discussion

Literature indicates the relationship between government and citizens can be transformed by using social media for information dissemination, transparency, participation, collaboration and ubiquitous government [3][7][31][36]. According to us we feel

public sector social media adoption had not been explored to great extent which is in line with literature [23][35]. There had been studies which had explored government adoption of social media through surveys and interview but to best of our knowledge there is no study which had explored it by examining the user generated discussion in the field (social media platforms). Therefore this study tries to explore how social media had been used for various activities and how users are reacting to the tweets for different usage.

The study reports H1 is rejected on the sample collected which signifies social media had been extensively used for information dissemination and broadcasting purposes. Information dissemination had been used for news; employments, jobs and career; creating awareness about new technologies (artificial intelligence and blockchain) and their usage in public administration. In this digital age, users are concerned about their cyber security, therefore cyber security has occurred in top hashtags.

H2 had been significantly rejected, which signifies tweet usage for different social media usage effects its sharing within the virtual communities. Fig. 2(a) and Fig 2(b) depicts a tweet related to participation as social media usage has got highest appeal of sharing and liking within the virtual communities (open participation has highest retweet and like ratio per hashtag). H3 had been significantly rejected, which signifies tweet usage for different social media usage effects its liking within the virtual world as well.

5.1 Contribution to theory

The article on the basis of literature evidences and social media analysis presents government usage of social media for five purposes, first is for information dissemination and broadcasting purposes; second is for bringing transparency in system; third is for open participation for encouraging citizens in participating in national and global context agenda discussions; fourth is for open collaboration for betterment of the society; and lastly for ubiquitous engagement. This can be regarded as the theoretical contribution of the article towards the academic literature.

5.2 Implications for practice

Exploration of RQ1 reveals highest number of hashtags tagged with “#government” and “#gov” had been used for information dissemination and broadcasting purposes whereas H2 and H3 reveals hashtags related to open participation has highest retweet ratio per hashtag and highest like ratio per hashtag. This signifies the tweets having participation appeal has highest penetration across the network. On the basis of the above analysis, the study briefly outlines guidelines for campaigns (hashtags usage) on social media by governments, news channels, political parties, non-governmental agencies and many more.

- (a) To increase the penetration of the message on social media, the authors and distributors should try to embed the appeal of action from reader’s prospective.

- (b) On social media the agenda is being discussed in national or global context, so authors and distributors should always keep in mind how the message will affect the different communities present online.
- (c) Authors and distributors should always be ready for rumors, if any, initiated and spread by other users present on the media.
- (d) Use instructing strategy before and during the disaster and bolstering and adjusting strategy during post-disaster and recovery phase [21]. Inspired by them authors of the article will like to suggest to distributors to design the message according to situation and whether it is for information dissemination, citizen participation, citizen collaboration or citizen engagement.

6 CONCLUDING DISCUSSION

The study presents five uses of social media in public administration activities there are: information dissemination and broadcasting, for bringing transparency in system, participation, collaboration and engagement. The article focus on exploring three research questions, how is “#government” and “#gov” being used on Twitter and is there linkage between information sharing and liking through tweets and nature of social media usage through three hypothesis. The sample collected reveals news channels used social media extensively for information dissemination purposes. The biggest limitation of the study is that study had collected data for only 151 days and tweets only in English language had been considered for the analysis. The second biggest limitation of the study is some of the hashtags may not be necessarily from the government, it can be from individual users as well. The hashtags related to employability had been extensively tagged with “#government”, which signifies may be citizens are heavily depending on governments for earning their living. Future researchers can explore how Twitter is being used in relation with public administration and employability of citizens. Second issue which had gained lot of attention with government hashtag is security, both physical security as well as cyber security. Researcher can explore the discussions on government and security further for deriving more insights from social media discussions.

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