

Media Dependency, Usage and Trust in a Time of Crisis – A Case Study of the Great East Japan Earthquake

Authors

CHENG, John William / チェン ジョン ウィリアム

Institute of Asia-Pacific Studies, Waseda University / 早稲田大学アジア太平洋研究センター
cwljwc@aoni.waseda.jp

MITOMO, Hitoshi / 三友仁志

Graduate School of Asia-Pacific Studies, Waseda University / 早稲田大学大学院アジア太平洋研究科
mitomo@waseda.jp

Abstract

Media system dependency theory suggests that in times of crisis, people's dependency on media tends to increase. However, currently few studies have related media dependency with media usage and trust in these situations. Therefore, the aim of this paper is to examine the relationship between people's dependency of mass and Internet media and their usage and trust of them in the case of the Great East Japan Earthquake.

Using data collected from Tohoku area and quantitative analysis, the results show that people's perceived dependency on a particular media is a strong predictor of their usage of that media in a time of crisis. However, just using a particular media does not directly imply that people trust it, especially with the presence of an alternative media. This finding implies that in today's digital media society, an effective communication strategy in times of crisis shall incorporate both the mass and Internet media.

Keywords

Media dependency, media usage, media trust, mass media, Internet media, times of crisis

1 Introduction

Both mass and Internet media have played an important role after the 2011 Great East Japan Earthquake¹ in their own right. For instance, in the following days after the disaster, the national television had provided non-stop 24 hours live coverage to keep the public up-to-date of the disaster (Tanaka, 2012). In parallel, the Internet, in particular social media had enabled messages and videos directly from the disaster areas to be seen all over the world as the event unfolded (Slater et al., 2012).

In times of crisis, such as a large scale nature disaster, terrorist attack or disease outbreak, media information is one of the most critical factors to maintain social stability. In these situations, because of the high level of uncertainties, most people tend to rely on the media to obtain information to understand their environment and to make critical decisions. Thus, the influences of media are often intensified. For example, a study by Mitomo et al. (2012) on the Great East Japan Earthquake has shown that media information can affect people's perception of reality and motivate them to take post-disaster actions even though they were not in the disaster area. Hence, in crisis management, it is considered that a reliable and trustworthy information source is one of the most important factors of social resilience (Longstaff, 2005).

Traditionally, mass media such as television and newspaper, which typically represents the official information from the authorities has been fulfilling this role. However, the rise of the Internet, in particular social media has substantially changed the media environment. They challenge the role of mass media as they provide an effective communication channel and alternative information source for the general public (Castells, 2007). That being said, in today's digital media society, despite the fact that the nature and way of governance of these two media are very different, at the same time, they are also highly intertwined (Napoli, 2015). Therefore, it is becoming increasingly important to understand the factors that affect people's usage of different media, especially for government authorities and non-government organisations to plan their communication strategy in times of crisis.

Media system dependency theory predicts that in crisis situations, people's dependency of media tends to be heightened (Ball-Rokeach, 1985), and it has been shown in previous studies, for example, during the 2001 September 11 terrorist attacks (Lowrey, 2004), the 2009 N1H1 outbreak in China (Hu, 2014), and the 2011 Great East Japan Earthquake (Jung, 2012). That being said, currently, very few studies have examined how media dependency is related to media usage and trust in times of crisis, especially with the consideration of the co-existence of mass and Internet media. One of the main reasons is suitable case studies are few and far between as large scale crisis occurs rarely and the media environment is changing in a rapid pace.

¹ Hereafter referred to as 'the disaster'.

With this background in mind, the aim of this paper is to investigate the relationship between people's dependency on mass and Internet media and their usage and trust of them in a time of crisis using 2011 Great East Japan Earthquake as a case study. The findings will contribute to the literature in media communications as well as have practical implications for government authorities and non-government organisations in their planning of communication strategy in crisis situations.

The rest of this paper is arranged as follows; Section 2 provides an overview of the role media played in the Great East Japan Earthquake. Section 3 reviews the literature on media system dependency theory and to derive the hypotheses. Section 4 describes the methodology and the details of the sample data. Section 5 presents the results of the data analysis, followed by Section 6 which concludes the paper with a discussion on the key findings.

2 Mass and Internet media in the Great East Japan Earthquake

On the 11th March 2011, the north-east coast of Japan was hit by one of the most severe natural disasters in recent history, known as the Great East Japan Earthquake, the magnitude 9.0 undersea earthquake, subsequent tsunami and Fukushima nuclear power station accident have created substantial social, economic and political impacts to Japan (Reconstruction Agency, 2014).

