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The Effect of Simultaneous Multi-Screening on the Users' Knowledge of Social Issues in a Highly Mediated Society

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Abstract

The aim of this paper is to investigate the effect of the simultaneous use of mass and social media on the users' level of general knowledge of social issues in the highly mediated society in Japan. In particular, it focuses on one of the recent major trends in media convergence known as "simultaneous multi-screening" i.e., when the users engage with more than one media simultaneously using multiple devices. The data used was collected from an Internet based survey conducted in March 2014 with 2,060 samples from Japan. Using structural equation modelling, the results have shown that multi-screening such as watching television and using social media simultaneously is indeed a common phenomenon in Japan. However, it has only a mild effect on the users' level of general knowledge of social issues as most of the effect came from the viewing of television news and current affair programmes directly. That being said, it has indirectly mediated the effect from the use of social media on the users' level of knowledge of social issues which otherwise has no direct effect at all. The results imply that although simultaneous multi-screening can link up the mass and social media. However, in the context of social issues, currently television news and current affair programmes in Japan appear to be are not a very strong catalyst to trigger the audiences to take immediate action online. These findings provide the foundation for future studies to further investigate what kind of television programmes can motivate the audiences to take further action, and which groups of audience are more likely to be motivated.

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1. Introduction

On 3 Aug 2013, during the television screening of the movie “Castle in the Sky”, Twitter users in Japan had set the Tweets per second (TPS) world record with 143,199 TPS when they sent Tweets to echo with the main character¹. In comparison with the peak of “only” 5,000 TPS² during the 2011 Great East Japan Earthquake³, although the situation and the context of the tweets are very different, but to a certain extent, this has demonstrated the influence from the mass media on social media users and the high level of interaction between these two media in Japan. This phenomenon has led to the questioning of what are the effects and implications of this kind of real time cross media interaction on the users. With this question in mind, the aim of this paper is to investigate the effect of the simultaneous use of mass and social media on the users from the perspective of their general knowledge of social issues. It extends from the previous studies by Mitomo et al. (2012; 2013) which have found that the use of Information Communication Technology (ICT) and mass media have created some positive influences on the users for post-disaster recovery after the 2011 Great East Japan Earthquake. Through different perspectives, they have found a consistent pattern that both ICT (e.g., social media) and mass media (e.g. television) could work coherently to generate positive effects such as the encouragement of civic participation both online and offline, and the development of social capital. Based on their findings, this study further investigates if both mass and social media can also be utilised coherently for a wider scope. In particular, in the highly mediated society in Japan⁴ in which the media is ubiquitous in everyday life and people are often overwhelmed by information from the rapidly converging media.

This study focuses on one of the recent major trends in media convergence known as “simultaneous multi-screening”, e.g., when the user is engaging with more than one media simultaneously. A study by Google (2012) has found that 77% of time when people were watching television, they were using another device to perform online activities such as emailing, Internet browsing and social networking. In other words, audiences can now react online instantly on the information they received from the television. This trend has created a new form of audience interaction and has been embraced by the advertising and entertainment sector. However, until now, very limited empirical studies have been conducted to analyse its effects from a social science perspective. With this background in mind, the main research question of this study is to investigate in a highly mediated society, what is the effect of the

¹ Krikorian, R. (13 Aug 2013). “New Tweets per second record and how!” The Official Twitter Blog. <https://blog.twitter.com/2013/new-tweets-per-second-record-and-how> (Accessed 2-Apr-14).

² Chowdury, A. (29 Jun 2011). “Global Pulse”. The Official Twitter Blog. <https://blog.twitter.com/2011/global-pulse> (Access 2-Apr-14).

³ The M9.0 undersea earthquake occurred on 11 Mar 2011, subsequent tsunami and nuclear power plant accident have cost more than 15,800 lives and 16.9 trillion yen of damages (Japan Reconstruction Agency, 2013).

⁴ E.g., in 2011, the mobile phone penetration rate in Japan was 94.5% with 29.3% as Smartphone, 79.1% of the Japanese population had access to the Internet and 33.6% of household had TV set capable of connecting to the Internet (MIC, 2012). Furthermore, by 2012, 25% of the total populations were connected to social media (Impress Japan, 2012).

simultaneous use of mass and social media on the users' level of general knowledge of social issues. This paper is arranged as follows; section 2 provides an overview of simultaneous multi-screening and the related literature review. Section 3 and 4 details the theoretical model and methodology respectively. Section 5 reviews and analyses the results, the findings are then discussed and concluded in section 6.

2. Simultaneous multi-screening

The term "multi-screening" might be confusing; indeed, it wasn't until recently that it has become commonly used in the advertising and marketing sector. In simple terms, as most of the users' media time is now spent in front of a screen e.g., the computer, smartphone or television screen, multi-screening literally means the user is engaging with multiple media. There are two main forms of multi-screening; sequential multi-screening – when the user moves from one screen to another at different times to complete a task; and simultaneous multi-screening – when the user engages with more than one screen at the same time for either related or unrelated activities (Google, 2012).

