# Had Information Seeking Been Changed After 3.11 Earthquake of Japan?: In View of Devices, Media Attitudes and SNS

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## Abstract

This paper analyzes the changes that the Great East Japan Earthquake of March 11 2011 brought on 1) information devices, 2) information sources, and 3) satisfaction and credibility toward the information source one year after the events took place. Data used in the analysis is obtained from an internet survey "Survey concerning changes in media use and information behavior one year after the earthquake" conducted on February 28, 2012. All survey participants representing the population composition of Metropolitan Tokyo who experienced the Great East Japan Earthquake (n=1034). The analysis showed that information behavior was not affected by the situations even though traditional communication infrastructure such as telephones did not function due to the earthquake and surging demand for evacuation information. satisfaction and credibility after one year showed more decline among those who had been using SNS before the earthquake. This trend was more significant among Twitter users. This suggests that The Great East Japan Earthquake of March11 temporarily put the information infrastructure into a chaotic situation. But the confusion was not prominent enough to encourage a change in information behavior, such as switching devices or information source; instead, the earthquake reinforced psychological aspects of information behavior.

## Introduction

The Great East Japan Earthquake had a large impact on Tokyo in two ways when observed from the viewpoint of communication. *One was that the communication system was regulated in the paralyzed social infrastructure by the earthquake. For example, 90% limitation of telephone was enforced when 9 times

more calls than usual were rushed into the system by those who wanted to confirm the safety of family members and friends[1]. Furthermore to provide enough traffic service information and evacuation information caused many commuters to be stranded on the way home. The other was that the credibility of information about the nuclear power plant accident was questioned when it happened in Fukushima, only 200km away from Tokyo. Since there was confusion when reporting the nuclear power plant accident which was said to be the worst since Chernobyl, its credibility was questioned. People started using Social Networking Services (hereinafter referred to as SNS) as a new information source.

These kinds of experiences could potentially bring some changes in information behavior by giving psychological or emotional impact on people directly or indirectly. People who lived away from the disaster area in Tohoku were exposed to the image of the disaster through TV and news and indirectly experienced the scale, energy and terror of the earthquake. In addition, demand for the information on the earthquake increased when they wanted to contact their family members and friends living in (or near) the disaster hit area. Furthermore, the accident at the Fukushima nuclear power plant and the following radiation damage caused a need for more credible information. When we considered risk communication in such circumstances, it was important to recognize what information about the earthquake the media conveyed or how it was conveyed, or how people recognized the scope of the disaster through media. However, the focus of this research is that affected people's information behavior.

According to predictions by Tokyo University researchers, with in Tokyo has a 98% probability of being hit by magnitude 7-plus earthquake and tsunami with in 30 years. Thanks to the swift recovery of traffic and communication system in Tokyo, visible change in information behavior did not seem to take place. We cannot eliminate some effects of inundation of information and conjectures concerning the nuclear power plant accident, even though the rapid recovery of communication system did not motivate people to change the communication device.

This paper identifies the impact of the earthquake had on the information behavior of people when the communication environment was demaged. Also the credibility of media was questioned. This paper uses the data of a survey held in February 2012 to show that the earthquake did not strongly affect information behavior of people. Also it speculates the condition when the effect was observed.

## Impact of the Eisaster on the Communication System

During the Great East Japan Earthquake, a Malfunction of the traffic network and communication system in metropolitan Tokyo occurred. At the same time, SNS functioned as a social information tool to deliver disaster and evacuation information (Yoshitsugu, 2011). People rushed to access Yahoo! Weather News site for

earthquake information, while SNS registered an increase of access for safety informaton and radiation information. SNS played a role as a new information tool at the time of the earthquake (Yoshitsugu, 2011, p. ), and its efficacy was confirmed as a key medium to be available at the time of disaster (Shigyo, 2011[a]). It's relation with mass media was not confrontational but complementary in information (Shigyo, 2011; Endo, 2011[b]).However, no analysis has been done[2] from the viewpoint of what changes took place in information behavior[3] right after the earthquake and also the period following the disaster.