On top of the catastrophic level of damage, another very remarkable aspect of this disaster is the role information communications technology (ICT) has played. For instance, as Slater et al. (2012) argue, because of the speed and volume of information available online, the Great East Japan Earthquake can be considered as the first time in history that a major natural disaster is mediated to the rest of the world in real time online. On top of that, social media also provided a new communication platform and information source for many people. For example, as many people were distressed by the disaster and confused or even enraged by the ambiguous information from the government, many had turned to the Internet for alternative information, as well as for emotional supports (Miura et al., 2014; Slater et al., 2012; Shimada & Seike, 2013). However, at the same time, the Internet was also plagued with rumours as well as false and even malicious information (Ichikawa, 2013). Therefore, despite the fact that the Internet and social media had caught most people's attention after the disaster, reports, for example, Kimura (2011) and MIC (2011), have shown that mass media was still the most trusted and reliable source of information for most people.

That being said, in today's digital media society, both mass and Internet media are inseparable, most people are not limited to any single form of media, and they can select freely their preferred media according to their personal goals and needs. A study by Cheng et al. (2014) finds that although both mass and Internet media can affect people's behaviours and motivate them to support the recovery, the effect of the two media are quite different and at the same time, they interact with one another to moderate the overall effect. Therefore, it is important to understand what drives people to use different media in such situation. One

suitable candidate to address this question is media dependency system theory which has been widely applied in media communication studies in political and social sciences.

3 Media system dependency theory

In essence, media system dependency theory (Ball-Rokeach & DeFleur, 1976) presents a framework that models the interrelationships between the audiences, media and society. It defines media dependency as '*a relationship between the individual goals and the extent which these goals are contingent upon the resources of the media system*' (Ball-Rokeach, 1985, p. 494), whereas the resources are the capacity to create, gather, process and disseminate information. At the micro level, the intensity of dependency refers to a person's '*perceived exclusivity of resources for goal attainment*' (Ball-Rokeach, 1998, p. 19), which the goal is referred to their needs for understanding, orientation and entertainment. In addition, on top of their personal perception, a person's dependency on media is also affected by their social background, such as their age, gender, and employment status.

The theory suggests that as people become more dependent on media, the influence of media on their perceptions and behaviours become stronger. That being said, it also points out that their dependency on media changes as their environment and goals change. That is, when their dependency on media changes, so as the structural of the whole dependency system. Thus, media dependency is not a one-way monolithic process; rather it is an interdependent relationship between the people, media and social system (Ball-Rokeach & DeFleur, 1976).

According to the theory, the two main factors of a social environment that can affect the intensity and substance of a person's media dependency are the level of ambiguity and threats in the environment. When the important features of their social environment become unpredictable and/or uninterpretable, for example, in times of crisis such as a natural disaster or disease outbreak, people are more likely to have difficulty to make decision because the situation is beyond their comprehension. Thus, their dependency on the media tends to increase, especially if they perceive it as the best or primary information source available (Ball-Rokeach, 1985). That being said, as Li (2014) points out, media system dependency theory was developed in the 1970s when mass media was the single main dominant information source. In this age of digital media whereas choices of media have become abundance, more studies are required in order to understand the effects of media dependency. For instance, as Lowrey (2004) notes, although media dependency and usage are correlated, but they are also empirically distinct.

In times of crisis or large scale social disruption, for example, during the 2001 September 11 terrorist attacks, Lowrey (2004) finds that television was the media of choice for most people regardless of their social background, and in contrast, the use of Internet media was depended on individual's familiarity of the media formation. Similarly, a study by Jung (2012) on the Great East Japan Earthquake shows that social media users tended to utilise the Internet to obtain disaster related information more than non-users. Furthermore, both

studies have pointed out that having access to an alternative media reduces one's consumption of mass media.

On top of usage, studies, for example, Kioussis (2011) and Tsfati (2003), point out that people's trust towards media is another key factor related to their dependency on media as well as the effects of media. For instance, as Jakob (2010) argues, media use and trust are positively related. In other words, the more a person is dependent on the media, the higher level of trust they will have on it and vice-versa. Thus, in times of crisis, as Hagar (2013) and Bucher (2002) point out, trust towards the media become in particularly important.