This study focuses on simultaneous multi-screening for related activities, in particular, when the user is watching television and using social media at the same time. Although multi-tasking when watching television is not a new idea at all, but what makes this interesting is the online capability offered by portable devices such as smartphone and notebook computer. They enable the users to connect to the social media as they receive information from the mass media simultaneously, i.e., while they are consuming information from the mass media, they can also participate instantly as part of the media by commenting and sharing the related information on social media. This combination has created a new dynamic in the media environment. Studies conducted by Google (2012) in the US and Microsoft (2013) in Australia, Brazil, Canada, the UK and US have found that more than 70% of their samples had used another device to perform activities such as Internet browsing and social networking while they were watching television, in other words, television no longer has the audiences' full attention. That being said, at the same time, they have also found that the television is the main catalyst to simulate the audiences to perform related activities on another devices such as to visit a website that was mentioned on television, to see what other people were saying online, and to post their own comments about the programmes they were watching. Similar trend has also been found in Japan, surveys (e.g., Netasia Research, 2013; SocialTV lab, 2012) have found that more than 50% of social media users had performed similar activities using social media when they were watching television. This trend has been widely embraced by the advertising and entertainment sector in the form of interactive commercials and entertainment programmes in Japan and other countries. However, until now there are no established theoretical models to analyse its effect on the users and hence, the following sections will draw references from different literatures in order to derive a theoretical model for this analysis.

2.1 Mass self-communication society

In today's society, the two main media are the mass and social media which by nature are very different media. For instance, the mass media (e.g., television, newspaper) is a vertical network that a similar message is simultaneously broadcasted from a few sources to the mass audience in a more or less one way direction (Castells, 2010). The flow of information (e.g., what and when to broadcast) is usually managed by the professional gatekeepers⁵ (e.g., journalists, editors) and it typically represents the verified and official information (Bruns 2005). On contrary, the social media (e.g., Facebook, Twitter) is a group of Internet-based applications built on Web 2.0⁶ that enables the users to create and share their own contents over the Internet, it has created a horizontal network which the users can be their own gatekeeper to decide what, when, and who to communicate with (Kaplan & Haenlein, 2010).

In reality, however, their differentiation is not as clearly cut. For instance, government authorities and business corporations now also utilise social media to communicate with their audiences. At the same time, user generated contents originated from social media have often made to the headlines in mass media. The integration and interaction between the vertical and horizontal network has created a new form of socialised communication that Castells (2007) envisions as the "mass self-communication" which is "self-generated in content, self-directed in emission, and self-selected in reception by many that communicate with many" (Castells, 2007 pp.428). Cardoso (2011) further elaborates that idea and suggests that in most modern societies the mass communication has evolved into what he refers as the "network communication" which is "a constant reformulation of relations between media forms, interconnecting interpersonal communication media and mass media" (Cardoso, 2011 pp.119). This new form of communication has shifted the power from the media producers to the consumers, and created a new generation of active audiences, who no longer depend on the mass media as the sole information source, they actively utilise various alternative media resources online to confirm, and challenge the information from the mass media and also produce their own information.

2.2 The active audiences

In terms of social and political issues, Bruns (2008) has pointed out that many audiences in the west have turned from the mass media to other alternative media sources online for news and informed opinions. Empowered by the Internet and in particular the social media, some have taken it into their own hands and become part of the media by creating and publishing their own reports and commentaries. One of the main driving factors, as Bruns (2008) points out, is that the public is becoming more and more mistrustful of the political and commercial independence of the mass media. In comparison, traditionally Japanese audiences tend to be more modest in speaking out on public issues and challenging the authorities (Takahashi, 2010).

⁵ Gatekeeper refers the controllers of the Gatekeeping process in media - "a regime of control over what content is allowed to emerge from the production processes in print and broadcast media; the controllers (journalists, editors, owners) of these media, in other words, control the gates through which content is released to their audiences" Bruns (2005) pp.11.

⁶ Web 2.0 refers to the concept of Internet platforms and applications that allow the users to create and share their own content (O'Reilly, 2005).

However, after the Great East Japan Earthquake, it can also be seen that many have begun to make use of the Internet and social media to check, share and even to question and challenge the information from the mass media and government authorities (Slater et al., 2012; Endo, 2013).

In the case of simultaneous multi-screening, it is anticipated that the level of audience participation and interaction will become even more dynamic as the audiences are connected to both mass and social media simultaneously. For instance, for those that might or might not be involved or interested in a particular topic initially, as soon as they are stimulated by the information from the mass media such as the television, they can participate in that particular topic online and then disengage instantly. This form of ad-hoc participation has two main potential effects; firstly, it could increase the chances of online participation such as sharing and commenting on the related information. Secondly, it could also increase the number of media outlet online as everyone in simultaneous multi-screening can become an information outlet. These two factors together could generate some interesting effects on the users' level of knowledge. For instance, as some researchers have anticipated, online participation will lead to increases in knowledge (e.g., Cardoso, 2011; Castells, 2009), but on the other hand, one of the commonly predicted consequences of the increase in media outlets is the fragmentation of general knowledge.

