Overall Sensitivity Analysis Utilizing Bayesian Network for the Questionnaire Investigation on SNS

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Abstract—**Social Networking Service (SNS) is prevailing rapidly in Japan in recent years. The most popular ones are Facebook, mixi, and Twitter, which are utilized in various fields of life together with the convenient tool such as smart-phone. In this work, a questionnaire investigation is carried out in order to clarify the current usage condition, issues and desired functions. More than 1,000 samples are gathered. Bayesian network is utilized for this analysis. Sensitivity analysis is carried out by setting evidence to all items. This enables overall analysis for each item. We analyzed them by sensitivity analysis and some useful results were obtained. We have presented the paper concerning this. But the volume becomes too large, therefore we have split them and this paper shows the latter half of the investigation result by setting evidence to Bayesian Network parameters. Differences in usage objectives and SNS sites are made clear by the attributes and preference of SNS users. They can be utilized effectively for marketing by clarifying the target customer through the sensitivity analysis.**

Keywords—*SNS; Questionnaire Investigation; Bayesian Network; Sensitivity Analysis*

I. INTRODUCTION

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. Various typed SNS were born ever since. Japanese users have reached 42.89 million at the end of December 2011. It is reported that 45.1% of Internet users (95.1 million) use SNS.

Social Networking Service (SNS) is prevailing rapidly in recent years. Facebook, mixi, and Twitter are the most popular ones. It is well known that Facebook played an important role in communication under the condition that the telephones and/or cellular phones connected with Internet could not make links when the big disaster hit the eastern part of Japan. Google launched forth into SNS by the name Google+ in June 2011. Thus, it has become a hot business spot and it is exerting great influence upon society and economy [1]. In this paper, a questionnaire investigation is conducted in order to clarify the current usage condition, issues and desired functions.

Differences in usage objectives and SNS sites would be made clear by the attributes and preference of SNS users.

For these purposes, we created a questionnaire investigation of jewelry/accessory purchasing (SNS). In recent years, the Bayesian network is highlighted because it has the following good characteristics [2] [3].

- Structural Equation Modeling requires normal distribution to the data in the analysis. Therefore, it has a limitation in making analysis, but the Bayesian network does not require a specific distribution type to the data. It can handle any distribution type.

- It can handle the data which include partial data.

- Expert's know-how can be reflected in building a Bayesian Network model.

- Sensitivity analysis can be easily performed by settling evidence. We can estimate and predict the prospective purchaser by that analysis.

- It is a probability model having a network structure. Related items are connected with directional link. Therefore, understanding becomes easy by its visual chart.

This research utilizes the Bayesian network to analyze SNS users' current usage conditions, issues and desired functions because no variable is required to have normal distribution. Reviewing past researches, there are some related researches as follows. Tsuji et al. have analyzed preference mining on future home energy consumption [4] [5]. There are some papers concerning purchase behavior in the shop [6] [7], but no research has been reported on the SNS users utilizing Bayesian network.

Bayesian network is utilized for this analysis. Sensitivity analysis is carried out by setting evidence to all items. This enables overall analysis for each item. After conducting the sensitivity analysis, useful results are obtained. Differences in usage objectives and SNS sites are made clear by the attributes and preference of SNS users. It can be utilized effectively for marketing by clarifying the target customer through the sensitivity analysis.

The rest of the paper is organized as follows. The outline of questionnaire research is stated in Section 2. In Section 3, Bayesian network analysis is carried out which is followed by the sensitivity analysis in Section 4. Section 5 is a summary.

II. OUTLINE OF QUESTIONNAIRE RESEARCH AND EXAMINEES

A. Outline of Questionnaire Research

We make a questionnaire investigation concerning the SNS. 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.

B. Outline of Examinees

We show major single variable summary results in Table 1.