3.1 Hypotheses

Based on the above observations, it can be argued that a person's general perception of their dependency on a particular media as an important information source will affect their usage and trust of that media in a time of crisis. Therefore, it is hypothesised that:

1. Hypothesis H1: A person's perceived dependency on mass media in general increases their usage of it in a time of crisis
2. Hypothesis H2: A person's perceived dependency on mass media in general increases their level of trust towards it in a time of crisis
3. Hypothesis H3: A person's perceived dependency on Internet media in general increases their usage of it in a time of crisis
4. Hypothesis H4: A person's perceived dependency on Internet media in general increases their level of trust towards it in a time of crisis

That being said, it is also acknowledged that having access to an alternative media can reduce one's usage and trust of the other media, thus, it is also hypothesised that:

5. Hypothesis H5: A person's perceived dependency on mass media in general reduces their usage of Internet media in a time of crisis
6. Hypothesis H6: A person's perceived dependency on mass media in general reduces their level of trust towards Internet media in a time of crisis
7. Hypothesis H7: A person's perceived dependency on Internet media in general reduces their usage of mass media in a time of crisis
8. Hypothesis H8: A person's perceived dependency on Internet media in general reduces their level of trust towards mass media in a time of crisis

Based on the these hypotheses, a path diagram (Figure 1) is constructed with two independent variables - a person's perceived dependency on mass media (A) and Internet media (B) in general, and four dependent variables - a person's usage of mass media (C) and Internet media (D) in a time of crisis, as well as their trust of mass media (E) and Internet media (F) in a time of crisis. In addition, acknowledging the fact that in today's digital media society that most people have access to both mass and Internet media, they are not mutually exclusive. Thus, in the path model, a person's perceived dependency on mass and Internet

media are co-varied, same is also applied for their usage and trust of the two media in a time of crisis.

Finally, as studies, for example (Jackob, 2010) (Hu, 2014) (Li, 2014), have shown that a person's usage and trust of media are also affected by their social background. Thus, in this case, age, gender, employment status as well as experience of the disaster are included as control variables.

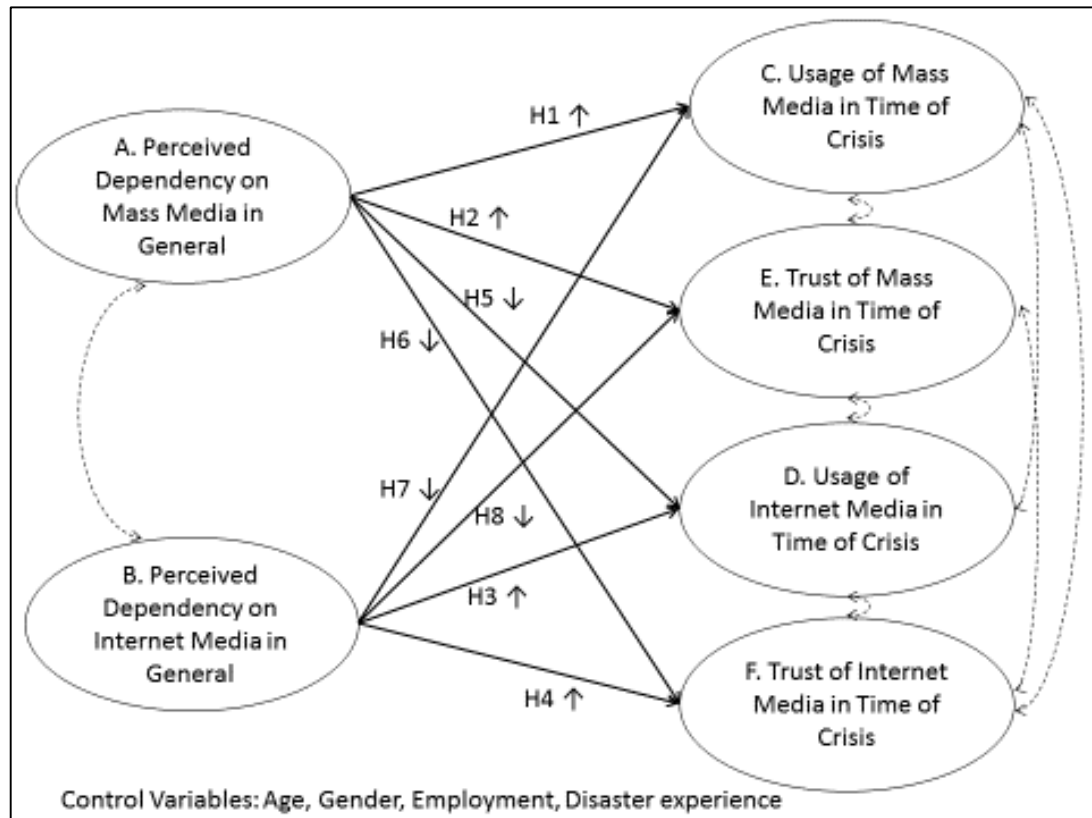


Figure 1- Path diagram

4 Methodology and data set

The hypotheses presented in the Section 3.1 were examined using a quantitative approach, specifically, with structural equation modelling (SEM). This method was selected because it can accurately model the relationships between multiple independent and dependent variables that are correlated with one another in different levels (Tabachnick & Fidell, 2013) as in this case. The data set used for this study was collected from an Internet panel survey. This data collection method was chosen because it offers a balanced solution between cost, time and sampling error (Couper, 2000). The survey was carried out by Micromill Inc.², one of the leading professional research companies in Japan which has a registered survey panel of more than a million people across the country. The samples were

² <http://www.macromill.com/qManage/index.html>

collected from the three prefectures –Fukushima, Miyagi and Iwate– that were directly hit by the Great East Japan Earthquake because it was anticipated that they would be more likely to have experienced the disaster directly.