Many discussed problems of mass media (Mori, 2011), the role of media (Endo, 2011), use of media (Hashimoto, 2011), and criticism of reports by foreign media (Kumagai, 2011). In research from a criticial viewpoint, issues cooncerning objective information and research information were pointed out, arguing incorrect information and conjectures by media.[4] As for the nuclear power plant accident, sometimes mass media reporting lagged behind internet information, and internet information was correct. Furthermore, mass media has been neglecting to verify the cause of the nuclear power plant accident.[5] After that a mutual relationship between mass media and SNS has been analyzed (Fujishiro, 2012; Sekiya, 2012; Okamoto, 2012; Shigyo, 2012; Yoshitsugu, Shigyo, 2012) to find there is compartmentalization of information. But the change in the behavior of people attracted almost no attention.

Disaster affects human behavior in various ways, from restricting moves to disaster hit area (Morabito, etc. 2011), change in their travel behavior (Chen, 2003), change in their consumption behavior (Robin, 2005), increase in violent behavior among children (Klein, 2009), to changes in partner relationships (Lower, etc. 2012). According to Chen (2003), more people in the U.S.A. are withdrawing from overseas trip. Furthermore, people are switching destination due to terrorist attack and war, which is more conspicuous after 9.11.

## Media use During the Earthquake

SNS has become the second information source at the time of the Great East Japan Earthquake (Kaufman,2013). In the Great East Japan Earthquake, SNS use concentrated on the day of the earthquake  (Yoshitsugu, 2011). However, more Post from Twitter came from disaster hit Fukushima and Kansai area than from Tokyo, where infrastructure was mal-functioned. As was pointed out by Shigyo (2011), Internet users wanted to knoco the information on the demaged area etc and development of the nuclear power plant accident from TV, while they wanted detail information from SNS. As for the time when SNS was used, the move heaby users, the more use of Twitter (42%), Mixi (41%) and Facebook (28%) was observed,[6] while a mount of posting was Mixi (76%), Facebook (73%) and Twitter (61%). Limiting on Twitter, the more user twitter, the tendency to try to access the latest

information (58%), information unavailable on TV (44%) and experts' comments (23%) were observed. When divided in the two viewpoints of rapidity/urgency and technicality, information with high speed and urgency such as "news flash on the earthquake", "evacuation order" and "traffic condition" were obtained from mass media including TV and radio, which were recognized as credible, while newspaper was used for technical information such as "nuclear power plant accident, radiation" and "food safety". Technical information on Twitter by universities and research institutions obtained relatively high credibility.[7] The younger the users were, the more likely internet was used as the primary information source. People in their 20s use Mixi and Facebook for information source for information of "earthquake news flash", "traffic condition", "nuclear power plant, radiation" and "food safety". However we cannot definitely say that such trend among people in their 20s changed greatly before and after the earthquake.[8]

## Research Method

This paper used data of a web survey conducted on February 29, 2012, on people who experienced the Great East Japan earthquake in Tokyo. The survey

Table 1: Sex and Age groups

|  |  |  | Sex | |
| --- | --- | --- | --- | --- |
|  |  |  | Male | Female |
| 20-24 | years old | n | 47 | 45 |
|  |  | % | 51.1 | 48.9 |
| 25-29 |  | n | 52 | 48 |
|  |  | % | 52.0 | 48.0 |
| 30-34 |  | n | 38 | 53 |
|  |  | % | 41.8 | 58.2 |
| 35-39 |  | n | 90 | 68 |
|  |  | % | 57.0 | 43.0 |
| 40-44 |  | n | 54 | 62 |
|  |  | % | 46.6 | 53.4 |
| 45-49 |  | n | 62 | 46 |
|  |  | % | 57.4 | 42.6 |
| 50-54 |  | n | 51 | 49 |
|  |  | % | 51.0 | 49.0 |
| 55-59 |  | n | 38 | 36 |
|  |  | % | 51.4 | 48.6 |
| over 60 |  | n | 95 | 100 |
|  |  | % | 48.7 | 51.3 |
| total |  | n | 527 | 507 |
|  |  | % | 51.0 | 49.0 |

