

Hypothesis Testing for Questionnaire Investigation on SNS

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Abstract

Social Networking Service (SNS) have become widely used in Japan in recent years with Facebook, mixi, Twitter and Google+ being the most popular. Big Disaster happened at 11/March/2011 in the east part of Japan. It is well known that Facebook played important role in communication under the condition that telephone and/or cellular phone connected with Internet could not make link. These are used in various fields of life together with the convenient devices such as smart-phones. Furthermore, such free applications as LINE、comm、KAKAKO Talk are often used by the young people and diversified communication methods came to be supported. A questionnaire investigation was used to clarify the current usage condition, issues and desired function etc. Information for marketing purposes was then extracted. Fundamental Statistical Analysis, Hypothesis testing were then performed. Reviewing past research, there are some related papers, but

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they do not include new tools which are evolving rapidly. Moreover there has been little research conducted on this precise topic. Some interesting results were obtained.

Keywords: SNS; Questionnaire Investigation; Hypothesis Testing

1 Introduction

Social Networking Service (SNS) become widely used in Japan in recent years with Facebook, mixi, Twitter and Google+ being the most popular. Big Disaster happened at 11/March/2011 in the east part of Japan. It is well known that Facebook played important role in communication under the condition that telephone and/or cellular phone connected with Internet could not make link. Google launched forth into SNS by the name Google+ at June 2011. Thus, it has become a hot business spot and it makes great influence upon society and economy. Furthermore, such free applications as LINE、comm、KAKAKO Talk are often used by the young people and diversified communication methods came to be supported.

There are proprietary instant messaging application for smartphones and PCs. In addition to basic messaging, users can send images, video and audio media messages among them and make free VoIP (Voice over Internet Protocol) calls. In this paper, we make questionnaire investigation in order to clarify the current usage condition, issues, and desired functions etc.

The rest of the paper is organized as follows. Current condition of SNS is stated in section 2. Based upon the previous researches, a new questionnaire sheet is constructed in section 3. Fundamental statistical analysis is executed in section 4. Hypothesis testing is executed in section 5. Section 6 is a summary.

2 Current Condition of SNS

SNS means the services to construct social network on the Internet. Friendster which has started in the year 2002 is said to be the father of SNS (Saito, 2010). Various typed SNS were born ever since.

From the Nielsen data, major SNS's usage condition is as follows (Table 1, 2, Figure 1). Visitors to Facebook are 17.515 million people, which are the largest, and then Twitter: 13.15, mixi: 4.468, Google+: 4.317 follow. Nearly 30% domestic Internet users in Japan use Facebook. As for the average visiting time, mixi is the most for 125 minutes and heavy users often use this media. Google+ has achieved 113.8% compared with the former month's usage. The number of users of Google+ is increasing mainly in the site for the fan of popular young entertainers and is now overcoming those of mixi. Various field of usage would prevail hereafter.

Table 1: Audience data for Mar/2013 mixi, Twitter, Facebook, Google+ by PC net

(Source: Nielsen)

	User (×1000)	Ratio to the former month	Reach Ratio	Total using time (million minutes)	Ratio to the former month	Average using time (minutes)	Ratio to the former month
mixi	4,468	105.0%	7.6%	561	106.6%	125	101.5%
Twitter	13,150	111.1%	22.3%	560	113.2%	42	101.9%
Facebook	17,515	101.4%	29.7%	1,411	106.6%	80	104.9%
Google+	4,317	99.0%	7.3%	33	112.7%	7	113.8%

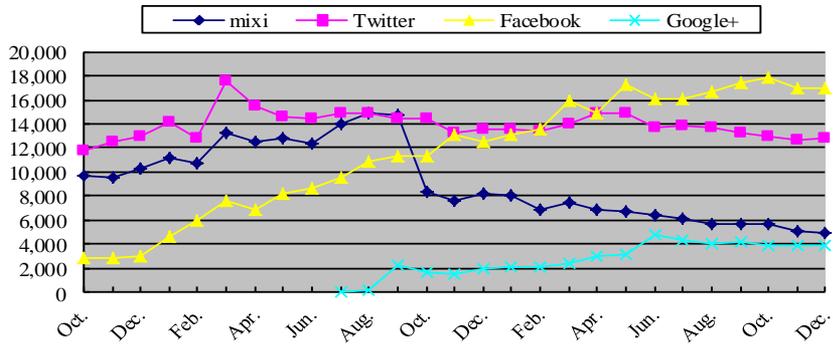


Figure 1: Time series of visitors by PC for Oct/2010~Mar/2013 (×1000)
(Source: Nielsen)

Table 2: Time series of visitors by PC for Oct/2010~Mar/2013 (×1000)
(Source: Nielsen)

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.
mixi	9,744	9,608	10,214	11,228	10,659	13,211	12,507	12,864	12,433	14,033
Twitter	11,778	12,444	12,901	14,211	12,824	17,571	15,489	14,666	14,516	14,914
Facebook	2,819	2,934	3,077	4,598	6,030	7,659	6,939	8,204	8,717	9,504
Google+	—	—	—	—	—	—	—	—	—	91
	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
mixi	14,917	14,723	8,385	7,684	8,135	8,037	6,839	7,428	6,914	6,682
Twitter	14,962	14,416	14,551	13,199	13,529	13,593	13,419	14,017	14,866	14,824
Facebook	10,827	11,274	11,319	13,061	12,543	13,049	13,508	14,877	14,831	17,241
Google+	166	2,257	1,622	1,541	2,038	2,051	2,045	2,480	3,028	3,099
	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
mixi	6,463	6,127	5,671	5,686	5,745	5,028	4,916	4,817	4,257	4,468
Twitter	13,741	13,920	13,741	13,243	13,011	12,710	12,776	12,992	11,835	13,150
Facebook	16,083	16,027	16,730	17,369	17,821	16,937	16,918	17,668	17,278	17,515
Google+	4,852	4,295	4,019	4,159	3,949	3,916	3,861	4,062	4,359	4,317

As is seen in Table 2 and Figure 1, users of 4 sites of Integrated genre' s SNS are saturating these days. It may be because that such free applications as LINE、comm、KAKAKO Talk are often used by the young people and diversified communication methods came to be supported. There are proprietary instant messaging application for smartphones and PCs. In addition to basic messaging, users can send images, video and audio media messages among them and make free VoIP (Voice over Internet Protocol) calls.

Users in Japan at January 2013 are as follows.

LINE: 45 million

KAKO Talk: 7.5 million

Comm.: 5 million

These are still increasing in the number of users.

3 Investigating Former Researches

3.1 SNS Users' Desire

Harada pointed out that SNS users want to have relation so as to satisfy following three desire [1].

- Desire for having relationship:

Desire for having relationship by making communication with friends in having mail and/ or agreement behavior.

The expected role in using SNS is to build good relationship with friends and keep it long. Furthermore, it is used to keep contact with those who are busy or stay in the distance.

- Desire for sharing sympathy:

Desire for sharing sympathy by enjoying hobbies with friends.

As for the second role, it is to talk with friends for about hobby freely. By attending the same hobby group, they seek to share the sympathy.

- Desire for making expression:

Desire for making expression as actor/ actress and being fascinated.

As for the third role, it is to confirm his own value through the evaluation executed by other people. By letting others know himself and by expressing his skill, SNS can be utilized as a “Theater”.

3.2 SNS Users’ Desire

Following consumers activity models are propped. Once AIDMA, after the Internet, AISAS and AISCEAS, now SIPS after SNS. AIDMA [2] is said to have following steps, which was proposed by Samuel Roland Hall in 1920th.

