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The impact of social media policy and use on value creation: a survey research

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Keywords

research, impact, social, media, policy, value, creation, survey

Disciplines

Engineering | Science and Technology Studies

THE IMPACT OF SOCIAL MEDIA POLICY AND USE ON VALUE CREATION: A SURVEY RESEARCH

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Abstract

Organizations need to provide effective policies in aligning their social media use with organizational goals to realize the expected benefits of social media. However, while social media use has been studied, social media policy research is lacking. This study aims to examine impacts of social media policy and active use on value creation. Drawing on the Model of IT/Business Value, we assessed the interplay between social media policy and social media use on value creation in a survey research conducted with Indonesia's disaster management agencies. Our analysis results of 124 survey responses show that social media use and social media policy positively influence disaster communication capability of disaster management agencies, which in turn positively affect disaster management performance. Further analysis on the relationship between social media policy on the social media use show high partial mediating role, while we did not find the moderating role of the social media policy.

Keywords: Social media, value creation, policy, communication, disaster management

1 INTRODUCTION

The role of non-information technology (IT) organizational resources, notably policies, strategies, organizational culture and structure, on IT value creation has been examined for decades in the IS literature (Melville, Kraemer, & Gurbaxani, 2004; Ray, Muhanna, & Barney, 2005). Specifically the impact of IT-related policies on the individual behavior of the organization's employees has been studied in the context of information security (Bulgurcu, Cavusoglu, & Benbasat, 2010; D'Arcy, Hovav, & Galletta, 2009; Höne & Eloff, 2002). Prior policy studies have also observed employee attitudes towards organizational policy (Bulgurcu, Cavusoglu, & Benbasat, 2010; D'Arcy, Hovav, & Galletta, 2009). However, the extent to which IT-related policies might contribute to the value creation process has received less research attention (D'Arcy, Hovav, & Galletta, 2009; Huang, Zmud, & Price, 2010). In stark contrast, the e-government literature clearly indicates that the absence of policies on social media use in government could hinder the government's capability to realize the potential value from social media use (Bertot, Jaeger, & Hansen, 2012; Kavanaugh et al., 2012; Yi, Oh, & Kim, 2013).

With the rise of adoption and use of social media in both private and public-sector organizations, policy related to the social media use has attracted recent attention in various disciplines (Bertot, Jaeger, & Grimes, 2012; Campbell, Lambright, & Wells, 2014; Husin & Hanisch, 2011a, 2011b; Kavanaugh, et al., 2012; Klang & Nolin, 2011; Vaast & Kaganer, 2013). Prior studies on social media policy focused on the policy development framework (Gallaugher & Ransbotham, 2010; Husin & Hanisch, 2011a, 2011b), information disclosure (Pallegedara & Warren, 2014), governance (Macnamara, 2010; Macnamara & Zerfass, 2012), data management and the legal considerations upon which policies should be derived (Bertot, Jaeger, & Hansen, 2012; Doran, 2012; Klang & Nolin, 2011; Magro, 2012; Yi, Oh, & Kim, 2013). However the literature lacks the empirical study on the role of the social media policy on the value creation process through the use of social media.

To fill this gap, this study examines the 124 usable survey data collected through an online survey on the use of social media and social media policy across the Indonesia's disaster management agencies. The survey respondents were social media officers and senior managers of Indonesia's disaster management agencies which have all adopted government social media use. Data were analyzed through structural equation modeling (SEM) using SmartPLS 3.2.1 and following the steps introduced by Sarstedt et al. (2014). Our SEM analysis results suggest that social media use and social media policy positively influence disaster communication capability of disaster management agencies, which in turn positively affects the level of disaster management performance. Our further analysis shows high partial mediating role of the social media policy on the relationship between social media use and communication (71.1%). In our study context, we did not find the moderating interaction effect of the social media policy on the relationship between social media use and communication.

The remaining of the paper presents literature review in Section 2. Section 3 presents our hypotheses and research model. Following that, Section 4 provides our research methodology. Section 5 presents the results of the study. The last two sections present our discussions and conclusions.

2 LITERATURE REVIEW

2.1 Value Creation through IT

The study on value creation through information technology has received considerable attention in the last two decades (Barua, Kriebel, & Mukhopadhyay, 1995; Mata, Fuerst, & Barney, 1995). Value creation of IT investment is often referred to as IT business value (Melville, Kraemer, & Gurbaxani, 2004). IT business value research recognizes that creating business value from IT investment is subject to other internal factors; so-called non-IT resources (e.g. policy, workplace practice, culture, organizational structure) and its external environment factors (Melville, Kraemer, & Gurbaxani,

2004). As summarized by Melville, Kraemer, & Gurbaxani (2004, p. 292), "if the right IT is applied within the right business process, improved processes and organizational performance result, conditional upon appropriate complementary investments in workplace practices and organizational structure and shaped by the competitive environment". Melville, Kraemer, & Gurbaxani (2004) suggest in their model that the impact of the IT resources and non-IT resources can be observed at the process and the organizational levels.