Table 2: Device ownership in each age group

| Age | | PC | Smart Phone | Tablet PC | Mobile phone other than smart phone |
|---|---|---|---|---|---|
| 20-24 | n | 46 | 28 | 4 | 69 |
| | % | *50.0* | *30.4* | *4.3* | *75.0* |
| 25-29 | n | 69 | 29 | 4 | 74 |
| | % | *69* | *29* | *4.0* | *74.0* |
| 30-34 | n | 56 | 17 | 1 | 77 |
| | % | *61.5* | *18.7* | *1.1* | *84.6* |
| 35-39 | n | 113 | 26 | 6 | 135 |
| | % | *71.5* | *16.5* | *3.8* | *85.4* |
| 40-44 | n | 71 | 20 | 2 | 94 |
| | % | *61.2* | *17.2* | *1.7* | *81.0* |
| 45-49 | n | 69 | 17 | 6 | 91 |
| | % | *63.9* | *15.7* | *5.6* | *84.3* |
| 50-54 | n | 68 | 9 | 3 | 79 |
| | % | *68.0* | *9.0* | *3.0* | *79.0* |
| 55-59 | n | 51 | 8 | 2 | 63 |
| | % | *68.9* | *10.8* | *2.7* | *85.1* |
| over 60 | n | 132 | 10 | 3 | 152 |
| | % | *67.7* | *5.1* | *1.5* | *77.9* |
| Total | n | 675 | 164 | 31 | 834 |
| | % | *65.3* | *15.9* | *3.0* | *80.7* |

Table 3: Information device and earthquake information in the earthquake

| Information \ Device type | PC | Smart Phone | Tablet PC | Mobile phone other than smart phone |
|---|---|---|---|---|
| Earthquake | | | ** | |
| Traffic | ** | * | | |
| Shelter | * | ** | | |
| Safety of family member | | * | | |

*: p< 0.05, **: p<0.01

subjects were male and female adults residing in Tokyo on the day of the earthquake, and rate of their ages and sexes group matched the population composition of metropolitan Tokyo.

Valid responses were collected from 1,034 respondents in the end (Table1).

This paper examines whether the 3.11 Great East Japan Earthquake, which temporarily put information infrastructure into chaos brought about device switching or change in information behavior using the survey data (n=1034).

## Analysis Results

Devices at hand at the time of the earthqauke were celluar phone (80.7%), followed by PCs (65.3%) and smart phones (15.9%) (Table 2). Difference among generations is visible only in smart phone. Useful tools to collect earthquake disaster information were in the order of PC (58.1%), smart phone (54.9%) and celluar phones (35.5%). People who were using PC at the time of the earthquake tended to search traffic information (p<.01) and evacuation information (p<.1). People with smart phone tended to seek evacuation information (p<.01) and safety information of their family members (p<.05) (Table 3). It can be understood that the former wanted traffic information and evacuation information to go home from work, or to find some a safty area. The latter were considered to have understood the situation and be in circumstances where going home or taking next action looked difficult; so it is likely considered that they used the device for searching for evacuation information and sending/receiving safety information.

As for the efficacy of devices, many responded that PC (58.1%), smart phone (54.9%) and tablet (48.4%) were useful, while the response highlighted low efficiency for celluar phone (35.5%) .[9] Merely 11.0 % of the users changed from celluar phone to smart phone. "Parallel use" of existing celluar phone and smart phone or "additional purchase" was only 2.6% of the respondents. 66.8% of the respondents kept using their celluar phone. Many of the respondents used smart phone as their second device after the earthquake (p<.000). Purchasing behavior of device took place within 6 months (28.1%) to 1 year (45.8%).

There was no statisticaly significant difference between the efficacy of celluar phone and changing to smart phone (p=.407). Even if the device failed to function as a tool to confirm the safety at the time of the earthquake, it was because of the "difficulty in making connection" caused by confusion in the communication network, overloading and breakdown. Unless the users recognized this failure as an issue of device function, it did not strongly encourage switching or additional purchase. [10]

As for the length of SNS use, Twitter (p=.860) and Mixi (p=.819) did not show change even though the efficacy of smart phone was acknowledged. Only Facebook (p=.089) showed some change not small enough to neglect. For "credible media" of reports after the earthquake, NHK (73.0%) placed top, followed by national newspapers (66.3%), commercial broadcasting stations (60.7%) and evening/sports papers (30.4%).[11] Besides mass media, Yahoo! News registered relatively high credibility of 52.8%.[12] In comparison, credibility of Facebook (10.1%), Twitter

(9.0%) and Mixi (7.8%) is low. As for information related to the earthquake during the period of one year, the "media with highest satisfaction" was national newspapers (53.6%), followed by commercial broadcasting stations (50.9%) and NHK (50.7%). When the satisfaction level of internet sources and SNS were compared, Yahoo!News (42.1%) registered high, but Facebook (8.5%), Twitter (9.7%) and Mixi (7.5%) was low.