1. Attention, 2. Interest, 3. Desire, 4. Memory, 5. Action

Where these are discriminated that attention is the stage for recognition and Interest, Desire, Memory are the stage for emotion, and Action is the stage for acting. AISAS [3] is the one DENTSU INC. proposed.

1. Attention, 2. Interest, 3. Search, 4. Action, 5. Share

SIPS [3] is the concept that DENTSU INC. has proposed January 2011 based upon the prevailing SNS.

1. Sympathize, 2. Identify, 3. Participate, 4. Share & Spread

A new activity pattern, in which SNS Users’ Desire and SIPS are combined, is exhibited at Figure 2.

We made a questionnaire investigation in order to clarify the current usage condition, issues and desired functions etc. χ^2 hypothesis Testing is executed for about users’ SNS consciousness. χ^2 hypothesis Testing is to clarify the difference between the expected value and the observed data, which is shown in Eq.(1).

$$\chi^2 = \sum_{i=1}^n \frac{(O_i - E_i)^2}{E_i} \quad (1)$$

Where O_i is an observed data and E_i is an expected value.

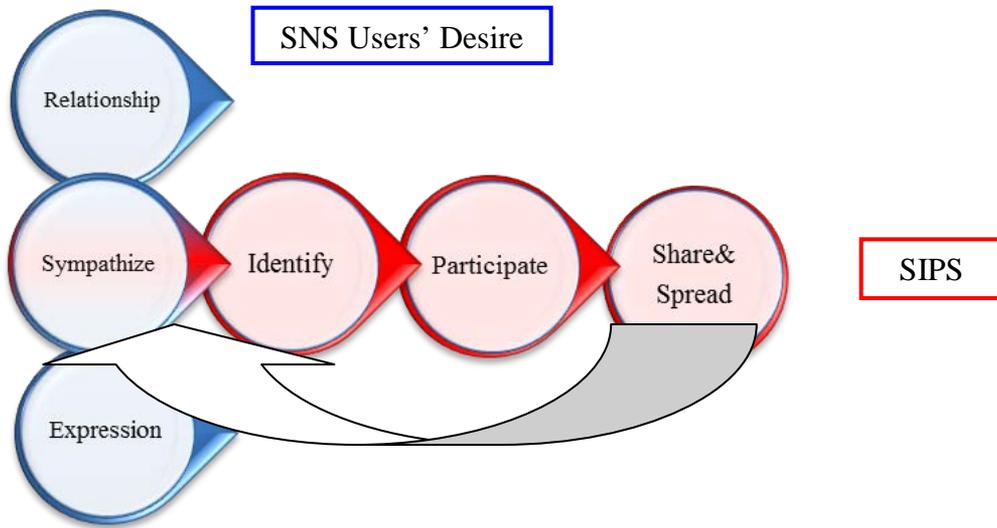


Figure 2: A New Activity Pattern in which SNS Users' Desire and SIPS are combined

Based upon the four consumers' characteristics and seven consumers' Response by Hypothesis Building Viewpoints (P. Kotler and K. Keller, 2006) in Table3, 9 hypotheses are built. Questionnaire sheet is designed based upon these hypotheses.

Table 3: Hypothesis Building Viewpoints
(Source: P. Kotler and K. Keller-Revised by the writer)

	Characteristics	Example
Consumers' characteristics	Demographic characteristics	Sex, Age, Family, Occupation
	Geographic characteristics	Urban City, Rural City, Tokyo/Osaka
	Psychographic characteristics	Life-style, Personality
	Usage condition	Daily use, Business use

		Quality, Endurance, After sales
	Benefit Response	service, Economical, Convenience, Swiftness
	Usage Ration Response	Big user etc.
Consumers' Response	Type of users	Non-user, Former user, First user, Regular user etc.
	Frequency	Light user, Heavy user etc.
	Royalty	Absolute, Non etc.
	Attitude towards products	Fanatic, Negative etc.

1. Difference of evaluation between user and non-user for SNS
2. Difference of evaluation by attribute
3. Difference of evaluation by residential area
4. Difference of usage by each SNS
5. Difference of Psychographic characteristics between user and non-user for SNS

We set 9 themes as follows. These are extracted from the experience of the professionals.

Theme 1: SNS users want much more to strengthen security and easiness of handling than non-users.

Theme 2: Male use SNS more frequently than Female.

Theme 3: Senior people seek friends who have attention to their interest.

Theme 4: Students often use SNS for killing time.

Theme 5: Young people esteem the space to discuss, while senior esteem hobby.

Theme 6: Urban citizen frequently use SNS than rural residents.

Theme 7: Users mainly use game in game genre SNS such as Mobage.

Theme 8: Those who like to play with many friends do not use so much SNS rather than those who do not like.

Theme 9: Those who esteem self –realization want to appeal themselves by utilizing SNS.

Questionnaire sheet is exhibited at Appendix. By combining the SNS Users' Desire and SIPS, Correspondence Table for each Questionnaire Item is exhibited in Table 4. Demographic, Geographic and Psychographic items are added in the questionnaire sheet.

Table 4: Correspondence Table for each Questionnaire Item

SNS User's Desire	Relationship	Q5(1),(2),(3) Q6(1),(2) Q7(1) Q10(1),(2),(3) Q12(1),(2),(3)
	Expression	Q5(10) Q6(8) Q7(7) Q10(10) Q12(8)
SIPS	Sympathize	Q5(4) Q6(3) Q7(2) Q10(4) Q12(4)
	Identify	Q5(5),(6) Q6(4),(5) Q7(3),(4) Q10(5),(6) Q12(5)
	Participate	Q5(7) Q6(6) Q7(5) Q10(7) Q12(6)
	Share & Spread	Q5(8),(9) Q6(7) Q7(6) Q8 Q10(8),(9) Q12(7)
Function	Q5(11) Q6(9),(10),(11) Q7(8) Q10(11) Q12(9),(10),(11),(12)	
Miscellaneous	Q6(12) Q7(9),(10),(11)	
Demographic	Q13 Q14 Q15 Q17 Q18	
Geographic	Q16	
Psychographic	Q19 Q20 Q21 Q22	

4 Outline of the Questionnaire Research and Examinees

4.1 Outline of the Questionnaire Research

We make a questionnaire investigation concerning the SNS. The outline of

questionnaire research is as follows.

- (1) Scope of investigation : Student, Government Employee and Company
Employee etc., Japan
- (2) Period : April/26/2012~June/6/2012
- (3) Method : Mail, online and self-writing
- (4) Collection : Number of distribution 1,500
Number of collection 1,197 (collection rate 79.8%)
Valid answer 1,098

Major single variable summary results of questionnaire investigation are as follows.

Table 5: Major single variable summary results

Question	Answer	Number of Answer	Share
Q1. Use the SNS	Use	792	72.1%
	Do not use	306	27.9%
Q13. Gender	Male	650	59.2%
	Female	448	40.8%
Q14. Age	—20	196	17.9%
	—30	328	29.9%
	—40	299	27.2%
	—50	194	17.7%
	—60	73	6.6%
	60—	8	0.7%
Q15. Occupation	Student	295	26.9%
	Government Employee	15	1.4%
	Company Employee	595	54.2%
	School Teacher/Staff	43	3.9%
	Clerk of Organization	19	1.7%
	Independents	45	4.1%

	Temporary Employee	15	1.4%
	Part-timers	53	4.8%
	Miscellaneous	18	1.6%
Q16. Residence	Hokkaido	22	2.0%
	Tohoku Region	49	4.5%
	Kanto Region	157	14.3%
	Chubu Region	176	16%
	Kansai Region	400	36.4%
	Chugoku Region	110	10.0%
	Shikoku Region	105	9.6%
	Kyushu Region	79	7.2%

4.2 Outline of Examinees

4.2.1 Average Utilization Frequency of the SNS (Q2)

From Figure 6, we can observe that 78% people use the SNS every day.