2.2   Social Media Use and Disaster Management Performance

Social media has been widely used by disaster management agencies to improve disaster management performance through collaboration with the public or with other agencies (Chatfield & Brajawidagda, 2012, 2014; Chatfield, Scholl, & Brajawidagda, 2013; Chatfield, Scholl, & Brajawidagda, 2014; Goggins, Mascaro, & Mascaro, 2012; Yates & Paquette, 2011). Disaster management is a strategic avenue to observe the impact of the IT (including social media) and non-IT resources to the organization at the process level because disaster management performance in many cases is often related to government performance (Farazmand, 2007). Disaster management is an approach that deals with the complex requirements for coping with a disaster (Donahue & Joyce, 2001; Henstra, 2010). In public administration literature, disaster management has been viewed as efforts to increase the capability of government to deal with various types of emergency and disaster situations that involve many agencies from different levels and jurisdictions (Donahue & Joyce, 2001; Waugh & Straib, 2006).

The enhanced disaster management performance through the use of social media is found in the studies of social media during the 2010 Haiti Earthquake, the 2011 Queensland flood in Australia, the 2012 Sumatra Earthquake in Indonesia, the 2012 Hurricane Sandy in the US and the 2012 Oklahoma Tornado in the US (Chatfield & Brajawidagda, 2012, 2014; Chatfield, Scholl, & Brajawidagda, 2013; Chatfield, Scholl, & Brajawidagda, 2014; Goggins, Mascaro, & Mascaro, 2012; Yates & Paquette, 2011). The values created through the use of social media in disaster management include: faster collaboration between agencies, faster disaster responses, faster rumour clarifications, increased disaster situational awareness, disaster risk reduction and improved collaboration with the public (Chatfield & Brajawidagda, 2012, 2014; Chatfield, Scholl, & Brajawidagda, 2013; Chatfield, Scholl, & Brajawidagda, 2014; Goggins, Mascaro, & Mascaro, 2012; Yates & Paquette, 2011).

2.3   Social Media Policy

Prior studies have recognized policies as important tools for developing a shared understanding between top management and all employees regarding organizational strategic decisions (Ettlie, 1983; Huang, Zmud, & Price, 2010; Thompson & Higgins, 1991; Zahra & Covin, 1993). In the organizational decision-making context, policy has been associated with day to day practical guidance (Huang, Zmud, & Price, 2010; Thompson & Higgins, 1991). Organizational policies are usually formulated and implemented by top management in alignment with the organizational goals (Huang, Zmud, & Price, 2010; Vaast & Kaganer, 2013) and present principles for decision-making by organizational members (Krüger, Brockmann, & Stieglitz, 2013; Vaast & Kaganer, 2013). The principles of decision-making shape shared perceptions among an organization's members regarding top management's decisions on the use of technology to achieve organizational goals (Vaast & Kaganer, 2013).

In the IT literature, organizational policies reflect the top management's views on how IT should be utilized to create value and avoid misuse or abuse for the organization (D'Arcy, Hovav, & Galletta, 2009; Huang, Zmud, & Price, 2010; Vaast & Kaganer, 2013).The impact of IT-related policies on the individual behavior of the organization's employees has been studied in the context of information security (Bulgurcu, Cavusoglu, & Benbasat, 2010; D'Arcy, Hovav, & Galletta, 2009; Höne & Eloff, 2002). Prior policy studies have observed employee attitudes towards organizational policy (Bulgurcu, Cavusoglu, & Benbasat, 2010; D'Arcy, Hovav, & Galletta, 2009). However, the extent to which IT-

related policies might contribute to the value creation process has not received much research attention (D'Arcy, Hovav, & Galletta, 2009; Huang, Zmud, & Price, 2010).

Social media policy refers to the guidelines for the organizational social media use in order to achieve the organizational goals/missions. Social media policy is often derived, transferred or developed from existing policies (Johnston, 2015; Klang & Nolin, 2011; Vaast & Kaganer, 2013). The existing policies from which social media policies are being developed include IT, communication and public relations, web and email policies (Klang & Nolin, 2011; Vaast & Kaganer, 2013). Any existing policies used by governments to cover their interactions with citizens might be relevant to, and used as sources for, social media policy (Johnston, 2015; Vaast & Kaganer, 2013). Previous studies on social media highlight the elements needed to guide social media use for organizational purposes (Hrdinová, Helbig, & Peters, 2010; Klang & Nolin, 2011; Mergel, 2012a; Pallegedara & Warren, 2014). Most studies have mixed enterprise social media use and employee social media use into a policy and only Mergel and Greeves (2012a) have identified the key elements of enterprise social media policy for organizational purposes. Most of the proposed social media policies in the literature were intended to provide general principles for government agencies to use when they develop their social media policies.