2.3 Media and knowledge of social issues

Traditionally, the mass media is known to provide a comment set of news information to the public and to maintain a basic level of social and political knowledge in the society. It reduces the knowledge gap and maintains the society from dividing into extreme polarised opinions (Tewksbury & Rittenberg, 2012; Sunstein, 2007). For example, a study by Kaufhold et al. (2010) has found that the use of professional news from the mass media has a positive effect on the audiences' level of general political knowledge. At the same time, they have also found that on contrary the use of online user generated news has a negative effect. They suggest one of the possible interpretations is that through participating in and consuming of online user generated news, the users can selectively expose only to information that are related to their interests and as a result, their general level of political knowledge reduces and they become fragmented into smaller groups. Indeed, some studies (e.g., Tewksbury & Rittenberg, 2012; Webster, 2012) have pointed out that traditionally it has been argued that increases in choices of media outlet will lead to the fragmentation of audience and subsequently fragmentation of knowledge and society. In particular with growing of the Internet, as Sunstein (2007) has argued it will fuel the fragmentation and polarisation of society⁷ due the effects such as "cybercascades" - a "process of information exchange in which a certain fact or point of view becomes widespread, simply because so many people seem to believe it" (Sunstein, 2007, pp.44). On the other hand, others have counter-argued that there is not sufficient evidence to show that the Internet is getting more segregated (Gentzkow & Shapiro, 2011), instead, the audience pattern of television and

⁷ Which he believes in not necessary a bad thing, in fact, certain level of polarisaion is necessary for a democratic society (Sunstein, 2007).

Internet are becoming more overlapped (Webster & Ksiazek, 2012). The arguments from both camps seem to be logical and valid, it implies that in the “mass-self communication” society, the effects from the use of media on the users knowledge are clearly not one-sided. Furthermore, another key challenge on this topic is the fast changing pace of the media environment due to ICT advancements. Therefore, in order to catch a glimpse of the effects of simultaneous multi-screening on the users’ knowledge, a model is constructed to investigate its effects on the users’ level of general knowledge of social issues, which is one of consequences of audience fragmentation and also sign of potential social fragmentation (Tewksbury & Rittenberg, 2012).

3. Theoretical Model

Based on the literature review, a path model is constructed with the use of mass media and social media as the independent variable, simultaneous multi-screening as both independent and dependent variable, and the users’ level of general knowledge of social issues as the dependent variable. First of all, regarding of social issues, television news and current affairs programmes are selected to represent the mass media and it is anticipated that:

- Hypothesis H1: The viewing of television news and current affairs programmes has a positive effect on the users’ level of general knowledge of social issues
- Hypothesis H2: The viewing of television news and current affairs programmes has a positive effect on the level of simultaneous multi-screening

At the same time, since social media is just a communication platform by itself, it is therefore assumed that merely using it alone will not directly contribute to the users’ level of knowledge. However, assuming that it can encourage multi-screening activities by providing the platform for the users to perform activities such as searching, confirming, commenting, sharing and acting on the related information online, therefore it is anticipated that,

- Hypothesis H3: The use of social media has a positive effect on the level of simultaneous multi-screen activities

Next, assuming online interactions and participations will lead to increases in knowledge,

- Hypothesis H4: Simultaneous multi-screening has a positive effect on the users’ level of general knowledge of social issues

Furthermore, assuming simultaneous multi-screening is triggered by the media, it is anticipated that it will mediate their effects on the users’ level of knowledge. Given that the viewing of television news and current affair programmes is expected to have a direct effect on the users’ knowledge of social issues while the use of social media is not, the mediation effects of simultaneous multi-screening are anticipated to be:

- Hypothesis H5: Simultaneous multi-screening partially mediates the effect of the viewing of television news and current affair programmes on the users' level of general knowledge of social issues
- Hypothesis H6: Simultaneous multi-screening indirectly mediates the effect of the use of social media on the users' level of general knowledge of social issues

Finally, it is assumed that the users' social backgrounds such as age, gender, education, geographic area, level of trust towards mass and social media and usage of other news sources will affect their level of general knowledge of social issues, and therefore they are added as control variables. Based on the above hypotheses, a path model is constructed as shown in figure 1.