TABLE I. MAJOR SINGLE VARIABLE SUMMARY RESULTS

Questionnaire	No. of answer (%)
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)
21–30	328 (29.9)
31–40	299 (27.2)
41–50	194 (17.7)
51–60	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 (16.0)
Kansai region	400 (36.4)
Chugoku region	110 (10.0)
Shikoku region	105 (9.6)
Kyushu region	79 (7.2)

III. BAYESIAN NETWORK ANALYSIS

In constructing Bayesian network, it is required to set an outline of the model reflecting the causal relationship among groups of items. Concept chart in this case is exhibited in Figure 1.

Haga and Motomura restricted the range of search to the following 5 stages while building the model [8].

①Selection of variables

②Grouping the variables

③Setting the search range for variable groups

④Setting the search range within the variable group

⑤Building the total structure

She found that it makes possible to interpret the model easily and to forecast the future activities of variables effectively.

We refer to this sample and build a model where cause and effect relationship is assumed by the order of (I) Purchaser⇒ (II) Extroversion and Usage condition ⇒ (III) Purpose for Usage ⇒ (IV) SNS. This means that (III) Purpose for Usage for (IV) SNS is influenced by (II) Extroversion and Usage condition, and one's sense of value for these is influenced by the (I) Purchaser.
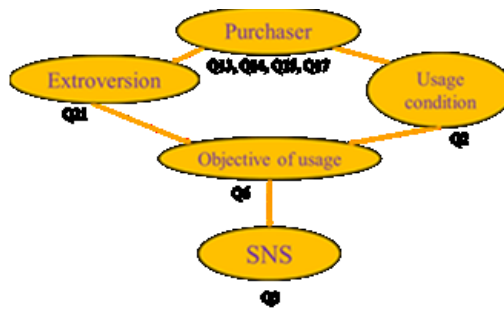
Fig. 1. Node and parameter (source: Takahashi et al, 2008 ; revised by the writer)
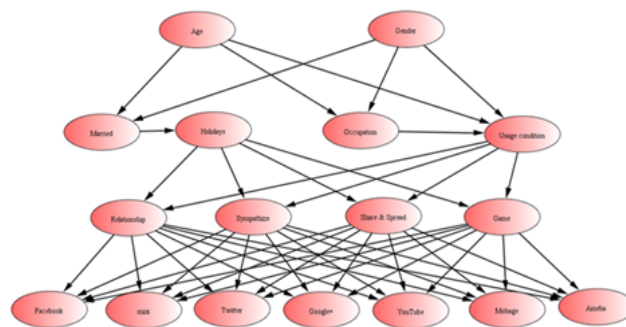
Fig. 2. Built model

TABLE II. NODE AND PARAMETER

Group name	Node in group	Parameter		
		1	2	3
Purchaser	Gender	Male	Female	-
	Age	<30	<50	>50
	Occupation	Student	Company employee	School teacher/staff
	Married	Married	Single	-
Usage condition	Usage condition	More than 5 times a day	More than 1 times a day	More than 1 times a week
Object of Usage	Relationship, sympathize, share & spread, game	Important	Ordinary level	Not important

Identify applicable sponsor/s here. If no sponsors, delete this text box (*sponsors*).

Extroversion	Holidays	Outdoor	Indoor	Cannot choose either
SNS	Facebook, mixi, Twitter, Google+, YouTube, Mobage, Ameba	Use	Do not use	-

Group name	Node in group	Parameter		
		4	5	6
Purchaser	Gender	-	-	-
	Age	-	-	-
	Occupation	Independents	Part-timers	Others
	Married	-	-	-
Usage condition	Usage condition	Less than that	-	-
Object of Usage	Relationship, sympathize, share & spread, game	-	-	-
Extroversion	Holidays	-	-	-
SNS	Facebook, mixi, Twitter, Google+, YouTube, Mobage, Ameba	-	-	-

We used BAYONET software (http://www.msi.co.jp/BAYONET/). When plural nodes exist in the same group, the causal relationship is hard to set a priori. In that case, the BAYONET system sets the sequence automatically utilizing AIC standard. Node and parameter of Figure 2 are exhibited in Table 2.