In the e-government literature, social media policy contributes to the organizational performance at least in two ways (Klang & Nolin, 2011; Mergel, 2012a). First, the establishment of policies on enterprise social media use helps the development of understanding between top management and social media team members on how to best benefit from the organization's social media use (Bertot, Jaeger, & Hansen, 2012; Hrdinová, Helbig, & Peters, 2010; Kavanaugh, et al., 2012; Mergel, 2012a). Second, the existence of the social media policy helps the organization to align its social media use with the organizational goals (Johnston, 2015; Mergel, 2012a). While the e-government literature clearly indicates that the absence of policies on social media use by governments could hinder the organization's capability to realize the potential value of social media (Bertot, Jaeger, & Hansen, 2012; Kavanaugh, et al., 2012; Yi, Oh, & Kim, 2013), theory-driven empirical research on how social media policy might contribute to the value creation process through social media use has been clearly lacking in the literature.

3   HYPOTHESES DEVELOPMENT

To examine the impacts of the social media policy on the value creation process through the use of social media, we adapt the IT Business value generation process model embedded in the Integrative Model of IT Business Value proposed by Melville, Kraemer, & Gurbaxani (2004). In the core IT business value generation process, the model posits that the right IT implemented in the right process create value through process performance conditional upon the synergy of the existence of the non-IT resources (Melville, Kraemer, & Gurbaxani, 2004). Here, we view social media use as the right IT resource and social media policy as the non-IT resources complimentary to the social media use. Adapting the theoretical model into the disaster management context, the remaining of this section discusses the constructs of interests and the relationship between them.

Social Media Use (USE). Social media use is defined as the level of active effort demonstrated by government in social media platform. Establishing presence in various social media platforms is part of the effort to have an active social media use. Adapting the concept of IT use and social media presence, this study conceptualize social media use as: frequency (FREQ), interactivity (INT) and duration (DUR) (Kietzmann, Hermkens, McCarthy, & Silvestre, 2011; Venkatesh, Brown, Maruping, & Bala, 2008). Increased frequency of use indicates that government is extending their online social presence by disseminating information through social media (Mossberger, Wu, & Crawford, 2013). Interactivity means that government is providing a virtual sphere for social interaction between citizens and the government (Stamati, Papadopoulos, & Anagnostopoulos, 2015). By enhancing interactions, government provides the opportunity for the public have more participation in policymaking (Mergel, 2013a). Interaction through social media can take place in many ways, such as

forwarding a message (Mergel, 2013a; Zheng & Zheng, 2014), responding to a message (Bonsón, Royo, & Ratkai, 2015; Mergel, 2013a; Zheng & Zheng, 2014), liking/providing a rating to a post or comment (Bonsón, Royo, & Ratkai, 2015; Mergel, 2013a) and providing feedback (Bertot, Jaeger, & Hansen, 2012; Bonsón, Torres, Royo, & Flores, 2012; Kavanaugh, et al., 2012). Duration reflects the time spent by the organization to manage its social media accounts, including social media and monitoring (Bekkers, Edwards, & de Kool, 2013). Duration of social media monitoring affects the organization's communication responsiveness (Bekkers, Edwards, & de Kool, 2013).

In disaster situation, social media acts as backchannel and viable communications during disaster situation (Chatfield, Scholl, & Brajawidagda, 2014; Sutton, Palen, & Shklovski, 2008). Providing disaster early warning through social media allows the citizens to co-produce the information and expands the coverage of the audience (Chatfield & Brajawidagda, 2012; Chatfield, Scholl, & Brajawidagda, 2013). Similarly, citizens are easier to provide reports related to disaster events through social media (Chatfield & Brajawidagda, 2014). Most importantly, the use of social media by disaster management agencies increase the speed of communication between the agencies involved in the disaster recovery phase by reducing both technological and organizational challenges (Goggins, Mascaro, & Mascaro, 2012; Yates & Paquette, 2011). Therefore we propose the following hypothesis:

H1: Social media use has a positive relationship with disaster communication

Social Media Policy (POL). Social media policy refers to the extent to which government provides the guidelines for the organizational social media use in order to achieve the organizational goals/missions. The existence of the social media policy contributes to the development of understanding between top management and social media team members on how to best benefit from the organization's social media use (Bertot, Jaeger, & Hansen, 2012; Hrdinová, Helbig, & Peters, 2010; Kavanaugh, et al., 2012; Mergel, 2012a). Social media policy is expected to guide social media use and create value for the organization by increasing the communication performance (Klang & Nolin, 2011; Mergel, 2012a). The existence of good policy ensures that social media use conforms to the current administrative practice through sufficient communication guidance (Kavanaugh, et al., 2012; Klang & Nolin, 2011; Mergel, 2012a). Social media policy defines the roles and responsibilities that relate to social media communication (Mergel, 2012b, 2013b). Therefore we propose the following two hypotheses:

H2: Social media policy has a positive relationship with disaster communication

Communication (COM) and Disaster Management Performance (DM). Disaster management performance is defined as the degree to which government is able to deploy social media to enhance effective and efficient disaster management cycle activities in the mitigation, preparedness, response, and recovery phase. In disaster management, communication is a salient factor during the mitigation, preparedness, response, and recovery phases (Comfort, 2007; Garnett & Kouzmin, 2007; Manoj & Baker, 2007). Communication is the extent to which government is able to utilize social media in sharing mission-critical information with its key stake holders. Successful communication in the mitigation and preparedness phase contributes to actions that reduce the risks and enhance government capability and community capacity for dealing with future disasters. Similarly, communicating policies, goals and action plans to all stakeholders might increase the support for an organization and might lead to more efficient disaster response. In the response and recovery phase, the establishment of timely, accurate and reliable communication leads to good coordination in disaster response and recovery. Therefore we propose the following hypothesis:

H3: Communication has a positive relationship with disaster management performance

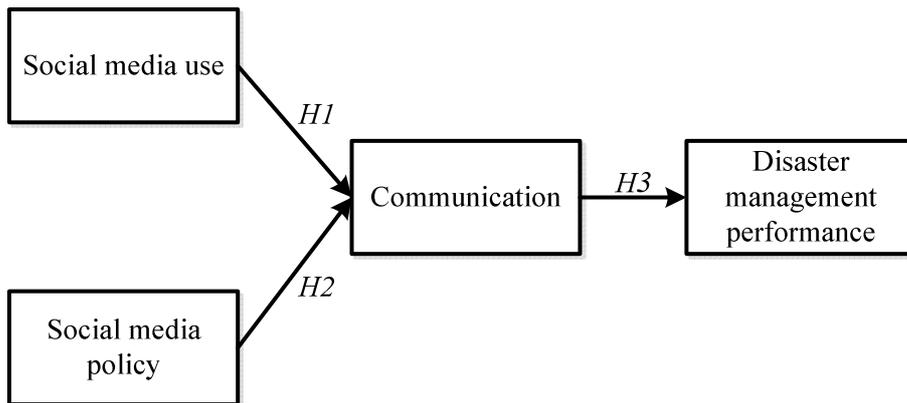The constructs and relationships among them are presented in Figure 1.

Figure 1.   Research model

4   RESEARCH METHODOLOGY

4.1   Instrument Development

A survey instrument was developed from literature review and case study interviews with 15 senior managers of Indonesia's ten disaster management agencies. The validity of the survey questionnaire instruments was assessed in a three-phase pre-test involving 22 participants from academics and social media heavy users to avoid ambiguity, lack of clarity or biases in wording (Bhattacherjee, 2012; Cavana, Delahaye, & Sekeran, 2001). As mentioned earlier, social media use is conceptualized as a formative construct consisting of three dimensions: frequency, interactivity and duration spent for managing the government social media account. Frequency, interactivity and duration were measured by a five-point interval Likert scale for five different social media platforms: Facebook, Twitter, Tumblr, Blog and YouTube. These five social media platforms were found in the previous studies on social media use in Indonesia (Brajawidagda & Chatfield, 2014; Chatfield & Brajawidagda, 2013a, 2013b; Chatfield, Scholl, & Brajawidagda, 2013; Rokhman, 2011). Social media policy was measured by 6 seven-point interval Likert scale items which are self-developed from case interview results. Similarly, communication is measured through 6 seven-point interval self-developed Likert scale items. The items were developed from the case interview results. Finally, disaster management performance instruments were 6 seven-point Likert scale items and self-developed from case interview results. These three constructs are reflective constructs.

4.2   Targeted Respondents

The targeted survey respondents were social media officers and senior managers of Indonesia's disaster management agencies which have all adopted government social media use. The participants were in the best position to answer survey questions. According to the Law 24/2007 on Disaster Management, the disaster management agencies include the National Disaster Management Agency (BNPB), the national armed forces (TNI), the national police (Polri), the National Search and Rescue Agency (SAR), the Meteorological, Climatological and Geophysical Agency of Indonesia (BMKG) and some other ministries (Government of Indonesia, 2007). Structurally, each agency at central government level has its local subsidiaries or corresponding agency in 34 provinces and more than 510 cities/regencies. For example, the BNPB has its corresponding agency at province/city/regency level which is called the Local Disaster Management Agency (BPBD).