Does length of SNS use influence credibility toward mass media space? As is shown in table 4, Twitter use showed an impact on the credibility of mass media. Twitter users who started their use from before the earthquake registered higher un-credibility. On the other hand, those who don't use Twitter one year after scored high credibility. Facebook tends to be used for "communicating with family members, casual friends, close friends (p<.000)" and "obtaining job-related information (p=0.001)". This shows there are many differences in the subjects of dispatching informtaion and use for the information in a simple term of SNS.

We examine whether SNS use influences satisfaction level toward mass media. According to Table 5, Twitter use among SNS has an impact on the satisfaction level toward mass media, however, it is limited to national newspapers and commercial broadcasting stations. Focused on the credibility of information, respondents relatively trust newscasters/reporters of broadcasting statios (45.6%) and experts/commentators (40.1%), while the least trusted information sources are PR managers of TEPCO (69.6%) and spokesmen of Nuclear and Industrial Safety Agency/spokesmen of Nuclera Safety Commission (61.8%). [13]

What impact did the level of SNS use have on the credibility toward information source? As is shown in Table 6, Facebook users who had been using

Table 4: Credibility toward mass media

| Independent variable | Dependent variable | B | T | P |
|---|---|---|---|---|
| Facebook | National newspapers | .19 | 0.61 | 0.54 |
| | Evening/sports papers | .65 | 2.09 | 0.37 |
| | NHK (Japan Broadcasting Corporation) | .02 | 2.09 | 0.37 |
| | Commercial broadcasting stations | .65 | 2.08 | 0.38 |
| | Yahoo! News | .36 | 1.16 | 0.24 |
| Twitter | National newspapers | .91** | 2.9 | 0.004 |
| | Evening/sports papers | .097** | 3.13 | 0.002 |
| | NHK (Japan Broadcasting Corporation) | .07* | 2.26 | 0.024 |
| | Commercial broadcasting stations | .19** | 6.39 | 0.000 |
| | Yahoo! News | .79* | 2.54 | 0.011 |

*: p< 0.05, **: p<0.01   5 divisions from "Do not trust at all" to "very trust".

## Table 5: Satisfaction toward mass media

| Independent variable | Dependent variable | B | t | P |
|---|---|---|---|---|
| Facebook | National newspapers | .44 | 1.419 | 0.156 |
| | Evening/sports papers | .21 | 0.689 | 0.491 |
| | NHK (Japan Broadcasting Corporation) | .002 | 0.56 | 0.955 |
| | Commercial broadcasting stations | .1 | 0.323 | 0.746 |
| | Yahoo! News | -.022 | -0.698 | 0.485 |
| Twitter | National newspapers | .107** | 3.456 | 0.001 |
| | Evening/sports papers | .062 | 2.002 | 0.46 |
| | NHK (Japan Broadcasting Corporation) | .013 | 0.432 | 0.666 |
| | Commercial broadcasting stations | .115** | 3.718 | 0.000 |
| | Yahoo! News | .038 | 1.212 | 0.226 |

*: p< 0.05, **: p<0.01  5 divisions from "It is not satisfied at all" to "very satisfied".