IV. SENSITIVITY ANALYSIS

Now, posterior probability is calculated by setting evidence as, for example, 1.0. Comparing Prior probability and Posterior probability, we can seek the change and confirm the instruction for purchasing. We set evidence to all parameters. Therefore the analysis volume becomes too large.

In this paper, we pick up half of the total cases and make analysis. In this paper, detailed analysis is conducted for the objective of usage items, Extroversion items and SNS site items, where nodes we analyze here are "Relationship", "Sympathize", "Share & Spread", "Game", "Holidays" and "SNS site". The first half part is analyzed in the previous paper.

As stated above, we set evidence for each parameter, and the calculated posterior probability is exhibited in Appendix Table A. The value of "Posterior probability – Prior probability" (we call this "Difference of probability" hereafter) is exhibited in Appendix Table B. The sensitivity analysis is executed by mainly using this table. It is well known that difference of probability becomes small as the node becomes distant [9].

Here, we pick up major parameters by the distance of node [9].

- Node separated by 1 class: Select major parameter of which absolute value of difference of probability is more than 0.02
- Node separated by 2 class: Select major parameter of which absolute value of difference of probability is more than 0.005
- Node separated by 3 class: Select major parameter of which absolute value of difference of probability is more than 0.001

For the sensitivity analysis of SNS site, only "Use" is analyzed.

In order to assist the definite decision making for the marketing plan, "Less than that" in "Usage condition", "Ordinary" in "Objective of usage" and "Cannot choose either" in "Extroversion" are deleted from the selection.

The larger one for the change of value is selected in "Objective of usage" by comparing "Important" and "Not". Furthermore, when the volume of change in "Not use" of SNS is greater than those in "Use", it is not selected.

In selecting parameters, negative value does not necessarily have distinct meaning, therefore we mainly pick up positive value in the case meaning is not clear.

Now we examine each case.

A. Sensitively Analysis for "Relationship"

1) Setting evidence to "Important"

①Node separated by 1 class.

Usage condition	More than 5 times a day	0.055

②Node separated by 2 class

Occupation	Student	0.007

③Node separated by 3 class

No corresponding data.

We can observe that "Those who put importance concerning, relationship are students who use more than 5 times a day".

2) Setting evidence to "Not important"

① Node separated by 1 class

Usage condition	More than 1 times a week	0.094
Extroversion	Indoor	0.029
Google+	Use	0.102
Mobage	Use	0.109
Ameba	Use	0.086

②Node separated by 2 class

Gender	Male	0.020
	Female	0.023
Age	—50	0.027
	50—	0.042

Occupation	Company Employee	0.019
	School Teacher/Staff	0.036
	Independents	0.019
	Part-timers	0.037
Married	Married	0.027
	Single	0.016
Sympathize	Not	0.025
Share & Spread	Not	0.046
Game	Not	0.019

③Node separated by 3 class

No corresponding data.

We can observe that "Those who do not put importance concerning relationship, are indoor typed Company Employer, School Teacher/Staff, Independents, Part-timers of married under 50 or over 50 or single Male/Female who use more than 1 times a week, do not esteem Sympathize, Share & Spread, Game, use Google+, Mobage and Ameba".

B. Sensitivity Analysis for "Sympathize"

1) Setting Evidence to "Important"
①Node separated by 1 class

Usage condition	More than 5 times a day	0.042
Extroversion	Indoor	0.051
Google+	Use	0.046
Ameba	Use	0.022

②Node separated by 2 class

Occupation	Student	0.011

③Node separated by 3 class
No corresponding data.

We can observe that "Those who put importance concerning sympathize, are indoor typed students who use more than 5 times a day, use Google+ and Ameba".