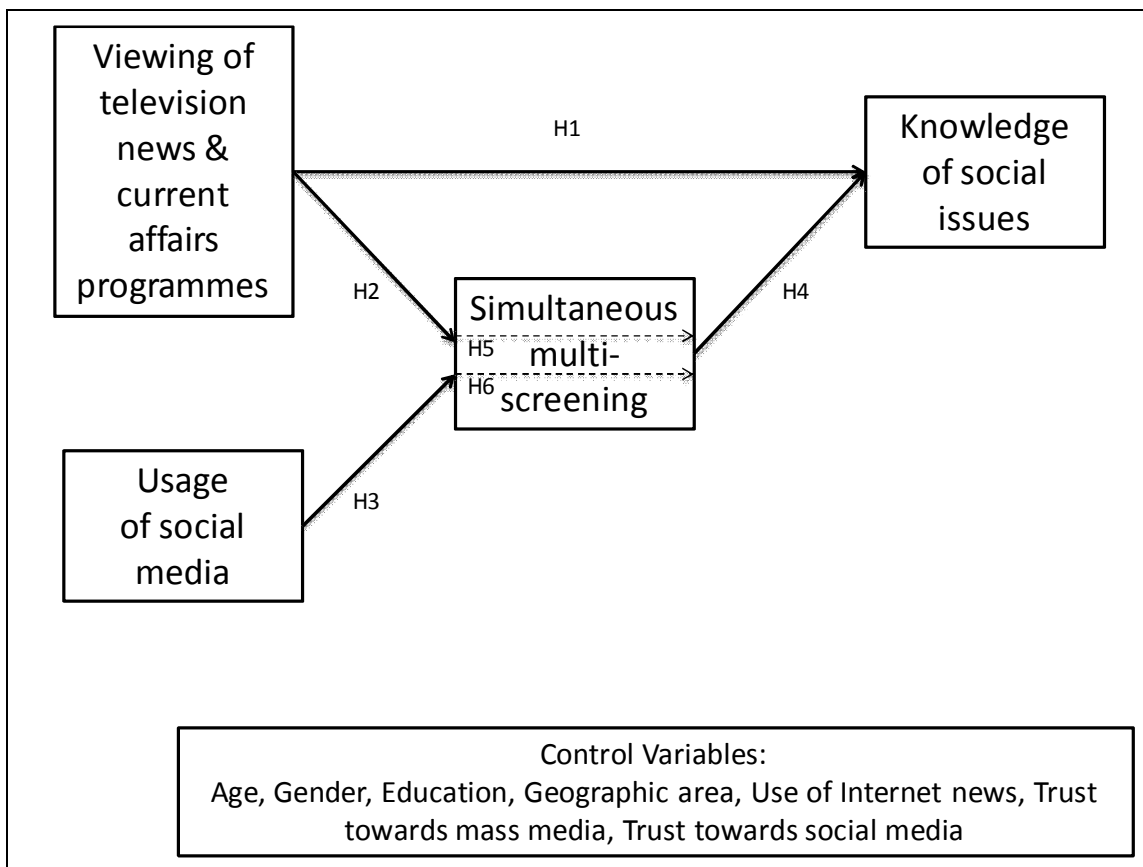


Figure 1. Path model

4. Methodology

The data set used in this study was collected from an Internet based survey conducted in March 2014⁸. An online questionnaire in Japanese was administrated to 2,060 respondents between 20

⁸ by Macromill, Inc. one of the leading online research companies in Japan.

to 60 years old⁹, half of sample was from the Tokyo Metropolitan area to represent the urban population and the other half was from the Tohoku area¹⁰ to represent the sub-urban population. 87 unengaged responds were identified in data screening and were removed, resulted in 1,973 effective samples. The details are summarised in table 1.

	Tohoku	Tokyo	Total
N	997 (50.5%)	976 (49.5%)	1973 (100%)
Average Age ¹¹	39.3	40.8	40.0
Gender¹²			
Male	42.5%	41.9%	42.2%
Female	57.5%	58.1%	57.8%
Education Level			
Junior high school	3.7%	1.3%	2.5%
Senior high school	35.0%	20.3%	27.7%
College or equivalent	27.5%	27.6%	27.5%
University	32.2%	45.5%	38.8%
Post-graduate	1.6%	5.3%	3.4%
ICT Device			
Owned a television set	91.9%	89.2%	90.6%
Owned a portable device (notebook PC, smartphone, tablet)	88.1%	92.0%	90.0%
Media Usage			
Watch television regularly (more than a few times a week)	92.9%	92.1%	92.5%
Watch television news regularly (more than a few times a week)	91.2%	89.0%	90.0%
Use Internet regularly (more than a few times a week)	94.0%	94.5%	94.3%
Read news on the Internet regularly (more than a few times a week)	71.2%	74.3%	72.8%
Use Social Media (Facebook, Twitter, LINE and others) regularly (more than a few times a week)	55.8%	53.2%	54.5%
Simultaneous Multi-screening – Performed the following tasks while watching television regularly (more than a few times a week)			
Emailing	47.9%	45.9%	46.9%
Internet browsing	69.6%	66.9%	68.3%
Social networking	35.6%	33.3%	34.0%

Table 1. Survey data

⁹ Since the aim of this study is to investigate the use of multi-screening and its effect on knowledge of social issue, therefore, this age group is selected because they are expected to be relatively higher proficient in ICT equipment and also has a relatively higher level of interest in social issues.