## Table 6: Credibility toward information source

| Independent variable | Dependent variable | B | T | P |
|---|---|---|---|---|
| Facebook | Newscasters and reporters of broadcasting stations | .064 | 2.069 | 0.039 |
| | Reporters in talk-variety-TV shows | .065 | 2.077 | 0.038 |
| | Experts and academic commentators of universities | .018 | 0.59 | 0.555 |
| | Responsible ministers (including Prime Minister) | -.028 | -0.896 | 0.371 |
| | Spokesmen of Nuclear and Industrial Safety Agency | -.046 | 1.49 | 0.136 |
| | Spokesmen of Nuclear Safety Commission | -.033 | -1.076 | 0.282 |
| | PR managers of TEPCO | -.37 | -1.202 | 0.23 |
| | Regular commentators on TV programs | .71* | 2.276 | 0.023 |
| | Anchors and announcers of news programs | .63* | 2.024 | 0.043 |
| Twitter | Newscasters and reporters of broadcasting stations | .134** | 4.352 | 0.000 |
| | Reporters in talk-variety-TV shows | .117** | 3.773 | 0.000 |
| | Experts and academic commentators of universities | .1** | 3.218 | 0.001 |
| | Responsible ministers (including Prime Minister) | .048 | 1.554 | 0.121 |
| | Spokesmen of Nuclear and Industrial Safety Agency | .033 | 1.059 | 0.29 |
| | Spokesmen of Nuclear Safety Commission | .043 | 1.381 | 0.168 |
| | PR managers of TEPCO | .022 | 0.707 | 0.48 |
| | Regular commentators on TV programs | .091** | 2.945 | 0.003 |
| | Anchors and announcers of news programs | .122** | 3.934 | 0.000 |

*: p< 0.05, **: p<0.01  5 divisions from "Do not trust at all" to "very trust".

SNS from before the earthquake did not trust 'Regular commentators on TV programs' and 'Anchors and announcers of news programs'. On the contrary, Twitter users did not trust 'Newscasters and reporters of broadcasting stations', 'Reporters in talk-variety – TV shows', 'Experts and academic commentators of universities'. Twitter users who were registered since before the earthquake have a higher possibility of not trusting these information sources.

As for information sources, information provided by newscasters and reporters of broadcasting stations (40.5%) and experts/commentators enjoyed higher satisfaction rate, followed by announcers of TV programs (18.1%) and reporters in talk-variety-TV shows (17.9%). Satisfaction rate toward information provided by the responsible ministers, spokesmen of Nuclear and Industrial Safety Agency/ spokesmen of Nuclear Safety Commission, and PR managers of TEPCO was less than 10%.[14]

When the relationship between SNS use level and satisfaction level toward information source is examined, Facebook users are not satisfied with the information by reporters in talk-variety-TV shows, while Twitter users are not satisfied with information by "a Cabinet ministers", "Spokesmen of Nuclear and

Table 7: Satisfaction toward information source

| Independent variable | Dependent variable | B | T | P |
|---|---|---|---|---|
| Facebook | Newscasters and reporters of broadcasting stations | .25 | 0.816 | 0.415 |
| | Reporters in talk-variety-TV shows | .066* | 2.111 | 0.035 |
| | Experts and academic commentators of universities | .009 | 0.285 | 0.775 |
| | a Cabinet ministers (including Prime Minister) | -.31 | -0.985 | 0.325 |
| | Spokesmen of Nuclear and Industrial Safety Agency | -.58 | -1.865 | 0.063 |
| | Spokesmen of Nuclear Safety Commission | -.053 | -1.7 | 0.089 |
| | PR managers of TEPCO | -.053 | -1.719 | 0.086 |
| | Regular commentators on TV programs | .044 | 1.426 | 0.154 |
| | Anchors and announcers in news programs | .034 | 1.104 | 0.27 |
| Twitter | Newscasters and reporters of broadcasting stations | .009** | 2.91 | 0.004 |
| | Reporters in talk-variety-TV shows | .122** | 3.946 | 0.000 |
| | Experts and academic commentators of universities | .069* | 2.217 | 0.027 |
| | a Cabinet ministers (including Prime Minister) | .03 | 0.962 | 0.336 |
| | Spokesmen of Nuclear and Industrial Safety Agency | .027 | 0.884 | 0.377 |
| | Spokesmen of Nuclear Safety Commission | .029 | 0.929 | 0.353 |
| | PR managers of TEPCO | .022 | 0.695 | 0.487 |
| | Regular commentators on TV programs | .068* | 2.189 | 0.029 |
| | Anchors and announcers in news programs | .105* | 3.383 | 0.001 |