In this study, we could not find any complete database on the targeted agencies, especially the agencies at the local province and city/regency level. This challenge is similar to prior e-government research, which also found it difficult to determine the population of the targeted government organizations (Gil-Garcia, Berg, Pardo, Burke, & Guler, 2009). Therefore, the first step was to identify the potential agencies through the two approaches in searching: 1) official government website and 2)

direct search using Google, Facebook, Twitter, YouTube, and Tumblr. If an agency has a government website, we searched the official link to obtain its address, email and social media account. For the direct search through Google and social media platforms, the keywords used were the combination of the name of the agency and the name of the province/city. Next, a careful observation of the social media content was made to ensure that the social media account was an official social media account of the targeted agencies. In total, the identification process yielded 674 disaster management agencies with at least one of official social media accounts either in Facebook, Twitter, Tumblr, Blog and YouTube.

4.3 Data Collection

The online survey was conducted through surveymonkey.com for 66 days between 12 January and 19 March 2015. The targeted survey respondents were invited to participate in the online survey through the letter of invitation sent to the head of the agencies. Friendly reminders were sent in week 4 through facsimile and the rest survey period through the combination of phone reminder and Facebook message. Of the 674 agencies contacted we received 136 responses. 12 responses were discarded due to the missing data. There is no systematic bias on the 12 discarded responses. Finally, there were 124 usable responses. The 124 usable responses are mainly from respondents at the local city/regency level (55%), followed by the province level (34%) and the national level (11%). Almost half of the respondents are IT department staff (47%), indicating where government social media infrastructure and resources are operated and maintained. Other respondents were from public relations department (28%) and social media department (6%). Respondents are also from the managerial level including head of IT department (5%) and head of public relations departments (5%). Only 4% of the respondents are from top managements. Others (6%) include various positions such as GIS officer and weather forecasters. The respondents are predominantly male (89%). Most of the respondents are in age between 23 and 30 years old (52%) with diploma/undergraduate education background (67%).

4.4 Statistics Analysis

This study used SEM analysis to test the hypotheses with the use of SmartPLS 3.2.1 software. SmartPLS which is based on the partial least square SEM (PLS-SEM) was chosen for the following reasons: this study has small sample size, some of the data are non-normal data and the use of formative variables (Chin & Newsted, 1999; Ringle, Sarstedt, & Straub, 2012). Following Sarstedt et al. (2014), the assessments of this model include: the assessment of the reflectively measured constructs (if any), the assessment of the formatively measured constructs (if any) and the assessment of the structural model. The assessment criteria of the reflectively measured constructs include evaluation on the indicator reliability, internal consistency, convergent validity and discriminant validity. Evaluation criteria for formative model include convergent validity, collinearity and significance and relevance of indicator weights. Evaluation criteria for the structural model include collinearity, predictive relevance, significance and relevance of path coefficients. Before the three steps above undertaken, we need to check the existence of the hierarchical component model (HCM).

As indicated earlier, social media use consists of three dimensions and therefore it is a reflective-formative HCM. For a reflective-formative HCM, the appropriate assessment is using a two-stage approach. The two-stage approach steps follows the procedures introduced by Hair et al. (2014). In the first stage, the four constructs (USE, POL, COM and DM) were built. The three sub-dimensions of USE (FREQ, INT and DUR) were then created and formatively linked to USE. All the instruments were reflectively assigned to each construct and sub-dimension. At this point, USE had no instruments and therefore all instruments of the FREQ, INT and DUR were replicated to USE. By using this model, the latent variable scores for the FREQ, INT and DUR were computed. The second stage of the two-stage approach was conducted by replacing the three sub-dimensions of the FREQ, INT and DUR with the latent variable scores computed in the first stage. Finally, the structural model was ready for the assessment to test the *H1*, *H2* and *H3*. In this paper, we only present the assessment results of the second stage of the two-stage approach.

5 RESULTS

5.1 Descriptive Statistics of the Measurement Model

The descriptive statistics of the 124 usable responses is presented in Table 1. Table 1 presents the number of response (N), minimum (Min) and maximum (Max), mean, standard deviation (S.D) and Kurtosis value of the responses collected through the questionnaire. Missing data was less than 10% and treated by imputation (Hair, Hult, Ringle, & Sarstedt, 2014). All the missing data were due respondents failing to provide answers to certain questions and not systematic faults. There was no response from unengaged respondents. The use of the Likert-scale prevents the outliers of the data. Kurtosis value of 7 was used as a threshold for the assessment of data distribution. As can be seen in Table 1, USE3, USE8, USE13 and POL2 are higher than the kurtosis threshold value and therefore were excluded from further analysis.