¹⁰ The agricultural region in Japan.

¹¹ The average age of the total population of Japan was 43.3 in 2010 according to the Population Census (MIC, 2010).

¹² 48.8% of the total population of Japan was male and 51.2% was female in 2010 according to the Population Census (MIC, 2010).

The data shown the digital literacy and media exposure of this group is relatively high, their ownership of television, portable devices as well as usage of both television and social media were around 90%. Their levels of multi-screening were quite high which is similar to the findings from other studies¹³. In addition, among this group, there seems to be no significant differences between the samples from the Tokyo Metropolitan area and the Tohoku area.

The data was analysed with SPSS and AMOS. First, exploratory factor analysis (EFA) was performed to test if the observed variables were loaded together as expected, and then confirmatory factor analysis (CFA) was conducted to evaluate the model fit and the factors reliability and validity. Finally, structure equation modelling (SEM) was employed to test the hypotheses. The variables are detailed in table 2¹⁴.

	Code	Description	Min	Max	Mean	SD
1	Knowledge	Level of general knowledge of social issues (Dependent Variable)				
	It was administrated as a latent variable represented by 10 observed variables measured by asking the respondents how much do they know about the following 10 news topics selected from the Yomiuri Shimbun's ¹⁵ 2013 list of top 20 readers' selected news ¹⁶ in a 1 to 5 Likert scale (1=do not know, 2=just heard about it, 3=just a little, 4=know about it, 5=know in details).					
	fQ10_1	Tokyo awarded as the hosting city for the 2020 Summer Olympics	1	5	4.03	0.88
	fQ10_2	Establishment of the act on the Protection of Specially Designated Secrets and discussion on the public's "right to know"	1	5	3.13	1.23
	fQ10_3	Sales tax to increase from 5% to 8% in April 2014	1	5	4.35	0.71
	fQ10_4	Liberal Democratic and New Komeito Party won the majority in the House of Councillors election, ended the divided Diet	1	5	3.35	1.32
	fQ10_5	Prime minister Abe declared to participate in TPP negotiation	1	5	3.55	1.17
	fQ10_6	300 tons of contaminated water leaked from the tanks in Fukushima first nuclear power plant	1	5	3.49	1.15
	fQ10_7	Tokyo governor Inose received 50million yen donation from the Tokushukai Group	1	5	3.85	1.03
	fQ10_8	Mt. Fuji selected as one of the world's heritages	1	5	4.14	0.85
	fQ10_9	10 Japanese hostages killed in the Amenas hostage crisis	1	5	3.03	1.36
	fQ10_10	China's decision to establish an 'East China	1	5	3.26	1.32

¹³ E.g., see, Google (2012), Microsoft (2013), Netasia Research (2013), SocialTV lab (2012).

¹⁴ All questions were in Japanese originally and were translated by author

¹⁵ One of the five national newspapers in Japan with the highest circulation (<http://www.yomiuri.co.jp/>)

¹⁶ <http://www.yomiuri.co.jp/feature/top10news/> (Accessed 4-Apr-14).

		Sea Air Defence Identification Zone' including the Senkaku Islands				
2	TVNewsCA	Viewing of television news and current affairs programmes (Independent Variable)				
It was administrated as a latent variable represented by the following 2 observed variables measured by asking the respondents how frequently they watch the following programmes on television in a 1 to 5 Likert scale (1=never, 2=once in a few months, 3=few times a month, 4=few times a week, 5=almost daily).						
	TVNews	News programmes	1	5	4.54	0.84
	CurrentA	Current affairs programmes	1	5	3.28	1.19
3	SocialMedia	Usage of social media (Independent Variable)				
It was administrated as a latent variable represented by the following 4 observed variables measured by asking the respondents how frequently they use the following social media in a 1 to 5 Likert scale same as 2.						
	Facebook	Facebook	1	5	2.14	1.57
	Twitter	Twitter	1	5	1.97	1.51
	LINE	LINE	1	5	2.58	1.79
	Others	Others	1	5	1.72	1.26
4	MultiScreen	Simultaneous Multi-screen activities (Independent Variable / Dependent Variable)				
It was administrated as a latent variable represented by the following 5 observed variables measured by asking the respondents how frequently they perform different tasks online or on social media while watching television in a 1 to 5 Likert scale same as 2.						
	MSSearch	Search for more information about the contents seen on television	1	5	2.41	1.35
	MSCheck	Check the truthfulness of the contents seen on television	1	5	2.22	1.29
	MSComment	Make comments about the contents seen on television	1	5	1.52	1.02
	MSShare	Share the contents seen on television	1	5	1.53	0.99
	MSAct	Take actions (such as "Like" on Facebook or "follow" on Twitter) in response to the contents seen on television	1	5	1.43	0.90
5	TrustTV	Trust towards the mass media on social issues (Control Variable)	1	5	3.51	0.98
It was represented by a single variable measured by asking the respondents how much do they trust the television media regarding social issues and current affairs in a 1 to 5 Likert scale (1= not trust, 2=mostly do not trust, 3=neutral, 4=mostly trust, 5=fully trust).						
6	TrustSMedia	Trust towards the social media on social	1	5	2.54	0.87