2) Setting evidence to "Not important"
①Node separated by 1 class

Usage condition	More than 1 times a week	0.026
Extroversion	Outdoor	0.062
Facebook	Use	0.036

②Node separated by 2 class

Gender	Male	0.006
	Female	0.005
Age	―50	0.012
	50―	0.021
Occupation	Company Employee	0.006
	School Teacher/Staff	0.016
	Independents	0.008
	Part-timers	0.016
Married	Married	0.017
Relationship	Not	0.015

Share & Spread	Not	0.018
Game	Not	0.008

③Node separated by 3 class
No corresponding data

We can observe that "Those who do not put importance concerning sympathize, are outdoor typed married Male/Female of Company Employee, School Teacher/Staff, Independents, Part-timers under 50 or over 50, do not esteem Relationship, Share & Spread, nor Game, use Facebook".

C. Sensitivity Analysis for "Share & Spread"

1) Setting evidence to "Important"
①Node separated by 1 class

Usage condition	More than 5 times a day	0.072

②Node separated by 2 class

Occupation	Student	0.013

③Node separated by 3 class
No corresponding data.

We can observe that "Those who put importance concerning share & spread are students who use more than 5 times a day".

2) Setting evidence to "Not important"
① Node separated by 1 class

Usage condition	More than 1 times a week	0.064
Extroversion	Outdoor	0.026
	Indoor	0.026
Google+	Use	0.124
Mobage	Use	0.128
Ameba	Use	0.096

②Node separated by 2 class

Gender	Male	0.022
	Female	0.023
Age	―50	0.029
	50―	0.056
Occupation	Company Employee	0.020
	School Teacher/Staff	0.053
	Independents	0.020
	Part-timers	0.038
Married	Married	0.032
Relationship	Not	0.062
Sympathize	Not	0.030
Game	Not	0.021

③Node separated by 3 class
No corresponding data.

We can observe that "Those who do not put importance concerning share & spread, are Outdoor/Indoor typed Company Employee, School Teacher/Staff, Independents, Part-timers of married Male/Female under 50 or over 50, do not esteem Relationship, Sympathize, nor Game, use Google+, Mobage and Ameba".

D. Sensitivity Analysis for "Game"

1) Setting evidence to "Important"

①Node separated by 1 class

Usage condition	More than 5 times a day	0.085
Extroversion	Indoor	0.078
Mobage	Use	0.150

②Node separated by 2 class

Age	—30	0.014
Occupation	Student	0.026

③Node separated by 3 class

No corresponding data.

We can observe that "Those who put importance concerning Game, are indoor typed students under 30 who use more than 5 times a day".

2) Setting evidence to "Not important"

①Node separated by 1 class

Usage condition	More than 1 times a day	0.042
Extroversion	Outdoor	0.027
Facebook	Use	0.052

②Node separated by 2 class

Occupation	Company Employee	0.005

③Node separated by 3 class

No corresponding data

We can observe that "Those who do not put importance concerning Game, are outdoor typed Company Employee who use more than 1 times a day, use Facebook".

E. Sensitivity Analysis for "Extroversion"

1) Setting evidence to "Outdoor"

①Node separated by 1 class

Married	Married	0.074
Sympathize	Not	0.054
Game	Not	0.022

②Node separated by 2 class

Gender	Male	0.005
Age	—50	0.031
	50—	0.040

③Node separated by 3 class

Occupation	Independents	0.027
Usage condition	More than 1 times a week	0.011

We can observe that "Those who prefer outdoor concerning extroversion, are Independent Male over 50 or under 50 who use more than 1 times a week, esteem Sympathize and Game".

2) Setting evidence to "Indoor"

①Node separated by 1 class

Married	Single	0.060
Sympathize	Important	0.051
Game	Important	0.095

②Node separated by 2 class

Gender	Female	0.010
Age	—30	0.041
Google+	Use	0.008
You tube	Use	0.006
Mobage	Use	0.026
Ameba	Use	0.008

③Node separated by 3 class

Occupation	Student	0.040
Usage condition	More than 5 times a day	0.016

We can observe that "Those who prefer indoor concerning extroversion, are single students under 30 who use more than 5 times a day, esteem Sympathize and Game, use Google+, You tube, Mobage and Ameba".