4.2.2 Usage Condition of the SNS (Q3, Q4, Q9)

We show the usage condition of the SNS concerning following questions in Figure 7.

Q3. What kind of the SNS do you use?

Q4. What kind of the SNS do you use the most?

Q9. What kind of the SNS are you going to continue to use?

The usage of Facebook, mixi and Twitter, which are the genre of Integrated SNS, are frequently used and You Tube (one of the moving picture SNS) is the same.

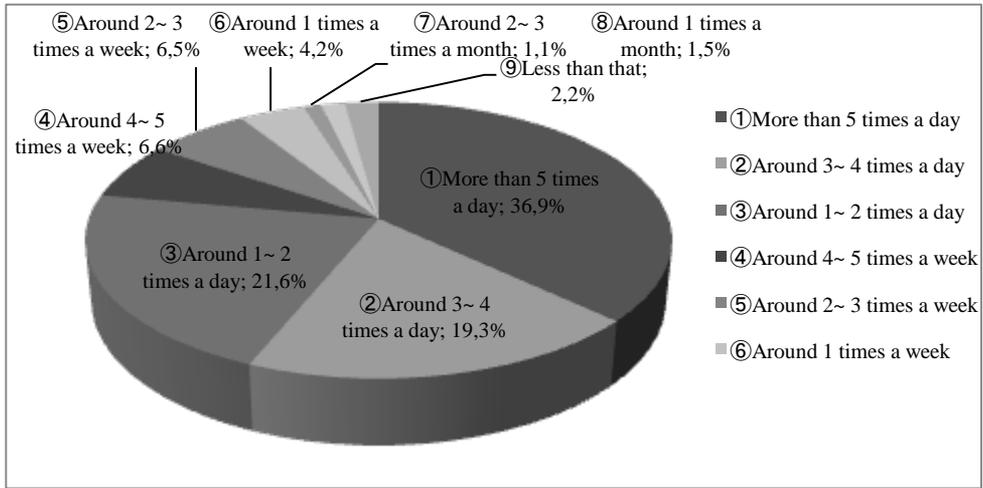


Figure 6: Average usage frequency of the SNS (Q2)

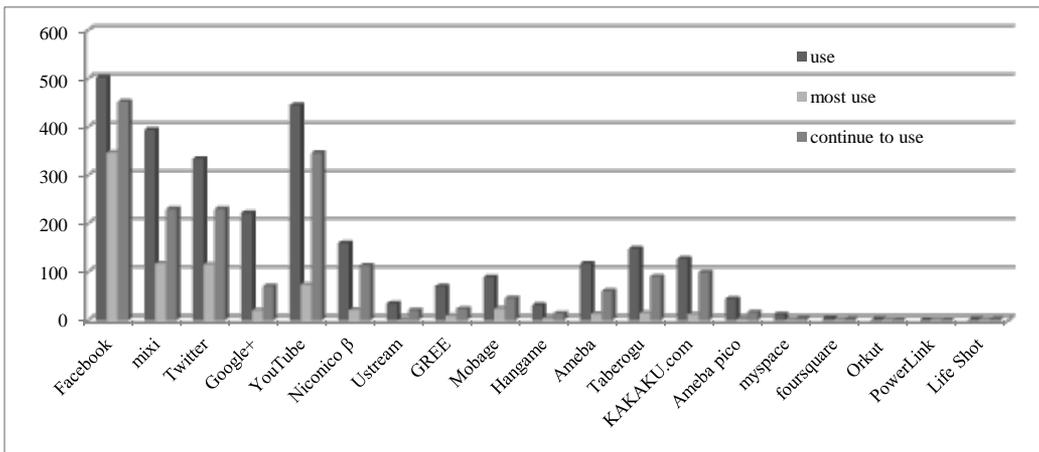


Figure 7: Usage condition of the SNS (Q3, Q4, Q9)

4.2.3 Reason to Use the SNS (Q5)

Biggest reason is “①Able to communicate with friends and acquaintances”, then “⑨Able to collect/ put out hobby and interesting information”, “⑩Able to post diary, tweets, moving images and photos” follow.

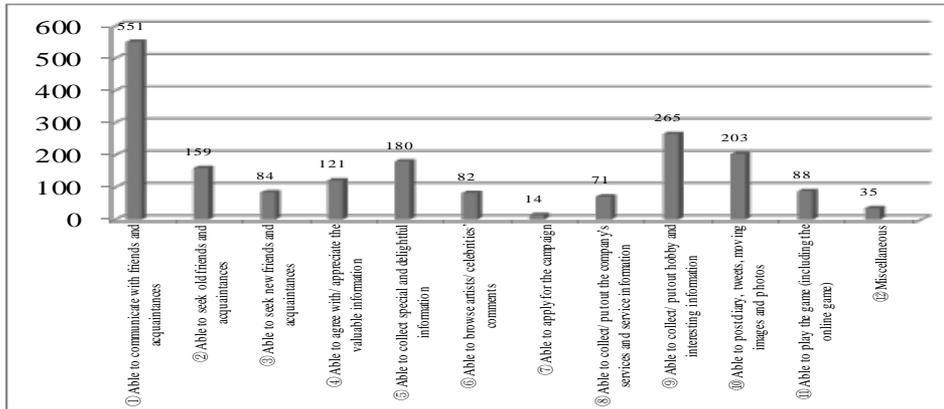


Figure 8: Reason to use the SNS (Q5)

4.2.4 Interesting and Fascinating Points When Using the SNS (Q6)

From Figure 9, we can observe that “①Able to communicate with each other by diary and tweets” is the most and then “⑫Good for killing time”, “②Obtained much opportunities to contact with friends and acquaintances who were under rare contact” and “⑤Able to collect news and information efficiently” follow.

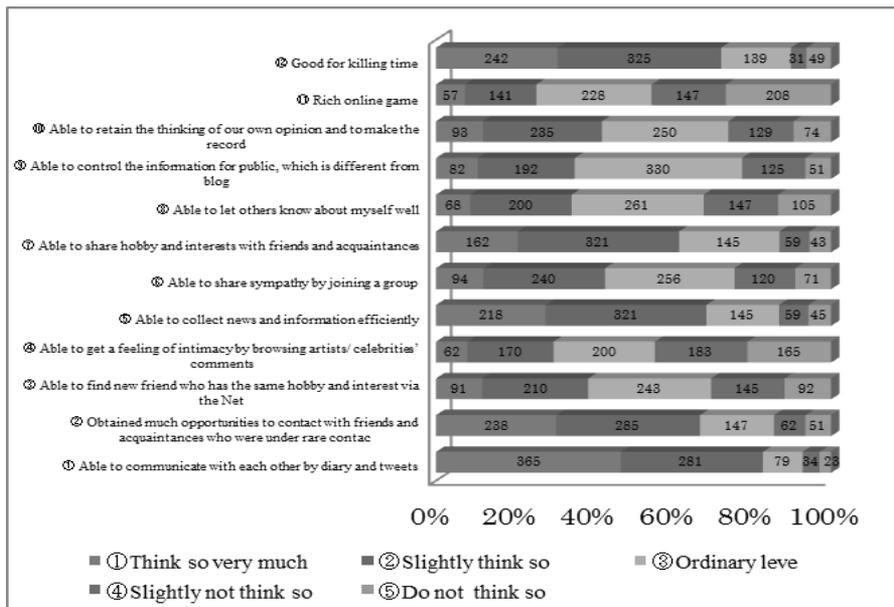


Figure 9: Interesting and fascinating points when using the SNS (Q6)

4.2.5 The Reason for Coming to Use the SNS (Q7)

Biggest reason is “⑨Suggestion by the friends and acquaintances”, then “③To collect information”, “⑩Acquaintances and friends use them” follow.