		issues (Control Variable)				
	It was administrated by asking the respondents how much do they trust the social media Facebook, Twitter, Line and Others individually regarding social issues and current affairs in a 1 to 5 Likert scale same as 5, then the maximum among the 4 were selected.					
7	ITNews ¹⁷	Usage of Internet News (Control Variable)	1	5	3.97	1.23
	It was represented by a single variable measured by asking the respondents how frequently they use the Internet to obtain news information in a 1 to 5 Likert scale same as 2.					
8	Age	Age (Control Variable)	20	60	40.03	10.28
9	Education	1=Junior high school, 2=Senior high school, 3=College or equivalent, 4=University, 5=Post-graduate (Control Variable)	Categorical 1=2.5%; 2=27.7%; 3=27.5%; 4=38.8%; 5=3.4%			
10	Geographic Area	2=Tohoku, 3=Tokyo Metropolitan (Control Variable)	Categorical 2=50.5%; 3=49.5%			
11	Gender	1=Male, 2=Female (Control Variable)	Categorical 1=42.2%; 2=57.8%			

Table 2. Variables

The EFA¹⁸ had resulted in 4 factors as expected. The communalities for all variables were >0.3. The observed variable “Twitter” under the latent variable “SocialMedia” was found to be highly loaded with another latent variable “MultiScreen”. This implies that Twitter probably was the most used social media in simultaneous multi-screening¹⁹, thus it is removed from the model. The Cronbach’s alphas for all latent variables were greater than 0.7 except for “TVNewsCA” and “SocialMedia” which were at around 0.6, this could be due to the relatively low number of observed variables associated with them. The KMO was 0.895 and Bartlett’s Test for sampling adequacy was sufficient. The total variance explained by the 4 factors model was 63.7%. Overall, the results indicated that the chosen variables were adequate. Common method bias (CMB)²⁰ was also tested and no major concern was found. CFA was then carried out to test the overall model fit and the factors’ validity and reliability, the modification indices were referred to improve the model fit²¹. Overall, the CFA model fit indicators (CMIN/DF=5.426, GFI=0.957,

¹⁷ Internet news is the second most used news source after television news, hence it is used to represent the use other new sources.

¹⁸ With principle component and varimax rotation.

¹⁹ This is inline with the findings by Netasia Research (2013).

²⁰ CMB was with tested using the Harman’s single factor test (Podsakoff, et al., 2003), the single un-rotated factor accounted for 31% of the total variance, indicated that CMB was not a concern.

²¹ “MSSearch” & “MSCheck” under “Multi-screening” had a very high modification index for covariance; it was probably because both questions were similar in nature and therefore, their error terms were co-varied. In addition, several news topics under “Knowledge” also had a relative high modification index for covariance and their error terms were co-varied accordingly.

AGFI=0.942, CFI=0.967, RMSEA=0.047, PCLOSE=0.914) shown that the overall goodness of fit of the model was satisfactory. The average variance extracted (AVE) and composite reliability (CR) was also tested and some concerns were noted for the latent variables “TVNewsCA” and “SocialMedia”²². Finally, a structural equation model (SEM) was constructed²³ to represent the path model as shown in Figure 1. The model fit indicators (CMIN/DF=5.893, GFI=0.934, AGFI=0.917, CFI=0.937, RMSEA=0.050, PCLOSE=0.550) shown the overall goodness of fit of the model was sufficient. The overall SEM model and results are shown in Figure 2.