Item		N	Min	Max	Mean	S.D.	Kurtosis
Social media use (USE)-Frequency Number of status, tweet or post posted through these following organizational social media accounts (PER DAY)							
USE1	Facebook (statuses)	124	0	5	2.80	1.06	.17
USE2	Twitter (tweets)	124	0	5	1.90	1.59	-1.20
USE3	Tumblr (posts)	124	0	4	.18	.71	18.02
Number of articles or videos posted through these following organizational social media accounts (PER MONTH)							
USE4	Blog (articles)	124	0	5	1.25	1.64	-.30
USE5	YouTube (videos)	124	0	3	.82	.95	-.48
Social media use (USE)-Interactivity How many interactions (through comments, retweets, replies, likes or reblogs) does your organization make through organizational social media account PER DAY:							
USE6	Facebook (likes, comments)	124	0	5	3.20	1.30	-.85
USE7	Twitter (retweets, replies)	124	0	5	2.19	1.75	-1.30
USE8	Tumblr (reblogs, likes)	124	0	5	.19	.68	28.76
USE9	Blog (comments)	124	0	5	.51	1.06	6.40
USE10	YouTube (comments)	124	0	4	.66	.81	1.83
Social media use (USE)-Duration Indicate how many hours PER DAY were spent for organizational social media account operation/management:							
USE11	Facebook	124	0	5	3.13	1.24	-.58
USE12	Twitter	124	0	5	2.27	1.87	-1.47
USE13	Tumblr	124	0	5	.37	1.11	9.98
USE14	Blog	124	0	5	.81	1.51	1.96
USE15	YouTube	124	0	5	1.04	1.15	-.40
Social media policy (POL)							
Our organization has policy/guideline/procedure							
POL1	on how to interact with traditional media (for example TV, radio, newspaper, radio frequency,	124	1	7	5.23	1.44	1.16

	siren etc.)						
POL2	to continuously monitor what is on social media that relates to emergency/disaster event	124	1	7	6.08	1.12	8.93
POL3	to provide immediate clarification on false information or rumors related to emergency/disaster event	124	1	7	5.40	1.24	3.64
POL4	on what can be disclosed to the public through social media	124	1	7	5.48	1.54	1.90
POL5	That provides us autonomy in responding to citizens' inquiry through social media	124	1	7	5.35	1.77	1.03
POL6	that the management is responsible on what we post on the official social media account	124	1	7	5.98	1.36	5.66
Communication (COM)							
Since our organization used social media …							
COM1	We have no technological interoperability problem for information sharing with other agencies	124	1	7	4.84	1.61	.54
COM2	Information sharing with other agencies is faster	124	2	7	5.76	1.05	2.43
COM3	We can share information with other agencies without official protocol	124	2	7	6.02	.95	6.49
COM4	Information sharing with the public is faster	124	1	7	4.64	1.78	-.68
COM5	The public report emergency/disaster information more timely to us	123	1	7	5.34	1.48	1.39
COM6	It is now easier for us to observe the current emergency/disaster event status through shared citizens' conversation in social media	124	1	7	5.47	1.38	2.63
Disaster management performance (DM)							
Since our organization used social media …							
DM1	we have higher awareness of emergency disaster alert	124	2	7	5.17	.99	.20
DM2	we reduce the risks associated with an emergency/disaster event faced by community	124	2	7	5.41	1.01	.73
DM3	we have faster response to an emergency/disaster event	124	2	7	5.17	1.19	.43
DM4	we have more effective collaboration with the public when disaster is enfolding	123	2	7	5.20	1.14	.68
DM5	we have more effective collaboration with other agencies when disaster is enfolding	124	1	7	4.89	1.54	-.51
DM6	we are able to "bust" false information or rumors faster	122	1	7	4.91	1.43	-.25

Table 1.   Descriptive statistics

5.2   The Assessment of the Reflective Instruments

Three constructs with reflective instruments were assessed through the examination of their instrument reliability, internal consistency, convergent validity and discriminant validity. The first three assessments results and cross loading for the discriminant validity are presented in Table 2. All the loading of the instruments was greater than the threshold value of 0.7, indicating instrument reliability (Hair, Hult, Ringle, & Sarstedt, 2014; Hulland, 1999). The composite reliability (CR) values of the three reflective constructs fall between 0.7 and 0.95, satisfactory to good (Hair, Hult, Ringle, & Sarstedt, 2014; Hulland, 1999), indicating that instruments are able to adequately measure the latent variable (Hair, Hult, Ringle, & Sarstedt, 2014). The average variance extracted (AVE) value of the three reflective constructs are above the threshold value of 0.5, indicating convergent validity.

Construct	Instruments	Loading	Cross loadings			Composite Reliability (CR)	Average Variance Extracted (AVE)
			COM	DM	POL		
COM	COM1	0.837	**0.837**	0.580	0.479	0.882	0.652
	COM4	0.824	**0.824**	0.526	0.439		
	COM5	0.787	**0.787**	0.473	0.404		
	COM6	0.779	**0.779**	0.425	0.540		
DM	DM2	0.786	0.536	**0.786**	0.445	0.899	0.690
	DM3	0.870	0.539	**0.870**	0.470		
	DM4	0.809	0.488	**0.809**	0.402		
	DM6	0.855	0.506	**0.855**	0.529		
POL	POL1	0.882	0.535	0.482	**0.882**	0.880	0.709
	POL3	0.846	0.499	0.470	**0.846**		
	POL4	0.796	0.405	0.454	**0.796**		