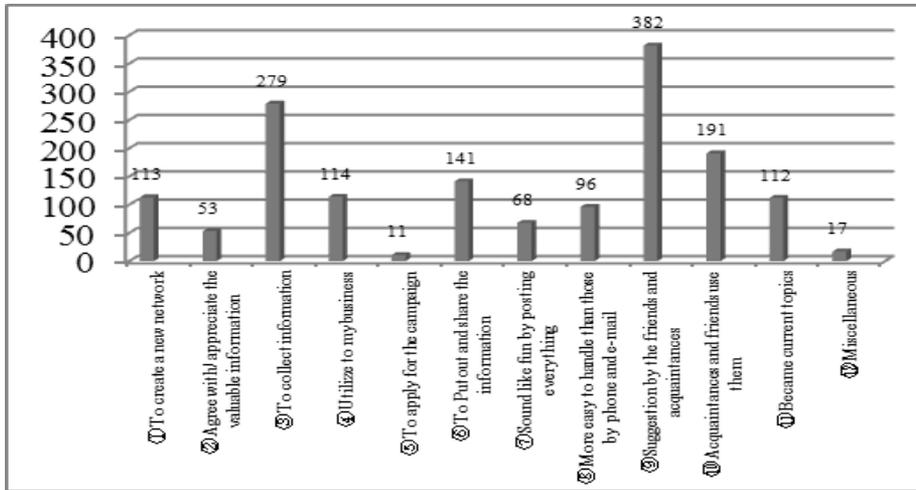


Figure 10: The reason for coming to use the SNS (Q7)

4.2.6 Average Utilization Frequency Reply to the Comments or Share Photos and News (Q8)

From Figure 11, we can observe that 32% people reply to the comments or share photos and news every time and frequency.

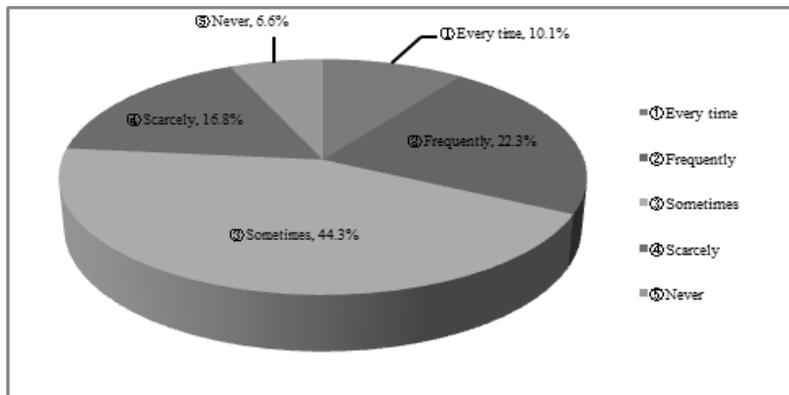


Figure 11: Average utilization frequency reply to the comments or share photos and news (Q8)

4.2.7 The Reason for Continuing to Use the SNS in the Future (Q10)

Biggest reason is “① Want to enrich communication with friends and acquaintances”, then “⑨ Want to collect/ put out hobby and interesting information”, “⑤ Want to collect beneficial and delightful information” follow.

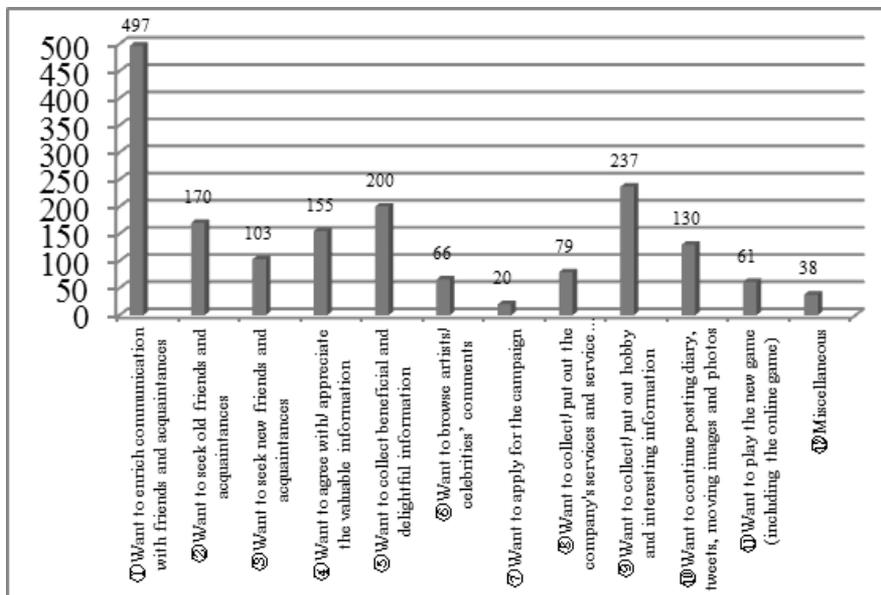


Figure 12: The reason for continuing to use the SNS in the future (Q10)

4.2.8 Important Points When Not Using the SNS (Q11)

From Figure 13, we can observe that “⑨ Cannot continue because it is too bothering” is the most and then “③ Anxious about security concerning individual information”, “⑩ Likely to increase the spam e-mail” and “① Do not have interest” follow. Those who do not use SNS recognize that they do not have Internet because they feel anxiety how to use.

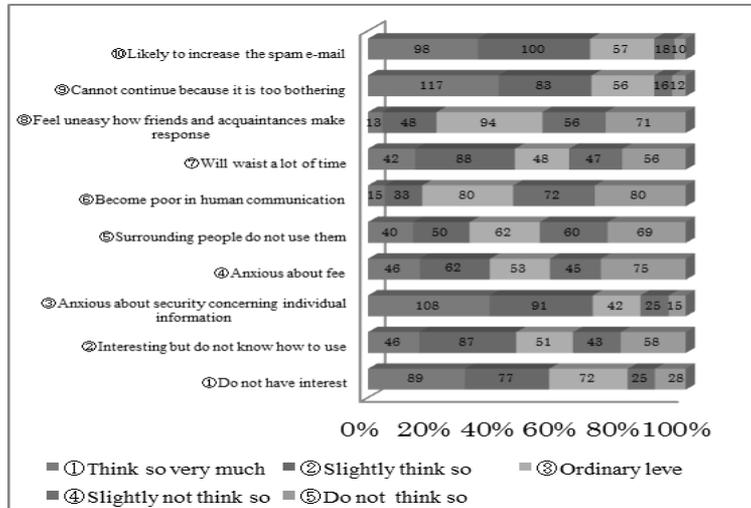


Figure 13: Important points when not using the SNS (Q11)

4.3.9 Expectation to the SNS in the Future (Q12)

From Figure 14, we can observe that “⑨ To make perfect the security of individual information” is the most and then “⑩ Easiness in using OR Easy to use”, “⑤ Enrich the collection of information” and “① Make full communication with friends and acquaintances” follow. Both users and non-users want to resolve the security anxiety at first. They also want to have easiness of handling. SNS which meet these requests will develop.