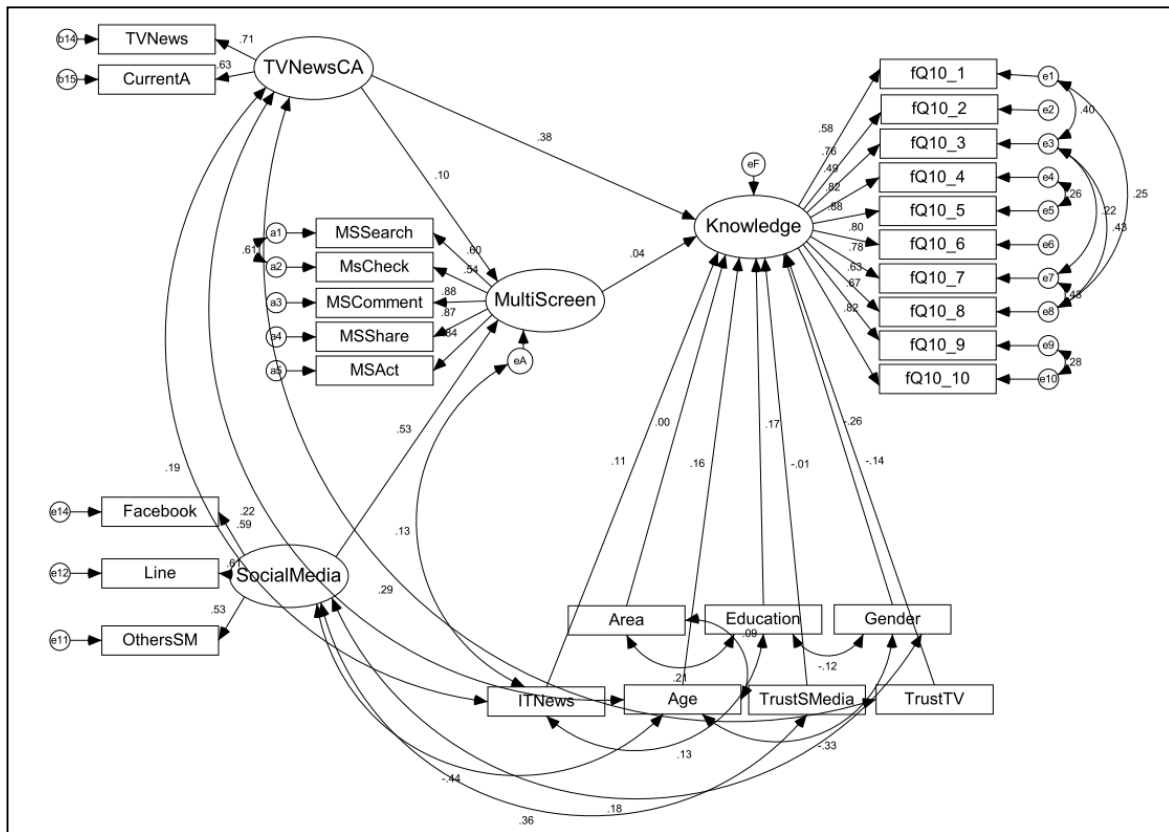


Figure 2. Part 1 - SEM model

5. Result analysis

Hypotheses 1 to 4 were tested by examining the standardised regression weight (Beta) and corresponding significance (P) of different paths as shown on figure 2, the results are summarised in table 4.

²² Using the model by Gaskin (2012), the AVE and CR for all latent variables were acceptable except for the AVE for both “SocialMedia” and “TVnewsCA” which were below the desired level of 0.5 at 0.38 and 0.47 respectively, in addition, their CR were also below the desired level of 0.7 at 0.55 and 0.63 respectively. This was probably related with the different usage pattern of different social media tools and television programmes. In this case, since the standardised regression weight of all their observed variables were >0.5 with p=0.001, they were considered as admissible with caution.

²³ The controlled variables were added with direct relationship assumed to the latent variable “knowledge”, and they were co-varied with the other variables according to the modification indices.

Hypothesis	Parameter	Beta/P	Result
H1	Knowledge <- TVNewsCA	0.385/0.001	Supported
H2	MultiScreen <- TVNewsCA	0.098/0.001	Supported
H3	MultiScreen <- SocialMedia	0.532/0.001	Supported
H4	Knowledge <- MultiScreen	0.041/0.066	Supported

Table 4. Part 1 - SEM standardised regression weight and significance

The results indicate that all 4 hypotheses are supported. In other words, the viewing of television news and current affairs programmes has increased the users' level of general knowledge of social issues (H1); it has also stimulated their level of simultaneous multi-screening (H2). At the same time, the use of social media has also increased their level of simultaneous multi-screening (H3), and simultaneous multi-screening has a positive effect on the users' level of general knowledge of social issues (H4). However, it is worth noting that the effect from the viewing of television news and current affair programmes on simultaneous multi-screening is relatively mild, especially compare with the effects from the use of social media. This implies that probably only a small portion of multi-screening activities was triggered by the viewing of television news and current affairs programmes. Furthermore, the effect of simultaneous multi-screening on the level of knowledge of social issues is also relatively weak especially when compare with the direct effect from the viewing of television news and current affairs programmes.

Hypotheses 5 and 6, the mediation effects were then tested by comparing the coefficient significance (P) between the independent variables ("TVNewsCA" and "SocialMedia") and the dependent variable "Knowledge" in three different conditions; directly without the mediator ("MultiScreen"), directly with the mediator, and indirectly with the mediator²⁴. The results²⁵ are summarised in table 5.

Hypothesis		Direct without Mediator (Beta/P)	Direct with Mediator (Beta/P)	Indirect with Mediator (Beta/P)	Mediation Type	Result
H5 - Partial mediation	Knowledge <- MultiScreen <- TVNewsCA	0.395/0.001	0.388/0.001	0.006/0.033	Partial	Supported
H6 – Indirect mediation	Knowledge <- MultiScreen <- SocialMedia	Not significant	Not significant	0.032/0.059	Indirect	Supported

Table 5. Mediation effects of Online Civic Participation

For H5, the significance values between "TVNewsCA" and "Knowledge" for all three conditions are significant, indicates that simultaneous multi-screening has partially mediated the effects of the viewing of television news and current affairs programmes on the knowledge of social issues,

²⁴ For details, see Cheung & Lau (2008).