*: $p < 0.05$, **: $p < 0.01$    5 divisions from "Do not satisfied at all" to "very satisfied"

Table 8: Impact of time of SNS use on the purpose of SNS use

| | Model 1 | | | Model 2 | | |
|---|---|---|---|---|---|---|
| | B | SE | t stat | B | SE | t stat |
| Constant | 2.827** | 0.14 | 20.156 | 2.526** | 0.151 | 16.697 |
| To interact with family members, casual friends and close friends | -.126** | 0.032 | -3.97 | -.019 | 0.034 | -0.544 |
| To interact with acquaintance required on the job | -.097* | 0.038 | -2.513 | .021 | 0.041 | 0.516 |
| To interact with celebrities | .067 | 0.035 | 1.88 | -.132** | 0.038 | -3.448 |
| To share what happened in his/her own daily life | -.009 | 0.038 | -0.241 | .03 | 0.041 | 0.717 |
| To share information of hobbies or leisure time activities | .058 | 0.035 | 1.652 | -.033 | 0.038 | -0.881 |
| To gain information related to his/her job | -.081* | 0.04 | -2.025 | -.121** | 0.043 | -2.784 |
| To gain news information | .079* | 0.038 | 2.072 | -.041 | 0.041 | -0.987 |
| To expand human network | -.104** | 0.035 | -2.956 | .061 | 0.038 | 1.607 |
| To obtain fun and delight | .089* | 0.039 | 2.267 | -.012 | 0.042 | -0.277 |
| To keep up with the trend | -.004 | 0.045 | -0.087 | .038 | 0.049 | 0.786 |
| Because other people are using it | -.042 | 0.037 | -1.15 | .099* | 0.04 | 2.488 |
| For not to be isolated from the network | .039 | 0.049 | 0.793 | -.015 | 0.053 | -0.288 |
| Out of curiosity about life of other people | -.057 | 0.051 | -1.113 | .017 | 0.056 | 0.304 |
| To worry about other people of other | .049 | 0.049 | 1 | 0.000 | 0.053 | -0.008 |
| To gain information of current issues and social issues | -.077 | 0.045 | -1.688 | -.023 | 0.049 | -0.477 |
| To let others know the news he/she is interested in | -.025 | 0.065 | -0.387 | -.02 | 0.07 | -0.293 |
| To let others know news of current issues and social issues he/she is interested in | .075 | 0.071 | 1.056 | .092 | 0.076 | 1.203 |
| To find the news and information earlier than others | .018 | 0.045 | 0.388 | -.147** | 0.049 | -3.004 |
| To find relief from loneliness | -.031 | 0.041 | -0.743 | -.024 | 0.045 | -0.543 |
| To respond to the time | -.055 | 0.043 | -1.269 | -.062 | 0.046 | -1.343 |
| N | | | 1034 | | | 1034 |
| adjusted R-square | | | 0.127 | | | 0.126 |
| F value | | | 4.901** | | | 4.86** |

*: $p < 0.05$, **: $p < 0.01$   5 divisions from "It is not the case at all" to "it is true".

Industrial Safety Agency", "Spokesmen of Nuclear Safety Commisoin," nor "PR managers of TEPCO".

In order to explain the difference between Facebook and Twitter appearing in Table 4 to Table 7, the impact on the use by SNS at the introduction time was estimated (Table 8). Model 1 indicates the case of Facebook, while model 2 shows the case of Twitter. What we can understand from Table 8 is that Facebook gives statistically significant impact on the private purpose of use, while Twitter also gives a statistically significance on the work.

## Discussion and Conclusion

This paper focused on the change of information behavior after the Great East Japan Eearthquake in 2011. It indicated that the behavior of changing communication devices was not directly connected to the earthquake experience when the information environment worsened. What influenced behavior was credibility/satisfaction toward media and credibility/satisfaction toward the information source. In a case where information behavior did register some change, it did not mean increased credibility and satisfaction toward media and information force. Rather, worsened credibility and satisfaction was indicated.

This research could also find some features of a relationship between the information people craved in a difficult situation and devices as well as how the people were involved with SNS. First, celluar phone does not show statistically significant difference in any earthquake information. But the ratio to changing daily device into smart phone because of experiencing anxiety or inconvenience was very low.