The survey was carried out in March 2013, it was sponsored by the Japan Commercial Broadcaster Association. The respondents were presented with a set of questions that represent the variables described in previous section. In total, 2,064 samples between the ages of 15 to 69 years old were collected. In data screening, 12 unengaged observations were identified and removed, resulted in a total of 2,052 effective samples. Among the samples, approximately 88%, 1,810 of them had access to both mass and Internet media³, and therefore, were selected for this study. Their demographic information is summarised in Table 1. It should be noted that although their gender distribution is similar to the national average, their average age is younger and their median income is also lower compared with the national average. These deviations resemble the typical sampling bias from an Internet survey (Couper, 2000).

Table 1- Demographic characteristics

	Observed (N=1,810)	Reference
Prefectures	Iwate – 21% / Miyagi – 52% / Fukushima – 27%	
Age	Mean - 43 Median - 44	46 - average of these three prefectures in 2011 (Deguchi, 2011).
Male / Female	52% / 48%	48.8% / 51.1% - national average in 2010 (MIC, 2010).
Employed (fulltime, part-time or self-employed)	69%	
Medium annual income	<2 million yen	3-3.99 million yen - national average in 2007 (MIC, 2007).
Direct damages from disaster – either themselves or their family ⁴	65%	

5 Result analysis

Based on path model in Figure 1, a SEM model (Figure 2) is constructed to test hypotheses H1 to H8 presented in Section 3.1. The dependent and independent variables are represented as a latent variable in the SEM model. Each latent variable is represented by a set of observed variables which are operationalised by a specific question in the questionnaire⁵.

³ Had access to mass media = owned a television or radio. Had access to Internet media = had access to wireline, wireless Internet or smartphone.

⁴ Includes physical damage (e.g., injury), property damage (e.g., house) and financial damage (e.g., loss of job, reduce of income), indirect damages (e.g., inconveniences caused by loss of lifeline, lack of supplies) were excluded.

⁵ Originally in Japanese.

First of all, the independent variables 'perceived dependency on mass media (A) and Internet media (B) in general' in Figure 1 are represented by asking the respondents:

- Question 1 - *'in general, how important is following media to you for obtaining information?'* in a 5 level Likert scale (1- not important at all, 2- Not so important, 3- Does not matter, 4- Important, 5- Very important) for the following eight types of media to represent mass media and Internet media. For instance, mass media is represented by 1- Television, 2- Radio, 3- Newspaper, and Internet media is represented by 4- Social media (e.g., Facebook, Twitter), 5- Portal site (e.g., Google, Yahoo), 6- Forum, 7- Blog, 8- Video sharing site (e.g., Youtube).

Secondly, the dependent variables 'usage of mass media (C) and Internet media (D) in a time of crisis' in Figure 1 are represented by asking the respondents:

- Question 2 - *'In the past year, how frequently did you use the following media to obtain information related to recovery or countermeasure of the Great East Japan Earthquake?'* in a 5 level Likert scale (1- Never, 2- Once or twice, 3- Once a few month, 4- A few times per month, 5- A few times per week) for the same list of media as Question 1.

Thirdly, the dependent variables 'trust of mass media (E) and Internet media (F) in a time of crisis' in Figure 1 are represented by asking the respondents:

- Question 3 - *'How much do you trust the following media regarding information related to recovery or countermeasure of the Great East Japan Earthquake?'* in a 5 level Likert scale (1- Not trust, 2- Somewhat not trust, 3- Neutral, 4- Somewhat trust, 5- Trust) for the same list of media as Question 1.

The code, mean, standard deviation, as well as the Cronbach's alpha of the variables are summarised in Table 2. First, from the mean values of the observed variables for perceived dependency (A and B), usage (C and D) and trust (E and F) of different media types, it can be seen that overall, mass media (television, radio and newspaper) is the preferred media source compared with Internet media (social media, portal site, forum, blog and video sharing site) for this group. Second, the Cronbach's alphas⁶ for the latent variables are at an acceptable level, indicate that the observed variables can reliably represent the latent variable. Third, it should also be noted that the mean value of some observed variables (for example, D3 and D4) are quite low relatively, it indicates a potential of floor effect⁷. In addition, their skewness and kurtosis are also quite high⁸. Both observations indicating that they are non-normally distributed, thus, in order to meet the joint multivariate normal distribution assumption for SEM, bootstrap re-sampling was employed in the calculation (Bollen & Stine, 1992).