F. Sensitivity Analysis for "Facebook"

1) Setting evidence to "Use"

①Node separated by 1 class

Relationship	Important	0.026
Sympathize	Not	0.045
Share & Spread	Important	0.031
Game	Not	0.065

②Node separated by 2 class

Usage condition	More than 1 times a day	0.006

③Node separated by 3 class

No corresponding data.

We can observe that "Those who use Facebook, use more than 1 times a day, esteem Relationship, and Share & Spread, while do not esteem Sympathize nor Game".

G. Sensitivity Analysis for "mixi"

1) Setting evidence to "Use"

①Node separated by 1 class

Relationship	Important	0.063
Sympathize	Important	0.033
Share & Spread	Important	0.023
Game	Important	0.058
Extroversion	Outdoor	0.032
	Indoor	0.032

②Node separated by 2 class

Usage condition	More than 5 times a day	0.048
	More than 1 times a day	0.037
	More than 1 times a week	0.016
Facebook	Use	0.036
Twitter	Use	0.037
You tube	Use	0.033

③Node separated by 3 class

Gender	Male	0.033
	Female	0.032
Age	—30	0.038

	—50	0.031
	50—	0.027
Occupation	Student	0.040
	Company Employee	0.033
	School Teacher/Staff	0.028
	Independents	0.033
	Part-timers	0.028
Married	Married	0.031
	Single	0.034

We can observe that "Those who use mixi, are indoor/outdoor typed Married/Single with versatile occupations in the wide spread ages, esteem Relationship, Sympathize, Share & Spread and Game, use Facebook, Twitter and You tube".

H. Sensitivity Analysis for "Twitter"

1) Setting evidence to "Use"
①Node separated by 1 class

Relationship	Important	0.046
Sympathize	Important	0.063
Share & Spread	Important	0.021
Game	Not	0.048
Extroversion	Outdoor	0.030
	Indoor	0.028

②Node separated by 2 class

Usage condition	More than 5 times a day	0.038
	More than 1 times a day	0.035
	More than 1 times a week	0.022
Facebook	Use	0.034
mixi	Use	0.034
You tube	Use	0.031

③Node separated by 3 class

Gender	Male	0.031
	Female	0.030
Age	—30	0.033
	—50	0.030
	50—	0.027
Occupation	Student	0.034
	Company Employee	0.031
	School Teacher/Staff	0.027
	Independents	0.031
	Part-timers	0.028
Married	Married	0.031
	Single	0.034

We can observe that "Those who use Twitter, are indoor/outdoor typed Married/Single with versatile occupations in the wide spread ages, esteem Relationship, Sympathize and

Share & Spread, while do not esteem Game, use Facebook, mixi and You tube".

I. Sensitivity Analysis for "Google+"

1) Setting evidence to "Use"
①Node separated by 1 class

Relationship	Not	0.262
Sympathize	Important	0.122
Share & Spread	Not	0.213
Game	Important	0.084
Extroversion	Outdoor	0.075
	Indoor	0.090

②Node separated by 2 class

Usage condition	More than 5 times a day	0.053
	More than 1 times a day	0.069
	More than 1 times a week	0.105
Facebook	Use	0.063
You tube	Use	0.082
Mobage	Use	0.133
Ameba	Use	0.113

③Node separated by 3 class

Gender	Male	0.080
	Female	0.081
Age	—30	0.071
	—50	0.083
	50—	0.093
Occupation	Student	0.068
	Company Employee	0.079
	School Teacher/Staff	0.091
	Independents	0.080
	Part-timers	0.088
Married	Married	0.083
	Single	0.078

We can observe that "Those who use Google+, are indoor/outdoor typed Married/Single with versatile occupations in the wide spread ages, esteem Sympathize and Game, while do not esteem Relationship nor Share & Spread, use Facebook, mixi and You tube".