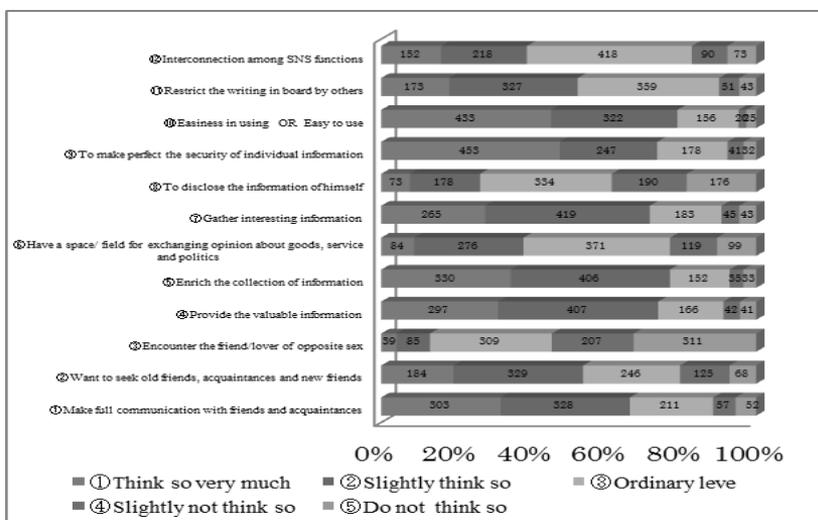


Figure 14: Expectation to the SNS in the future (Q12)

5 The results of statistical hypothesis testing

The results of statistical hypothesis testing are as follows.

Theme 1: SNS users want much more to strengthen security and easiness of handling than non-users.

Null Hypothesis: SNS users want to strengthen security and easiness of handling as non-users.

Table 6: Cross Tabulation result 1-1

		Q12⑨ (%)					Total
		Think so very much	Slightly think so	Ordinary level	Slightly not think so	Do not think so	
Q1	User	0.478	0.258	0.201	0.038	0.025	1.000
	Non-user	0.472	0.267	0.133	0.062	0.067	1.000
Sum		0.476	0.260	0.187	0.043	0.034	1.000

Real number	Important	Not important	Sum	Expectation	Important	Not important	Sum
User	557	48	605	User	547.9	57.1	605
Non-user	144	25	169	Non-user	153.1	15.9	169

Statistic (χ^2 value)	7.350
Rejection region (1% significance level)	$Z > 6.635$

Table 7: Cross Tabulation result 1-2

		Q12⑩ (%)					Total
		Think so very much	Slightly think so	Ordinary level	Slightly not think so	Do not think so	
Q1	User	0.497	0.337	0.133	0.017	0.016	1.000
	Non-user	0.281	0.337	0.281	0.036	0.066	1.000
Sum		0.453	0.337	0.163	0.021	0.026	1.000

Real	Important	Not	Sum	Expectation	Important	Not	Sum
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number		important				important	
User	634	25	659	User	621.9	37.1	659
Non-user	121	20	141	Non-user	133.1	7.9	141

Statistic (χ^2 value)	23.815
Rejection region (1% significance level)	$Z > 6.635$

Rejection region is over 6.635 for 1% significance level and 3.841 for 5% significance level by 1 degree of freedom.

The null hypothesis is rejected with 1% significance level. SNS users want much more to strengthen security and easiness of handling than non-users. As is shown in Figure 14 (Q12), non-users do not reach to the actual use because they do not know how to handle. If the users send good messages(easy to handle etc.), non-users will shift to users.

Theme 2: Male use SNS more frequently than Female.

Null Hypothesis: The frequency of the SNS use is not so different between male and female.

Table 8: Cross Tabulation result 2

		Q2 (%)				
		More than 5 times a day	Around 3~ 4 times a day	Around 1~ 2 times a day	Around 4~ 5 times a week	Around 2~ 3 times a week
Q13	Male	0.354	0.190	0.226	0.063	0.072
	Female	0.388	0.198	0.204	0.070	0.055
Sum		0.369	0.193	0.216	0.066	0.065

		Around 1 times a week	Around 2~ 3 times a month	Around 1 times a month	Less than that	Total
		Male	0.045	0.014	0.014	0.023
Female	0.038	0.009	0.017	0.020	1.000	
Sum		0.042	0.011	0.015	0.022	1.000

Real number	More than once a day	Else	Sum	Expectation	More than once a day	Else	Sum
Male	341	102	443	Male	344.9	98.1	443
Female	271	72	343	Female	267.1	75.9	343

Statistic (χ^2 value)	0.456
Rejection region(5% significance level)	$Z > 3.841$

The null hypothesis is not rejected. It cannot necessarily be said that male use SNS more than female. According to the Research result by Government (May/2012), it shows that:

- 20-29 male 97.6%, female 97.9%
- 30-39 male 95.7%, female 95.8%
- 40-49 male 95.6%, female 94.3%

Therefore there is few difference.

Theme 3: Senior people seek friends who have attention to their interest.

Null Hypothesis: Senior people seek the friends who have attention to their interest as junior does.

Table 9: Cross Tabulation result 3

		Q14 (%)						Total
		—20	—30	—40	—50	—60	60—	
Q6 ③	Think so very much	0.308	0.363	0.165	0.121	0.044	0.000	1.000
	Slightly think so	0.257	0.314	0.252	0.129	0.048	0.000	1.000
	Ordinary level	0.214	0.296	0.300	0.165	0.025	0.000	1.000
	Slightly not think so	0.214	0.414	0.269	0.090	0.014	0.000	1.000
	Do not think so	0.141	0.348	0.315	0.141	0.054	0.000	1.000
Sum		0.228	0.337	0.268	0.133	0.035	0.000	1.000

Real number	—40	40—	Sum	Expectation	—40	40—	Sum
Important	249	52	301	Important	253.4	47.6	301

Not important	204	33	237	Not important	199.6	37.4	237
Statistic (χ^2 value)				1.098			
Rejection region (5% significance level)				$Z > 3.841$			

The null hypothesis is not rejected. It cannot be necessarily said that senior people seek friends who have attention to their interest than junior. We can observe that young people also have a tendency to seek friends.

Theme 4: Students often use SNS for killing time.

Null Hypothesis: Students does not necessarily often use SNS for killing time.

Table 10: Cross Tabulation result 4

		Q6⑫ (%)					Total
		Think so very much	Slightly think so	Ordinary level	Slightly not think so	Do not think so	
Q15	Student	0.402	0.414	0.129	0.039	0.016	1.000
	Company Employee	0.100	0.400	0.200	0.100	0.200	1.000
	Government Employee	0.267	0.427	0.191	0.026	0.089	1.000
	School Teacher/Staff	0.074	0.481	0.259	0.185	0.000	1.000
	Clerk of Organization	0.286	0.429	0.286	0.000	0.000	1.000
	Independents	0.300	0.250	0.275	0.050	0.125	1.000
	Temporary Employee	0.273	0.364	0.182	0.091	0.091	1.000
	Part-timers	0.333	0.394	0.182	0.061	0.030	1.000
	Miscellaneous	0.308	0.462	0.077	0.000	0.154	1.000
	Sum	0.308	0.413	0.177	0.039	0.062	1.000

Real number	Important	Not important	Sum	Expectation	Important	Not important	Sum
Student	209	358	567	Student	195.4	371.6	567
Miscellaneous	14	66	80	Miscellaneous	27.6	52.4	80
Statistic (χ^2 value)				11.676			

Rejection region (1% significance level)	$Z > 6.635$
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The null hypothesis is rejected with 1% significance level. It can be said that students often use SNS for killing time. Frequent access which is shown by the result of Table 10 bears this phenomenon for one reason.

Theme 5: Young people esteem the space to discuss, while senior esteem hobby.

Null Hypothesis: Young people do not necessarily esteem the space to discuss, while senior does not necessarily esteem hobby.