⁶ A commonly used measure of reliability between multiple measurements of a variable (George & Mallery, 2013).

⁷ Floor effect - when the variables have scores that are at or near the lower limit, they potentially reduce the possible amount of variation in the variables (Everitt, 2002).

⁸ For example, the skewness and kurtosis of D3 is 2.05 and 1.81 respectively.

Table 2- Variables

Variable	Code	Description	Range	Mean	Standard deviation	Cronbach's alpha
Latent	A	Perceived Dependency on Mass Media in General				
Observed	A1	Television	1-5	4.27	0.89	0.74
	A2	Radio		3.87	1.11	
	A3	Newspaper		3.93	1.08	
Latent	B	Perceived Dependency on Internet Media In General				
Observed	B1	Social media	1-5	2.74	1.18	0.84
	B2	Portal site		3.50	1.14	
	B3	Forum		2.62	1.07	
	B4	Blog		2.65	1.03	
	B5	Video sharing site		2.91	1.05	
Latent	C	Usage of Mass Media in Time of Crisis				
Observed	C1	Television	1-5	4.22	1.05	0.61
	C2	Radio		2.88	1.59	
	C3	Newspaper		3.56	1.51	
Latent	D	Usage of Internet Media in Time of Crisis				
Observed	D1	Social media	1-5	1.86	1.33	0.89
	D2	Portal site		2.62	1.53	
	D3	Forum		1.58	1.11	
	D4	Blog		1.68	1.12	
	D5	Video sharing site		1.82	1.20	
Latent	E	Trust of Mass Media in Time of Crisis				
Observed	E1	Television	1-5	3.44	0.92	0.81
	E2	Radio		3.54	0.82	
	E3	Newspaper		3.46	0.88	
Latent	F	Trust of Internet Media in Time of Crisis				
Observed	F1	Social media	1-5	2.73	0.78	0.88
	F2	Portal site		3.00	0.75	
	F3	Forum		2.77	0.73	
	F4	Blog		2.70	0.79	
	F5	Video sharing site		2.84	0.80	
Control	AGE	Age	15-69	43.02	13.00	
	GEN	Gender	0=Male; 1=Female	0=52% 1=48%		
	EMP	Employment status	0=Unemploye d; 1=Fulltime, part-time or self-employed	0=31.5% 1=68.5%		
	DAM	Damages from disaster ⁹	0=No; 1=Yes	0=35.3% 1=64.7%		

⁹ Direct damages included physical damage (e.g., injury), property damage (e.g., house) and financial damage (e.g., loss of job, reduce of income), indirect damages (e.g., inconveniences caused by loss of lifeline, lack of supplies) were excluded.

The SEM model is presented in Figure 2, the latent variable is represented by an oval shape, the observed variable is represented by a rectangle, the error term (e) is represented by a circle, and the arrow indicates the relationship between the variables. The results of the SEM model, specifically, the resultant standardised estimate between the latent variables and their corresponding significance are summarised in Table 3. Overall, the model fits indicators of the SEM (CMIN/DF=13.60¹⁰, CFI=0.82, GFI=0.84, AGFI=0.80, RMSEA=0.08) indicate that the model is acceptable at a moderate level¹¹.