J. Sensitivity Analysis for "You tube"

1) Setting evidence to "Use"
①Node separated by 1 class

Sympathize	Important	0.034
Game	Important	0.021

②Node separated by 2 class
No corresponding data.
③Node separated by 3 class
No corresponding data.

We can observe that "Those who use You tube, esteem Sympathize and Game".

K. Sensitivity Analysis for "Mobage"

1) Setting evidence to "Use"

①Node separated by 1 class

Relationship	Not	0.260
Sympathize	Important	0.097
Share & Spread	Not	0.210
Game	Important	0.216
Extroversion	Outdoor	0.076
	Indoor	0.104

②Node separated by 2 class

Usage condition	More than 5 times a day	0.070
	More than 1 times a day	0.063
	More than 1 times a week	0.105
Google+	Use	0.128
You tube	Use	0.086
Ameba	Use	0.119

③Node separated by 3 class

Gender	Male	0.083
	Female	0.083
Age	—30	0.076
	—50	0.084
	50—	0.094
Occupation	Student	0.075
	Company Employee	0.080
	School Teacher/Staff	0.093
	Independents	0.082
	Part-timers	0.089
Married	Married	0.084
	Single	0.083

We can observe that "Those who use Mobage, are indoor/outdoor typed Married/Single with versatile occupations in the wide spread ages, esteem Sympathize and Game, while do not esteem Relationship, nor Share & Spread, use Google+, You tube and Ameba".

L. Sensitivity Analysis for "Ameba"

1) Setting evidence to "Use"

①Node separated by 1 class

Relationship	Not	0.244
Sympathize	Important	0.113
Share & Spread	Not	0.192
Game	Important	0.112
Extroversion	Outdoor	0.085
	Indoor	0.095

②Node separated by 2 class

Usage condition	More than 5 times a day	0.070
	More than 1 times a day	0.076
	More than 1 times a week	0.107

Google+	Use	0.122
You tube	Use	0.089
Mobage	Use	0.130

③Node separated by 3 class

Gender	Male	0.087
	Female	0.088
Age	—30	0.081
	—50	0.089
	50—	0.097
Occupation	Student	0.079
	Company Employee	0.086
	School Teacher/Staff	0.095
	Independents	0.087
	Part-timers	0.093
Married	Married	0.089
	Single	0.086

We can observe that "Those who use Ameba, are indoor/outdoor typed Married/Single with versatile occupations in the wide spread ages, esteem Sympathize and Game, while do not esteem Relationship nor Share & Spread, use Google+, You tube and Mobage".

V. REMARKS

Setting evidence to all parameters, we can obtain following findings.

If the model is spread toward lower level with branch, observation data tends to be small. Therefore ripple effect becomes small as it passes through node to node.

The change of differences of probability (ie."Posterior probability - Prior probability") decreases exponentially as a node is separated from the source node where evidence is set. To cope with this, such methods as Reinforcement Learning, transformation by logarithmic scale would be effective. As the depth of a model becomes deep, above phenomenon occurs, therefore model building of shallow depth is required.

1) We could confirm that those who esteem Relationship, Sympathize, Share & Spread and Game are relatively young and they use them frequently.

2) Those who esteem Sympathize have a tendency to use Google+ and Ameba, while they do not use Facebook. Google+ has a good characteristic in group function and Ameba is often utilized as a diary. Users sympathize these sites rather than Facebook, where it makes public the current information.

Furthermore users feel much more sympathy than Facebook.

This may be because mixi has a good diary function.

3) These who do not esteem Game of outdoor typed company employee often use Facebook.

4) Young people of indoor type use SNS frequently than those of outdoor type.

5) Correlation between usage objective and SNS site is shown in Table 3.

We can observe that the users of Facebook, mixi, Twitter esteem Relationship and Share & Spread.

The users of Facebook and Twitter do not esteem Game.

As could be seem from the investigation results of the former half, users of Google+, Mobage, Ameba have the same usage objective and use them simultaneously.