Table 11: Cross Tabulation result 5-1

		Q14 (%)						Total
		—20	—30	—40	—50	—60	60—	
Q12 ⑥	Think so very much	0.238	0.357	0.238	0.060	0.095	0.012	1.000
	Slightly think so	0.199	0.377	0.232	0.134	0.054	0.004	1.000
	Ordinary level	0.202	0.259	0.286	0.183	0.067	0.003	1.000
	Slightly not think so	0.210	0.311	0.303	0.126	0.050	0.000	1.000
	Do not think so	0.111	0.384	0.253	0.192	0.061	0.000	1.000
Sum		0.196	0.321	0.264	0.152	0.063	0.003	1.000

Real number	—40	40—	Sum	Expectation	—40	40—	Sum
Important	110	37	147	Important	95.7	51.3	147
Not important	45	46	91	Not important	59.3	31.7	91

Statistic (χ^2 value)	16.022
Rejection region (1% significance level)	$Z > 6.635$

Table 12: Cross Tabulation result 5-2

		Q14 (%)						Total
		—20	—30	—40	—50	—60	60—	
Q12 ⑦	Think so very much	0.192	0.392	0.219	0.132	0.060	0.004	1.000
	Slightly think so	0.186	0.313	0.289	0.153	0.060	0.000	1.000
	Ordinary level	0.224	0.246	0.268	0.180	0.077	0.005	1.000
	Slightly not think so	0.222	0.289	0.267	0.156	0.067	0.000	1.000

Do not think so	0.140	0.326	0.279	0.163	0.070	0.023	1.000
Sum	0.195	0.321	0.264	0.153	0.064	0.003	1.000

Real number	—40	40—	Sum	Expectation	—40	40—	Sum
Important	191	16	207	Important	185.1	21.9	207
Not important	113	20	133	Not important	118.9	14.1	133

Statistic (χ^2 value)	4.539
Rejection region (1% significance level)	$Z > 3.841$

The null hypothesis is rejected with 1% significance level. It can be said that Young people esteem the space to discuss, while senior esteem hobby. It has a tendency that young people likes chat in the cyber space more than face to face communication in the real world.

Theme 6: Urban citizen frequently use SNS than rural residents.

Null Hypothesis: It can not necessarily be said that urban citizens frequently use SNS than rural residents.

Table 13: Cross Tabulation result 6

		Q16 (%)						
		Tokyo	Kanagawa	Osaka	Aichi	Saitama	Hokkaido	Aomori
Q2	More than 5 times a day	0.079	0.079	0.297	0.010	0.003	0.017	0.017
	Around 3~ 4 times a day	0.066	0.079	0.243	0.020	0.007	0.033	0.026
	Around 1~ 2 times a day	0.065	0.041	0.276	0.012	0.006	0.024	0.018
	Around 4~ 5 times a week	0.077	0.115	0.250	0.000	0.000	0.019	0.000
	Around 2~ 3 times a week	0.118	0.039	0.216	0.000	0.000	0.000	0.020
	Around 1 times a week	0.030	0.061	0.121	0.000	0.000	0.061	0.030
	Around 2~ 3 times a	0.111	0.222	0.111	0.000	0.000	0.111	0.000

month							
Around 1 times a month	0.167	0.083	0.083	0.000	0.000	0.000	0.083
Less than that	0.059	0.000	0.412	0.000	0.000	0.000	0.118
Sum	0.075	0.070	0.263	0.010	0.004	0.023	0.022

	Miyagi	Yamagata	Ibaraki	Tochigi	Chiba	Gunma	Yamanashi
More than 5 times a day	0.003	0.000	0.000	0.000	0.007	0.003	0.000
Around 3~ 4 times a day	0.007	0.000	0.007	0.000	0.007	0.000	0.000
Around 1~ 2 times a day	0.000	0.000	0.006	0.006	0.006	0.000	0.000
Around 4~ 5 times a week	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Around 2~ 3 times a week	0.020	0.000	0.000	0.000	0.020	0.000	0.020
Around 1 times a week	0.000	0.061	0.000	0.000	0.000	0.000	0.000
Around 2~ 3 times a month	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Around 1 times a month	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Less than that	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sum	0.004	0.003	0.003	0.001	0.006	0.001	0.001

	Nagano	Niigata	Ishikawa	Fukui	Gifu	Shizuoka	Shiga
More than 5 times a day	0.003	0.010	0.000	0.007	0.000	0.069	0.003
Around 3~ 4 times a day	0.000	0.020	0.000	0.013	0.000	0.138	0.000
Around 1~ 2 times a day	0.000	0.018	0.006	0.024	0.006	0.124	0.000
Around 4~ 5 times a week	0.000	0.019	0.000	0.000	0.000	0.135	0.019
Around 2~ 3 times a week	0.000	0.000	0.000	0.039	0.000	0.137	0.020
Around 1 times a week	0.000	0.000	0.000	0.030	0.000	0.121	0.061
Around 2~ 3 times a	0.000	0.000	0.000	0.222	0.000	0.000	0.000

month							
Less than that	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Sum	0.014	0.014	0.003	0.003	0.121	0.005	0.003

	Nagasaki	Saga	Kagoshima	Okinawa	Total
More than 5 times a day	0.000	0.014	0.010	0.010	1.000
Around 3~ 4 times a day	0.000	0.013	0.020	0.007	1.000
Around 1~ 2 times a day	0.000	0.018	0.035	0.018	1.000
Around 4~ 5 times a week	0.000	0.019	0.077	0.019	1.000
Around 2~ 3 times a week	0.000	0.000	0.000	0.020	1.000
Around 1 times a week	0.000	0.000	0.061	0.000	1.000
Around 2~ 3 times a month	0.000	0.111	0.000	0.000	1.000
Around 1 times a month	0.083	0.000	0.000	0.000	1.000
Less than that	0.000	0.000	0.000	0.000	1.000
Sum	0.001	0.014	0.023	0.011	1.000

Real number	Large City	Miscellaneous	Sum	Expectation	Large City	Miscellaneous	Sum
More than once a day	267	345	612	More than once a day	258.5	353.5	612
Else	65	109	174	Else	73.5	100.5	174

* “Large City” is the one such as “Tokyo, Kanagawa, Osaka, Aichi and Saitama” which has the big population of top 5 prefectures. “Miscellaneous” is other prefectures.

Statistic (χ^2 value)	2.186
Rejection region (5% significance level)	$Z > 3.841$

The null hypothesis is not rejected. It cannot necessarily be said that urban citizen frequently use SNS than rural residents. Rural residents also use SNS well.

Theme 7: Users mainly use game in Game Genre’s SNS such as Mobage.

Null Hypothesis: It cannot necessarily be said that users mainly use game in Game

Genre's SNS such as Mobage.