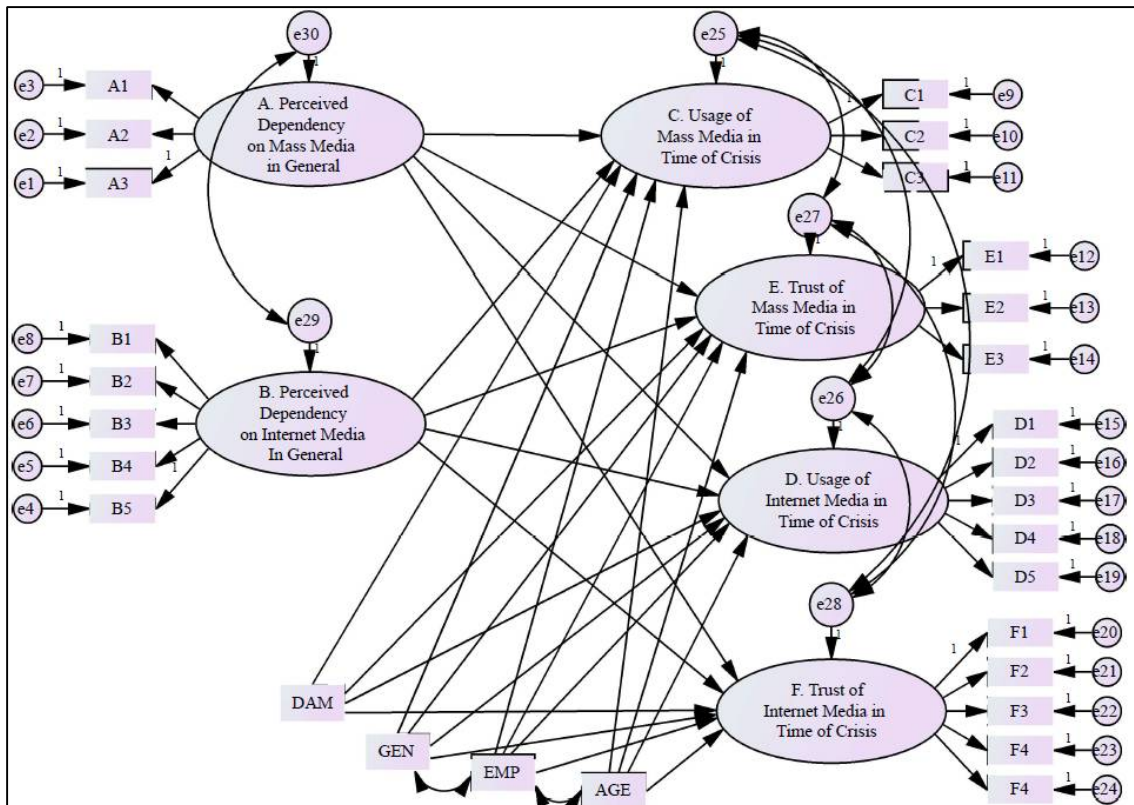


Figure 2-SEM model

¹⁰ The high CMIN/DF is probably caused by the non-normally distribution of some variables (Kenny, 2014).

¹¹ Based on the model fits indices recommended by Kenny (2014).

Table 3- SEM results

Parameter		Est.	Sig.
C. Usage of Mass Media in Time of Crisis	<--- A. Perceived Dependency on Mass Media in General	0.67	***
D. Usage of Internet Media in Time of Crisis	<--- A. Perceived Dependency on Mass Media in General	-0.08	**
E. Trust of Mass Media in Time of Crisis	<--- A. Perceived Dependency on Mass Media in General	0.61	***
F. Trust of Internet Media in Time of Crisis	<--- A. Perceived Dependency on Mass Media in General	-0.03	NS
C. Usage of Mass Media in Time of Crisis	<--- B. Perceived Dependency on Internet Media in General	-0.02	NS
D. Usage of Internet Media in Time of Crisis	<--- B. Perceived Dependency on Internet Media in General	0.56	***
E. Trust of Mass Media in Time of Crisis	<--- B. Perceived Dependency on Internet Media in General	-0.10	***
F. Trust of Internet Media in Time of Crisis	<--- B. Perceived Dependency on Internet Media in General	0.52	***
A1. Television	<--- A. Perceived Dependency on Mass Media in General	0.83	***
A2. Radio	<--- A. Perceived Dependency on Mass Media in General	0.66	***
A3. Newspaper	<--- A. Perceived Dependency on Mass Media in General	0.61	***
B1. Social Media	<--- B. Perceived Dependency on Internet Media in General	0.69	***
B2. Portal Site	<--- B. Perceived Dependency on Internet Media in General	0.56	***
B3. Forum	<--- B. Perceived Dependency on Internet Media in General	0.79	***
B4. Blog	<--- B. Perceived Dependency on Internet Media in General	0.82	***
B5. Video Sharing Site	<--- B. Perceived Dependency on Internet Media in General	0.71	***
C1. Television	<--- C. Usage of Mass Media in Time of Crisis	0.54	***
C2. Radio	<--- C. Usage of Mass Media in Time of Crisis	0.49	***
C3. Newspaper	<--- C. Usage of Mass Media in Time of Crisis	0.77	***
D1. Social Media	<--- D. Usage of Internet Media in Time of Crisis	0.67	***
D2. Portal Site	<--- D. Usage of Internet Media in Time of Crisis	0.62	***
D3. Forum	<--- D. Usage of Internet Media in Time of Crisis	0.69	***
D4. Blog	<--- D. Usage of Internet Media in Time of Crisis	0.80	***
D5. Video Sharing Site	<--- D. Usage of Internet Media in Time of Crisis	0.69	***
E1. Television	<--- E. Trust of Mass Media in Time of Crisis	0.86	***
E2. Radio	<--- E. Trust of Mass Media in Time of Crisis	0.82	***
E3. Newspaper	<--- E. Trust of Mass Media in Time of Crisis	0.87	***
F1. Social Media	<--- F. Trust of Internet Media in Time of Crisis	0.81	***
F2. Portal Site	<--- F. Trust of Internet Media in Time of Crisis	0.70	***
F3. Forum	<--- F. Trust of Internet Media in Time of Crisis	0.83	***
F4. Blog	<--- F. Trust of Internet Media in Time of Crisis	0.78	***
F5. Video Sharing Site	<--- F. Trust of Internet Media in Time of Crisis	0.72	***
C. Usage of Mass Media in Time of Crisis	<--- AGE	0.17	***
D. Usage of Internet Media in Time of Crisis	<--- AGE	-0.05	NS
E. Trust of Mass Media in Time of Crisis	<--- AGE	-0.09	NS
F. Trust of Internet Media in Time of Crisis	<--- AGE	0.06	**
C. Usage of Mass Media in Time of Crisis	<--- GEN	-0.04	NS
D. Usage of Internet Media in Time of Crisis	<--- GEN	-0.10	**
E. Trust of Mass Media in Time of Crisis	<--- GEN	0.01	NS
F. Trust of Internet Media in Time of Crisis	<--- GEN	0.09	***
C. Usage of Mass Media in Time of Crisis	<--- EMP	0.00	NS
D. Usage of Internet Media in Time of Crisis	<--- EMP	-0.05	**
E. Trust of Mass Media in Time of Crisis	<--- EMP	-0.04	NS
F. Trust of Internet Media in Time of Crisis	<--- EMP	-0.01	NS
C. Usage of Mass Media in Time of Crisis	<--- DAM	0.09	***
D. Usage of Internet Media in Time of Crisis	<--- DAM	0.07	**
E. Trust of Mass Media in Time of Crisis	<--- DAM	-0.04	NS
F. Trust of Internet Media in Time of Crisis	<--- DAM	-0.04	NS
Sig. ***P<0.001; **P<0.05; NS=Not Significant			
Est. Standardised estimate			