TABLE III. CORRELATION BETWEEN USAGE OBJECTIVE AND SNS SITE

	Relationship	Sympathize	Share & Spread	Game
Facebook	○	×	○	×
mixi	○	○	○	○
Twitter	○	○	○	×
Google+	×	○	×	○
You Tube	—	○	—	○
Mobage	×	○	×	○
Ameba	×	○	×	○

We could obtain the interesting insight by classifying the volume of change.

Further investigation should be executed hereafter.

VI. CONCLUSION

Social Networking Service (SNS) is prevailing rapidly in Japan in recent years. In this work, a questionnaire investigation was carried out in order to clarify the current usage condition, issues and desired functions. More than 1,000 samples are gathered. Bayesian network is utilized for this analysis. After conducting the sensitivity analysis, useful results are obtained. Differences in usage objectives and SNS sites were made clear by the attributes and preference of SNS users. We could observe that the users of Facebook, mixi,

Twitter esteemed Relationship and Share & Spread. While the users of Facebook and Twitter did not esteem Game.

They can be utilized effectively for marketing by clarifying the target customer through the sensitivity analysis. We could obtain the detailed results together with those of the former half.

VII. FUTURE WORKS

To confirm instructions and their results would be our next step investigation. Systematic research investigation for SNS is still on the beginning stage. Such research as this should be further developed with the increased case studies.

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APPENDIX: Table A

Name	state	Prior	Gender		Age			Occupation				
			Male	Female	—30	—50	50—	Student	Company Employee	School Teacher/Staff	Independents	Part-timers
Gender	Male	0.592	1.000	0.000	0.592	0.592	0.592	0.606	0.694	0.513	0.545	0.079
	Female	0.408	0.000	1.000	0.408	0.408	0.408	0.394	0.306	0.487	0.455	0.921
Age	—30	0.477	0.477	0.477	1.000	0.000	0.000	0.978	0.327	0.251	0.062	0.260
	—50	0.449	0.449	0.449	0.000	1.000	0.000	0.014	0.584	0.657	0.806	0.582
	50—	0.075	0.074	0.074	0.000	0.000	1.000	0.008	0.090	0.092	0.133	0.158
Occupation	Student	0.267	0.276	0.260	0.553	0.008	0.028	1.000	0.000	0.000	0.000	0.000
	Company Employee	0.542	0.604	0.386	0.353	0.670	0.621	0.000	1.000	0.000	0.000	0.000
	School Teacher/Staff	0.040	0.037	0.051	0.022	0.062	0.052	0.000	0.000	1.000	0.000	0.000
	Independents	0.042	0.043	0.052	0.006	0.084	0.083	0.000	0.000	0.000	1.000	0.000
	Part-timers	0.049	0.008	0.133	0.032	0.076	0.125	0.000	0.000	0.000	0.000	1.000
	Others	0.061	0.032	0.118	0.034	0.099	0.091	0.000	0.000	0.000	0.000	0.000
Married	Married	0.424	0.464	0.351	0.133	0.667	0.734	0.146	0.512	0.528	0.635	0.467
	Single	0.576	0.536	0.649	0.867	0.333	0.266	0.854	0.488	0.472	0.365	0.533