Table 14: Cross Tabulation result 7

		Q4 (%)						
		GREE	Mobage	Hangame	Facebook	mixi	Twitter	Google+
Q6 ⑪	Think so very much	0.035	0.193	0.053	0.175	0.158	0.105	0.035
	Slightly think so	0.036	0.071	0.007	0.236	0.243	0.143	0.029
	Ordinary level	0.004	0.013	0.000	0.439	0.149	0.145	0.031
	Slightly not think so	0.000	0.000	0.000	0.463	0.156	0.177	0.007
	Do not think so	0.000	0.000	0.000	0.635	0.077	0.144	0.024
Sum		0.010	0.031	0.005	0.440	0.149	0.147	0.024

		YouTube	Niconico β	Ustream	Ameba	Taberogu	KAKAKU. com	Ameba pico
		Think so very much	0.140	0.088	0.000	0.000	0.000	0.000
Slightly think so	0.129	0.021	0.000	0.021	0.021	0.007	0.014	
Ordinary level	0.088	0.022	0.000	0.035	0.018	0.018	0.000	
Slightly not think so	0.088	0.020	0.000	0.014	0.027	0.027	0.000	
Do not think so	0.048	0.024	0.000	0.000	0.019	0.014	0.000	
Sum		0.088	0.027	0.000	0.017	0.019	0.015	0.003

		myspace	foursquare	Orkut	PowerLink	Life Shot	Miscellaneous	Total
		Think so very much	0.000	0.000	0.000	0.000	0.000	0.018
Slightly think so	0.000	0.000	0.000	0.000	0.000	0.021	1.000	
Ordinary level	0.000	0.000	0.000	0.000	0.000	0.039	1.000	

Slightly not think so	0.000	0.000	0.000	0.000	0.000	0.020	1.000
Do not think so	0.000	0.000	0.000	0.000	0.000	0.014	1.000
Sum	0.000	0.000	0.000	0.000	0.000	0.024	1.000

Real number	Game			Game			
	Genre's SNS	Miscellaneous	Sum	Expectation	Genre's SNS	Miscellaneous	Sum
Important	32	165	197	Important	11.4	185.6	197
Not important	0	355	355	Not important	20.6	334.4	355

* “Game Genre’s SNS” is GREE, Mobage and Hange. “Miscellaneous” is the other SNS.

Statistic (χ^2 value)	61.380
Rejection region (1% significance level)	Z > 6.635

The null hypothesis is rejected with 1% significance level. It can be said that users mainly use game in Game Genre’s SNS such as Mobage.

Theme 8: Those who like to play with many friends do not use so much SNS rather than those who do not like.

Null Hypothesis: It cannot necessarily be said that those who like to play with many friends do not use so much SNS rather than those who do not like.

Table 15: Cross Tabulation result 8

		Q11⑨ (%)					Total
		Think so very much	Slightly think so	Ordinary level	Slightly not think so	Do not think so	
Q20	Think so very much	0.378	0.216	0.189	0.135	0.081	1.000
	Slightly think so	0.361	0.320	0.186	0.082	0.052	1.000
	Ordinary level	0.357	0.333	0.238	0.036	0.036	1.000

Slightly not think so	0.537	0.278	0.167	0.000	0.019	1.000
Do not think so	0.727	0.091	0.182	0.000	0.000	1.000
Sum	0.410	0.293	0.198	0.057	0.042	1.000

Real number	Important	Not important	Sum	Expectation	Important	Not important	Sum
Play with many people	88	21	109	Play with many people	94.3	14.7	109
Else	53	1	54	Else	46.7	7.3	54

Statistic (χ^2 value)	9.408
Rejection region (1% significance level)	$Z > 6.635$

The null hypothesis is rejected with 1% significance level. It can be said that those who like to play with many friends do not use so much SNS rather than those who do not like.

Those who like to play with many friends have a lot of face to face communication chance.

Theme 9: Those who esteem self – realization want to appeal themselves by utilizing SNS.

Null Hypothesis: It cannot necessarily be said that those who esteem self – realization want to appeal themselves by utilizing SNS.

Table 16: Cross Tabulation result 9

		Q22 (%)				
		Self-realization	Affection	Safety and security	Honor	Clothes/Eating/ House
Q12 ⑧	Think so very much	0.219	0.260	0.014	0.205	0.219
	Slightly think so	0.313	0.210	0.011	0.222	0.159
	Ordinary	0.317	0.251	0.012	0.189	0.144

level						
Slightly think so	not think so	0.233	0.296	0.005	0.280	0.122
Do not think so		0.291	0.223	0.000	0.269	0.126
Sum		0.287	0.248	0.008	0.229	0.145

	Contribution to society	Recognized from others	Miscellaneous	Total
Think so very much	0.000	0.000	0.082	1.000
Slightly think so	0.034	0.017	0.034	1.000
Ordinary level	0.033	0.015	0.039	1.000
Slightly not think so	0.037	0.000	0.026	1.000
Do not think so	0.023	0.023	0.046	1.000
Sum	0.013	0.040	1.000	0.013

Real number	Self-realization	Miscellaneous	Sum	Expectation	Self-realization	Miscellaneous	Sum
Important	115	134	249	Important	103.6	145.4	249
Not important	140	224	364	Not important	151.4	212.6	364

Statistic (χ^2 value)	3.618
Rejection region (6% significance level)	$Z > 3.537$

The null hypothesis is rejected with 6% significance level. It can be said that those who esteem self – realization want to appeal themselves by utilizing SNS.

6 Conclusion

Recently, users of SNS are increasing rapidly in Japan. There are various SNS in order to fit for users' needs. We made questionnaire investigation and executed hypothesis testing. Some of them are the results we have supposed, while some of them are not.

Table 17: Hypothesis Testing Result

No	Theme	Statistic	Rejection region
1	SNS users want much more to strengthen security and easiness of handling than non-users.	7.350*	6.635
		23.815*	6.635
2	Male use SNS more frequently than Female.	0.456	3.841
3	Senior people seek friends who have attention to their interest.	1.098	3.841
4	Students often use SNS for killing time.	11.676*	6.635
		16.022*	6.635
5	Young people esteem the space to discuss, while senior esteem hobby.	4.539**	3.841
6	Urban citizen frequently use SNS than rural residents.	2.186	3.841
7	Users mainly use game in Game Genre's SNS such as Mobage.	61.380*	6.635
8	Those who like to play with many friends do not use so much SNS rather than those who do not like.	9.408*	6.635
9	Those who esteem self – realization want to appeal themselves by utilizing SNS.	3.618***	3.537

*: Rejected with 1% significance level

** : Rejected with 5% significance level

***: Rejected with 6% significance level

As a result, 3 hypotheses are not rejected. In particular, from the viewpoint of P. Kotler and K. Kelle (2006) stated above, difference of sex, married-unmarried in Demographic items and difference of residence in Geographic items are not rejected. Furthermore, for about extroversion in Psychographic items, theme that outdoor typed people spread the information is not accepted.

Hypotheses testing results show that SNS is easy to handle by utilizing the prevailing smartphone and tablet. People can smoothly communicate with other people, which include various typed personality.

SNS users are now 42, 89 million at the time December 2011 and it is forecasted to be 56, 43 million at the time December 2014. SNS will develop further.

From the hypotheses testing results, we can expect that the communication would increase among users and the knowledge would be shared because it is a useful tool which can support various needs.

Appendix: Questionnaire concerning the SNS

Please answer the following questions. Please write down ○ to the answering items. Plural selection is allowed for the Question 3, 5, 7, 9, 10. Select ①~⑤ of the right column for the Question 6, 11, 12.

1. Do you use the SNS?

Q1 ①YES ②NO * If you answer “②NO”, then proceed to Q11, please.