Based on the results of the SEM shown in Table 3, hypotheses H1 to H8 presented in Section 3.1 were tested by examining the standardised estimate between different latent variables and its corresponding significance¹². The results are summarised in Table 4.

First of all, for hypotheses H1, H2, H3 and H4, the results have shown that for both mass and Internet media, a person's perceived dependency on a particular media has a positive and significant effect on their usage as well as trust of it in a time of crisis. Therefore all four hypotheses are supported. On the other hand, for hypotheses H5 and H6, the results have indicated that while one's perceived dependency on mass media in general reduces their usage of Internet media in a time of crisis, it has no effect on people's trust of Internet media. Thus H5 is supported but H6 is rejected. In contrast, for hypotheses H7 and H8, the results have revealed an interesting pattern that while a person's perceived dependency on Internet media in general has no effect on their usage of mass media, it reduces their level trust of mass media in a time of crisis. Hence, H7 is rejected but H8 is supported.

Finally, looking at the results of the control variables in Table 3, it can be seen that their effect on people's usage and trust of both mass and Internet media are quite mild compared with the effect from people's perceived media dependency. That being said, it still can be seen that in terms of gender, male tend to use more of Internet media, but are less trustful towards it. At the same time, for age, it appears that older people tend to utilise mass media more, but interestingly they also have a higher trust towards Internet media. In addition, it is worth noting that while having suffered direct damages from the disaster increases people's usage of both media to obtain disaster related information, but at the same time, it has no effect on their level of trust towards both media.

In summary, the results have revealed that while a person's perceived dependency on a particular media in general is a strong predictor of their trust and usage of it in a time of crisis. However, the effect of their perceived dependency on mass and Internet media on the usage and trust of the other media in a time of crisis is not symmetric. For instance, dependency on mass media in general reduces the usage of Internet media in a time of crisis, but not the trust of it. At the same time, dependency on Internet media in general has no effect on the usage of mass media, but it reduces people's trust towards it in a time of crisis.

¹² Obtained with Bootstrap Samples=2,000; Bias-Corrected Confidence level=95%.