Table 2.   Instrument reliability, internal consistency, convergent validity and cross-loading

The discriminant validity by using three assessments: cross-loading, Fornell-Larcker criterion and HTMT criterion (Fornell & Larcker, 1981; Hair, Hult, Ringle, & Sarstedt, 2014; Henseler, Ringle, & Sarstedt, 2015; Hulland, 1999). As shown at the cross-loading column in Table 2, the outer loading values the instruments to their constructs were higher than the cross loading values to other constructs. The Fornell-Larcker matrix, as presented in Table 3, shows that the squared AVE of each construct was higher than the correlation values with other constructs. The HTMT matrix also satisfies the threshold value of less than 0.85. The $HTMT_{inference}$ value of less than 1 was computed through a bootstrap procedure. All in all, the three assessment results provide evidence of discriminant validity.

	Fornell-larcker matrix				HTMT matrix		
	COM	DM	POL	USE	COM	DM	POL
COM	0.807						
DM	0.624	0.831			0.742		
POL	0.575	0.556	0.842		0.706	0.676	
USE	0.589	0.604	0.431	Formative			

Table 3.   Fornell-larcker and HTMT matrix

During the assessment, several instruments were eliminated due to reliability and validity issues: COM3, DM1, POL2, POL3 and POL5.

5.3   The Assessment of the Formative Instruments

The assessment of formative instruments includes convergent validity, collinearity and statistical/relevance of the instruments weight. The only construct with a formative instrument was the USE construct. This construct is a formative HCM and there is no reflective instrument designed to measure this construct. Therefore, the assessment on the convergent validity was not undertaken. The examinations of the constructs include collinearity, statistical significance and relevance of the outer weight. As shown in Table 4, based on the variance inflation factor (VIF) values of the three formative instruments that were all less than 5, there was no collinearity issue (Hair, Hult, Ringle, & Sarstedt, 2014). The t-statistic tests on instruments' weights showed significant results for frequency of use (FREQ) but not for the other two: interactivity of use (INT) and duration of use (DUR). However, the loadings of the DUR and INT were greater than 0.5, suggesting these two instruments should be retained (Hair, Hult, Ringle, & Sarstedt, 2014).

	VIF	Weight	t-statistic of weight	Loading
Dur	3.085	0.293	1.435	0.905

Int	3.216	0.281	1.496	0.907
Freq	3.961	0.499	2.023	0.963

Table 4.   Assessment results of formative instruments

5.4   The Assessment of the Structural Model

Since the results of the measurement model assessment satisfied the reliability and validity requirements, the next step was the assessment of the structural model. The assessment of the structural model included assessing the collinearity of the exogenous variables, measuring the paths coefficient and their significance, assessing the coefficient of determination R^2, effect size f^2 and finally assessing the model's predictive relevance Q^2 (Hair, Hult, Ringle, & Sarstedt, 2014; Hulland, 1999; Sarstedt, Ringle, Smith, Reams, & Hair, 2014).

The overall results of the assessment are presented in Table 5 and Figure 2. As shown in Table 5, the structural model is not affected by collinearity issues of the exogenous variables as the VIF value are less than 5 (Hair, Hult, Ringle, & Sarstedt, 2014). The bootstrap t-statistic of the path coefficient (124 cases, 5000 samples and no sign changes option) showed that all the relationships were significant at 0.01 (***). The path coefficient of USE→COM is 0.419***, POL→COM is 0.394*** and COM→DM is 0.624***. The effect size f^2USE→COM value of 0.272 (medium), POL→COM value of 0.240 (medium), and COM→DM value of 0.638 (large) show the contribution of the exogenous variable to the variance explained.

The R^2 of COM shows that this endogenous variable explains 0.473 of the variance of the USE and POL. Slightly lower than that, the R^2 of DM describes 0.390 variance of the COM. The values of both R^2s suggest weak coefficients of determination. Finally, the Q^2 values for COM and DM are above 0, indicating that predictive relevance is established. The evidence suggests that *H1*, *H2* and *H3* are accepted.

	COM (R^2=0.473, Q^2=0.293)				DM (R^2=0.390, Q^2=0.264)			
	VIF	Path Coefficient	t-statistic	f^2	VIF	Path Coefficient	t-statistic	f^2
COM					1.000	0.624	9.886	0.638
DM								
POL	1.228	0.394	5.141	0.240				
USE	1.228	0.419	7.579	0.272				