2. How often do you use the SNS?

Q2 ①More than 5 times a day ②Around 3~ 4 times a day ③Around 1~ 2 times a day
④Around 4~ 5 times a week ⑤Around 2~ 3 times a week ⑥Around 1 times a week
⑦Around 2~ 3 times a month ⑧Around 1 times a month ⑨Less than that

3. What kind of the SNS do you use?

Q3 ①Facebook ②mixi ③Twitter ④Google+ ⑤YouTube ⑥Niconico β ⑦Ustream
⑧GREE ⑨Mobage ⑩Hangame ⑪Ameba ⑫Taberogu ⑬KAKAKU.com
⑭Ameba pico ⑮myspace ⑯foursquare ⑰Orkut ⑱PowerLink ⑲Life Shot
⑳Miscellaneous ()

4. What kind of the SNS do you use the most?

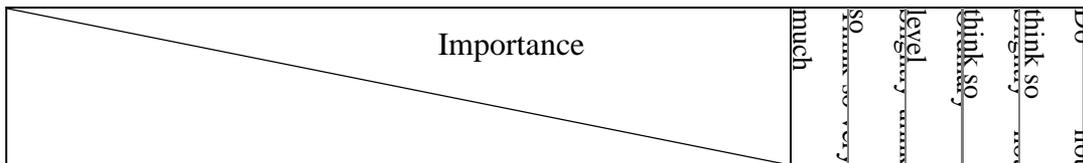
()

5. Why is it?

Q5 ①Able to communicate with friends and acquaintances

- ②Able to seek old friends and acquaintances
- ③Able to seek new friends and acquaintances
- ④Able to agree with/ appreciate the valuable information
- ⑤Able to collect special and delightful information
- ⑥Able to browse artists/ celebrities' comments
- ⑦Able to apply for the campaign
- ⑧Able to collect/ put out the company's services and service information
- ⑨Able to collect/ put out hobby and interesting information
- ⑩Able to post diary, tweets, moving images and photos
- ⑪Able to play the game (including the online game)
- ⑫Miscellaneous ()

6. What are the SNS's interesting and fascinating points?



<p>Q6 ①Able to communicate with each other by diary and tweets</p> <p>②Obtained much opportunities to contact with friends and acquaintances who were under rare contact</p> <p>③Able to find new friend who has the same hobby and interest via the Net</p> <p>④Able to get a feeling of intimacy by browsing artists/ celebrities' comments</p> <p>⑤Able to collect news and information efficiently</p> <p>⑥Able to share sympathy by joining a group</p> <p>⑦Able to share hobby and interests with friends and acquaintances</p> <p>⑧Able to let others know about myself well</p> <p>⑨Able to control the information for public, which is different from blog</p> <p>⑩Able to retain the thinking of our own opinion and to make the record</p> <p>⑪Rich online game</p> <p>⑫Good for killing time</p> <p>⑬Miscellaneous ()</p>	①	②	③	④	⑤
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7. How did you come to use the SNS?

<p>Q7 ①To create a new network</p> <p>②Agree with/ appreciate the valuable information</p> <p>③To collect information</p> <p>④Utilize to my business</p> <p>⑤To apply for the campaign</p> <p>⑥To Put out and share the information</p> <p>⑦Sound like fun by posting everything</p> <p>⑧More easy to handle than those by phone and e-mail</p> <p>⑨Suggestion by the friends and acquaintances</p>
--

⑩ Acquaintances and friends use them

⑪ Became current topics

⑫ Miscellaneous ()

8. How often do you reply to the comments or share photos and news?

Q8 ① Every time ② Frequently ③ Sometimes ④ Scarcely ⑤ Never

9. What kind of the SNS are you going to continue to use?

Q9 ① Facebook ② mixi ③ Twitter ④ Google+ ⑤ YouTube ⑥ Niconico β ⑦ Ustream

⑧ GREE ⑨ Mobage ⑩ Hangame ⑪ Ameba ⑫ Taberogu ⑬ KAKAKU.com

⑭ Ameba pico ⑮ myspace ⑯ foursquare ⑰ Orkut ⑱ PowerLink ⑲ Life Shot

⑳ Miscellaneous ()

10. Why is it?

Q10 ① Want to enrich communication with friends and acquaintances

② Want to seek old friends and acquaintances

③ Want to seek new friends and acquaintances

④ Want to agree with/ appreciate the valuable information

⑤ Want to collect beneficial and delightful information

⑥ Want to browse artists/ celebrities' comments

⑦ Want to apply for the campaign

⑧ Want to collect/ put out the company's services and service information

⑨ Want to collect/ put out hobby and interesting information

⑩ Want to continue posting diary, tweets, moving images and photos

⑪ Want to play the new game (including the online game)

⑫ Miscellaneous ()

11. Why don't you use the SNS?

Importance	much	SO MUCH SO VERY	level very much	think so	think so not
<p>Q11 ①Do not have interest</p> <p>②Interesting but do not know how to use</p> <p>③Anxious about security concerning individual information</p> <p>④Anxious about fee</p> <p>⑤Surrounding people do not use them</p> <p>⑥Become poor in human communication</p> <p>⑦Will waste a lot of time</p> <p>⑧Feel uneasy how friends and acquaintances make response</p> <p>⑨Cannot continue because it is too bothering</p> <p>⑩Likely to increase the spam e-mail</p> <p>⑪Miscellaneous ()</p>	①	②	③	④	⑤

12. What do you expect the SNS in the future?

Importance	much	SO	level	think so	think so
Q12 ①Make full communication with friends and acquaintances ②Want to seek old friends, acquaintances and new friends ③Encounter the friend/lover of opposite sex ④Provide the valuable information ⑤Enrich the collection of information ⑥Have a space/ field for exchanging opinion about goods, service and politics ⑦Gather interesting information ⑧To disclose the information of himself ⑨To make perfect the security of individual information ⑩Easiness in using ⑪Restrict the writing in board by others ⑫Interconnection among SNS functions ⑬Miscellaneous ()	①	②	③	④	⑤

About yourself

Q13 <Gender> ①Male ②Female

Q14 <Age> () years old

Q15 <Occupation> ①Student ②Government Employee ③Company Employee
 ④School Teacher/Staff ⑤Clerk of Organization ⑥Independents
 ⑦Temporary Employee ⑧Part-timers ⑨Miscellaneous ()

Q16<Address> Prefecture : () City : ()

Q17<Are you married?> ①Married ②Single

Q18<How many children do you have?> ()

Q19<Are you positive to do anything?> ①Positive ②Somewhat positive
③Ordinary level ④Somewhat passive ⑤Not positive

Q20< Do you like to play with many others?>①Think so very much
②Slightly think so ③Ordinary level ④Slightly not think so ⑤Do not think so

Q21<How do you spend holidays?> ①Outdoor ②Indoor ③Cannot choose either

Q22<What is the most important thing to you?>
①Affection ②Safety and security ③Honor ④Clothes/Eating/House⑤Self-realization
⑥Contribution to society ⑦Recognized from others ⑧Miscellaneous ()

The figure below is an on-line data gathering Form for Questionnaire Investigation.

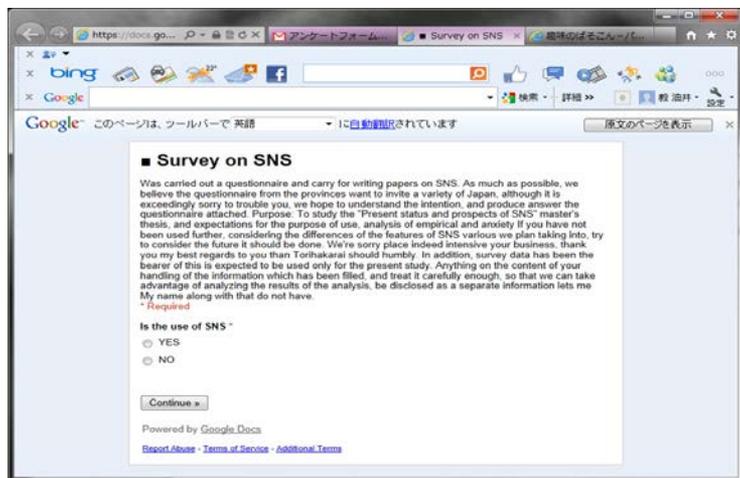


Figure 14: On-line data gathering Form for Questionnaire Investigation,
https://docs.google.com

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