Table 4 - Result of hypotheses H1 to H8

Hypothesis				Est / Sig	Result
H1	A. Perceived Dependency on Mass Media in General	Increases	C. Usage of Mass Media in Time of Crisis	0.67***	Supported
H2	A. Perceived Dependency on Mass Media in General	Increases	E. Trust of Mass Media in Time of Crisis	0.61***	Supported
H3	B. Perceived Dependency on Internet Media in General	Increases	D. Usage of Internet Media in Time of Crisis	0.56***	Supported
H4	B. Perceived Dependency on Internet Media in General	Increases	F. Trust of Internet Media in Time of Crisis	0.52***	Supported
H5	A. Perceived Dependency on Mass Media in General	Reduces	D. Usage of Internet Media in Time of Crisis	-0.08**	Supported
H6	A. Perceived Dependency on Mass Media in General	Reduces	F. Trust of Internet Media in Time of Crisis	NS	Rejected
H7	B. Perceived Dependency on Internet Media in General	Reduces	C. Usage of Mass Media in Time of Crisis	NS	Rejected
H8	B. Perceived Dependency on Internet Media in General	Reduces	E. Trust of Mass Media in Time of Crisis	-0.10***	Supported

6 Discussion and conclusion

The aim of this paper is to investigate how people's perceived dependency on mass media and Internet media in general can affect their usage and trust of these two media in a time of crisis. Based on a path model established based on media system dependency theory and data collected from Japan after the 2011 Great East Japan Earthquake, three key findings are identified from the data analysis.

First, it can be seen that in a time of crisis, for example, the Great East Japan Earthquake in this case, a person's perceived dependency on a particular media in general is a strong predictor of their usage and trust of it to obtained information related to the disaster (H1, H2, H3 and H4). That is, in crisis situations, people will turn to the media that they are already familiar with for information, this observation is in line with what the theory has predicted.

Second, the results, on the other hand, have revealed some intriguing findings on interrelationship between mass and Internet media, especially considering that this group has access to both mass and Internet media. For instance, it can be seen that despite the fact that

Internet media is becoming more and more influential in modern society, mass media is still the preferred media in a time of crisis. This is demonstrated by H4 and H6, that a person's perceived dependency on mass media in general reduces their usage of Internet media to obtain disaster related information, at the same time, dependency on Internet media has no influence on the usage of mass media. That being said, the results have also revealed that just because people prefer to use mass media for disaster related information, it does not directly imply that they trust it. That is, it can be seen that although a person's perceived dependency on Internet media in general has no effect on the use of mass media for disaster related information, it reduces their level of trust towards mass media (H8). In contrast, while their perceived dependency on mass media in general reduces the usage of Internet media, it has no effect on their level of trust towards it in terms of disaster related information (H7). These imply that while mass media is the dominant information source and its role still cannot be replaced by the Internet, in a time of crisis, having access to an alternative information source, such as the Internet media in this case, can raise people's awareness and alertness of the information from mass media. Thus, the influence of Internet media shall not be underestimated.

Third, the effects of social background also support the above observation that usage of media does not equal to having trust towards it. For example, having suffered direct damages from the disaster increases the usage of both media to obtain disaster related information, this is understandable as those who were affected by the disaster naturally have a higher need of related information. However, it is interesting to note that this has no direct influence on their level of trust towards the media.

In summary, the above three key findings indicate that in today's digital media society whereas people have access to both mass and Internet media, their perceived dependency on a particular media in general is a strong indicator of their usage of that media in crisis situation, for example to obtain disaster related information in this case. However, just because they utilise that particular media, it does not directly imply that they trust that media in a time of crisis. This observation has an important implication for government authorities as well as non-government organisations in the planning of their communication strategy in times of crisis. In particular, they shall aware that although mass media is still the preferred information source for most people in times of crisis, the role of Internet media cannot be underestimated. On the other hand, although Internet media offers a new and effective way of communication, it cannot replace mass media. Therefore, it is recommended that an effective communication strategy in times of crisis shall incorporate both mass and Internet media. For instance, while utilising mass media to reach the maximum potential audience, information from mass media can be complemented with interactive contents such as interactive feedback platforms and additional information resources online.

Finally, this study has some limitations that must be considered when interpreting the results. First is the potential of causal ambiguity, although the causal relationships proposed in this study is established based on a sound theoretical background. However, since the data

was collected from a single survey, the possibility of a spurious relationship cannot be eliminated. Second is sampling bias, despite the sample size is sufficient large, since the data was collected from an Internet panel survey, because of the nature of this method, it unavoidably consisted a certain degree of sampling bias.

In conclusion, based on a model built upon media system dependency theory and using the Great East Japan Earthquake as case study, this paper has examined the relationship between people's perceived level of dependency on mass and Internet media in general and their usage and trust of these media to obtain disaster related information after the Great East Japan Earthquake. The findings have demonstrated the interrelationship between mass and social media in today's digital media society and recommended that an effective communication strategy shall incorporate both of them, especially in times of crisis. In addition, it establishes the foundation of future study in this area.

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