Table 5.   Assessment results of structural model
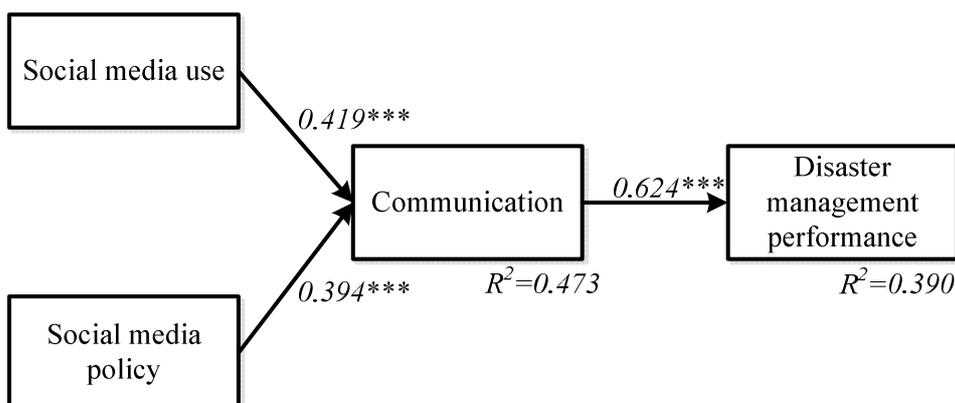

Figure 2.   The results of the assessment of the structural model

5.5   Post hoc analysis

Besides the hypotheses, we also observed the moderating interaction between social media policy and social media use. Using a two-stage approach (Hair, Hult, Ringle, & Sarstedt, 2014), the assessment results path coefficient value of 0.031 with bootstrap t-statistics=0.391,indicatingthat there is no moderating interaction between social media policy and social media use. We also examined the mediating role of the social media policy on the relationship between social media use and communication. Following Hair et al. (2014), three steps were undertaken: 1) examining whether the direct effect of the social media use on communication without social media policy is significance, 2) examining whether the indirect effect of the social media policy to communication through social media policy is significance, and 3) compute the proportion of the direct effect absorbed by the indirect effect through the mediator, or variance accounted for (VAF). When we examined the direct effect of the social media use to communication, results show path coefficient value of 0.593 and bootstrap t-statistics 13.916, indicating a significant direct effect. Assessment of the indirect effect of the social media use to communication through social media policy results path coefficient value of USE→POL is 0.440 (bootstrap t-statistics 6.096) and POL→COM is 0.393 (bootstrap t-statistics 5.068) which suggests a significant indirect effect. Finally, the VAF is computed by comparing the direct effect of the social media use to communication with the indirect effect of through social media policy. The VAF is 71.1%, computed from 0.593/(0.440+0.393). The VAF value suggests the partial mediation role (Hair, Hult, Ringle, & Sarstedt, 2014).

6   DISCUSSIONS

This study examined impacts of social media policy on the value creation process through social media use in the context of disaster management. To our best knowledge, this study is the first study that empirically examined impacts of the social media policy on value creation from the use of social media. Consistent with prior studies, social media use contribute to process performance (Trainor, Andzulis, Rapp, & Agnihotri, 2014). Consistent with our expectations, our findings show both social media use (*H1*) and social media policy (*H2*) have a positive direct effect in establishing good disaster communication, which in turn positively affect disaster management performance (*H3*).

Our finding on the communication R^2 value of 0.473 suggests that social media use and social media policy explain the variance of the disaster communication at the weak level. However, there are other factors that might contribute to the explanation of the variance. Prior studies on government social media use suggest that factors such as privacy, security, and culture might be considered to increase the explanation of the variance (Bertot, Jaeger, & Hansen, 2012; Kavanaugh, et al., 2012). The disaster management performance R^2 value of 0.390 indicates that the combination of social media use, social media policy and communication have a weak explanation to the different level of disaster management performance across organizations. However, this R^2 value is acceptable and considerably higher than other studies on IT value creation at the process level (Ray, Muhanna, & Barney, 2005; Trainor, Andzulis, Rapp, & Agnihotri, 2014).

Our further analyses include two relationships between social media policy and social media use. In our study context, we did not find the moderating interaction effect of the social media policy on the relationship between social media use and communication. Importantly, however we found the partial mediating role (71.1%) of the social media policy on the relationship between social media use and disaster communication.

7   CONCLUSIONS

In this empirical research we examined the role of social media policy on the value creation through social media use in the disaster management context. Our results showed the importance of social

media policy in government to establish disaster communication which in turn enhances the disaster management performance.

Our study provides a theoretical contribution to the literature by empirically testing the impact of social media policy on the value creation process through the use of social media. Our findings also suggest some important policy implications for policy makers and public administrators. That is, in order to realize the potential benefits of their social media use they need to pay more attention to the important role played by effective enterprise social media use policy and to make greater efforts to build an innovation culture that would encourage social media use for enhanced internal operations (e.g. disaster risk communications), improved public services (e.g. agile early tsunami warnings), and the identification of opportunities for citizen engagement and even citizen co-production. This study has some limitations. Even though we have pre-tested the instruments, our new questionnaire instrument which was developed for a larger research project suffers from high kurtosis on several items. Our future research directions include the extension of our research model by incorporating other salient factors to increase the coefficient determinant of communication and applying the model in different research contexts.

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