The number of SNS users will increase in the future, and it may become a useful everyday information tool. Based on the number of both SNS users, 16,910,000 for Facebook and 12,770,000 for Twitter (as of December 2012), we can expect many problems at policy level in addition to dissemination rate in Japan when SNS tries to function as a social infrastructure.

Also this research showed a difference among different SNS users in the way they were involved with social information, dispatching information, and their use of seeking information. Twitter users tend to emphasize social information search function, especially those who have used it for a long time in order to exchange communication with celebrities and obtain related information, job related information look for clues and hints, share information with relatively close acquaintances, and search for information to suit the inclination and purpose. As for Facebook users, interaction with "necessary acquaintance on the job" and "celebrities" in addition to "family members, casual friends, close friends" was the purpose. There was a an indication that the purpose for using this media was to gain "fun and delight" derived from new human network and additional function by

modification of media function. Excluding the purpose of exchangeing communication with celebrities, these results may point out the difference in the "quality" concerning the network formed on Twitter and Facebook as well distributed information.

If allowed to say more, (aside from the fact of whether such social impact was strong or weak), Twitter, which can be casually posted upon from private incidents to social or anti-social incidents, can be regarded very appropriate to be in the division of microblogs among SNS. There, as was symbolized in the low credibility and satisfaction level toward outside experts (researchers, commentators) as was proved in this study and analysis, Twitter puts the user's claim in maximum 140 letters, while depending on the contents provided by mass media for information source and the object of criticism, from short comments (sometimes irresponsible) to claims (complex thought may exist in the background). The users create "loose" networks regardless of the evaluation of their social status where they enjoy response to the contents they sent out by those in a circle within expectation. Sometimes they become the target of social criticism from total strangers. This phenomenon in the internet sphere is called "flaming" ("en-joh" in Japanese). In those aspects, Twitter is a media featuring double-edged sword nature as a social information device.

Facebook also has a function of dispatching and spreading information on networks. Since this SNS recommends registration in the real name, its dissemination tends to be a more closed network compared with Twitter's. Unless someone in the network responds with "Like", the possibility for its contents to proliferate to others in the network remains low. This makes it easier to halt irresponsible proliferation. This research found that Facebook users from before the earthquake evaluated credibility of broadcasting stations low. We assume that the high individuality of Facebook made it easier to use this media in specific situations rather than in pursuit or dissemination of earth related information and an information of the accident at the Fukushima nuclear plant. As for the purpose of use in comparison with Twitter users, Facebook users have a high possiblity to form "firm" networks in their daily lives as well including their family members, and they set a high value on communication there.

### NOTES

1. NTT East Japan (2011) "Tracks for Recovery in the Great East Japan Earthquake" http://www.ntt-east.co.jp/info/detail/pdf/shinsai_fukkyu.pdf

2. Institute for Information and Communications Policy (2012)

3. Nielsen "Survey Result of Internet Use Trend in the Week of the Occurrence

of the Great East Japan Earthquake" March 29, 2011

4.  Asahi Shimbun dated November 19, 2013

5.  Urgent Symposium "The Great East Japan Earthquake and Reporting Media" May 21, 2011

6.  Percentage of users with more than one access per day

7.  Twitter and Mixi users have high percentage in people in their 10s and 20s

8.  "White Paper Information and Communication in Japan" 2012 Edition, p.274-275.

9.  Institute for Information and Communications Policy, "Survey concerning the Change of Information Behavior Triggered by the Great East Japan Earthquake", pp.2-4.

10. From "not useful at all" to "very useful" in the scale of 5. The percentage is the sum of "somewhat useful" and "very useful".

11. "White Paper Information and Communication in Japan" 2012 Edition, p.260.

12. The result is the sum of "somewhat credible" and "very credible".

13. According to researches by IICP, credibility varies depending on themes. TV and radio score high credibility for information in timely reports, while credibility toward newspapers and experts score high for information requiring expertise.

14. "The percentage of "credible " is the sum of "somewhat credible" and "very credible".

15. "The percentage of "credible " is the sum of "somewhat credible" and "very credible".

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