²⁵ Obtained with 2,000 bias-corrected bootstrap re-samples.

and hence, H5 is supported. For H6, the significance value between “SocialMedia” and “Knowledge” has changed from insignificant in direct without mediator, and direct with mediator to significant in indirect with mediator, hence it indicates that simultaneous multi-screening has indirectly mediated the effect of the use of social media on the knowledge of social issues, and therefore, H6 is also supported. However, it should be noted that the mediation effect of “MultiScreen” of “TVNewsCA” on “Knowledge” appears to be very weak as the beta coefficient in the condition of indirect with mediator is close to indifferent. This implies that the most of the effect on the users’ knowledge of social issues is coming from the viewing of television news and current affairs programmes directly instead of mediated by multi-screening. That being said, albeit the effect is also quite mild, simultaneous multi-screening has indirectly mediated the effect from the use of social media, which otherwise has no direct effect on the users’ knowledge of social issues.

Finally, among the control variables, “Age” appears to be the most influential, it has a positive influence on the “Knowledge” (0.164/0.001) and is positively correlated with “TVNewsCA” (0.220/0.001) and negatively correlated with “SocialMedia” (-0.442/0.001). On the other hand, “geographic area” seems to have no direct relationship with the knowledge of social issues and also usage of either mass or social media.

6. Discussion and conclusion

Simultaneous multi-screening offers new potentials for mass media providers to engage and interact with their audiences as well as also for social media users to reflect and react on the contents they seen on mass media instantly. In this paper, it is assumed that four basic conditions are required for it to function. Firstly, obviously the users should be receiving information from the mass media (i.e., watching television in this case) and secondly, they should be able to connect to the Internet as they are watching television. Thirdly, they should be familiar with social media and fourthly and most importantly, they should be motivated by the information from the television to act.

In the context of social issues and current affairs, the first three conditions are well met, for instance, more than 90% of the samples watched television news regularly and owned at least one online capable portable device, 54% of them were regular social media user and 34% used it regularly when they were watching television. However, regarding the fourth condition, although the results do indicate that viewing of television news and current affair programmes has a positive effect on simultaneous multi-screening activities statistically; however the effect is relatively mild. This implies that only a small portion of the multi-screening activities are motivated by television news and current affairs programmes. Nonetheless, the results have shown that for those who were motivated, multi-screening does have some positive effect on their general level of knowledge of social issues despite the effect is also relatively mild. Furthermore, although simultaneous multi-screening appears to have limited direct mediation effect on the viewing of television news and current affairs; however, it can indirectly mediate some effect from the use of social media on the users’ knowledge of social issues. In other

words, for the majority who obtain their news information mainly from the television, simultaneous multi-screening does not contribute much to their level of general knowledge of social issues. However, for social media users, they can obtain news information via simultaneous multi-screening appears to activities such as searching and/or sharing the related information on social media.

In summary, in response to the research question, this finding can be interpreted from two perspectives. Firstly, simultaneous multi-screening appears to have minimal effects on the users' level of general knowledge of social issues, in other words, it does not increase nor reduce the level of fragmentation of knowledge of social issues among the users, and the television still plays the dominant role in terms of the audiences' level of general knowledge of social issues. Secondly, in comparison with the entertainment programmes, it appears that currently television news and current affairs programmes in Japan are not a very strong catalyst to trigger simultaneous multi-screening activities. Most of the multi-screening activities probably are not triggered by these programmes, and most likely they are not related with social issues. One of the possible reasons is that interactive news or current affairs programmes are not common in Japanese television²⁶ until recently. This finding has led to the next question – for social issues and current affairs, what kind of television programme can stimulate the audiences to take further actions? Which group of audience are more likely to be motivated? Although it is beyond the scope of this paper to answer these questions directly, nonetheless, the findings provide the foundation for the future studies to answer these questions. Finally, it should be noted that there are some limitations associated with the results and they should be treated with caution. For instance, as the data was collected from a single survey and therefore causal ambiguity cannot and should not be ruled out. In addition, despite the fact that the sample size is sufficiently large, the data was collected from a selected group using a single instrument (Internet survey) and most of the questions were self-reported based, hence, potential sampling bias should also be taken into consideration.

²⁶ As of April 2014, although all of the 5 public television channels in Japan offer news and current affair programmes, only 2 of them offer “interactive” news and current affairs programme with a dedicated Twitter hashtag for viewers to send in comments, and both programmes are shown in the late evening time slot. The two programmes are the News Web by NHK (<http://www3.nhk.or.jp/news/newsweb/about.html>) (Accessed 24-Apr-2014) and News23 by TBS (<http://www.tbs.co.jp/news23/feature/>) (Accessed 24 Apr 2014).

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