Usage condition	More than 5 times a day	0.368	0.315	0.292	0.464	0.242	0.167	0.548	0.253	0.212	0.332	0.186
	More than 1 times a day	0.408	0.382	0.395	0.375	0.388	0.351	0.322	0.441	0.372	0.369	0.360
	More than 1 times a week	0.175	0.193	0.207	0.115	0.265	0.275	0.091	0.239	0.176	0.188	0.344
	Less than that	0.049	0.110	0.107	0.046	0.105	0.207	0.040	0.067	0.240	0.111	0.111
Relationship	Important	0.824	0.788	0.785	0.822	0.775	0.743	0.832	0.789	0.753	0.790	0.757
	Ordinary	0.102	0.118	0.119	0.100	0.124	0.141	0.094	0.118	0.138	0.117	0.132
	Not	0.074	0.094	0.095	0.078	0.101	0.116	0.074	0.093	0.110	0.093	0.111
Sympathize	Important	0.385	0.368	0.368	0.389	0.358	0.345	0.396	0.365	0.353	0.367	0.353
	Ordinary	0.311	0.322	0.323	0.312	0.327	0.331	0.308	0.325	0.327	0.321	0.331
	Not	0.304	0.310	0.309	0.299	0.315	0.324	0.297	0.310	0.319	0.312	0.316
Share & Spread	Important	0.614	0.582	0.580	0.616	0.573	0.538	0.627	0.584	0.541	0.584	0.561
	Ordinary	0.255	0.265	0.266	0.257	0.267	0.274	0.254	0.265	0.275	0.264	0.270
	Not	0.131	0.153	0.154	0.127	0.160	0.187	0.119	0.151	0.184	0.151	0.170
Game	Important	0.254	0.245	0.243	0.268	0.234	0.227	0.279	0.235	0.235	0.246	0.229
	Ordinary	0.292	0.305	0.307	0.287	0.311	0.326	0.280	0.306	0.324	0.304	0.318
	Not	0.454	0.449	0.450	0.445	0.455	0.447	0.441	0.459	0.441	0.450	0.453
Extroversion	Outdoor	0.311	0.316	0.301	0.274	0.342	0.350	0.275	0.322	0.324	0.338	0.316
	Indoor	0.269	0.263	0.279	0.310	0.234	0.225	0.308	0.256	0.254	0.239	0.263
	Cannot choose either	0.421	0.421	0.419	0.416	0.424	0.425	0.416	0.422	0.422	0.424	0.421
Facebook	Use	0.634	0.619	0.619	0.625	0.619	0.610	0.626	0.622	0.610	0.620	0.614
	Not	0.367	0.381	0.381	0.375	0.381	0.390	0.374	0.378	0.390	0.380	0.386
mixi	Use	0.495	0.528	0.527	0.533	0.526	0.522	0.535	0.528	0.523	0.528	0.523
	Not	0.505	0.472	0.473	0.467	0.474	0.478	0.465	0.472	0.477	0.472	0.477
Twitter	Use	0.422	0.452	0.452	0.455	0.451	0.449	0.456	0.453	0.449	0.453	0.450
	Not	0.578	0.548	0.548	0.545	0.549	0.551	0.544	0.547	0.551	0.547	0.550
Google+	Use	0.142	0.223	0.223	0.213	0.225	0.235	0.211	0.222	0.233	0.222	0.230
	Not	0.858	0.777	0.777	0.787	0.775	0.765	0.789	0.778	0.767	0.778	0.770
You Tube	Use	0.562	0.542	0.542	0.546	0.540	0.538	0.547	0.541	0.539	0.542	0.539
	Not	0.438	0.458	0.458	0.454	0.460	0.462	0.453	0.459	0.461	0.458	0.461
Mobage	Use	0.116	0.199	0.199	0.192	0.200	0.209	0.191	0.196	0.209	0.198	0.205
	Not	0.884	0.801	0.801	0.808	0.800	0.791	0.809	0.804	0.791	0.802	0.795
Ameba	Use	0.149	0.236	0.236	0.229	0.238	0.245	0.228	0.235	0.244	0.235	0.241
	Not	0.851	0.764	0.764	0.771	0.762	0.755	0.772	0.765	0.756	0.765	0.759

Married		Usage condition			Relationship			Sympathize			Share & Spread			Game		
Married	Single	More than 5 times a day	More than 1 times a day	More than 1 times a week	Important	Ordinary	Not	Important	Ordinary	Not	Important	Ordinary	Not	Important	Ordinary	Not
0.657	0.545	0.609	0.589	0.573	0.593	0.586	0.584	0.592	0.591	0.5922	0.593	0.591	0.586	0.594	0.590	0.592
0.343	0.455	0.391	0.411	0.427	0.407	0.414	0.416	0.408	0.409	0.4078	0.407	0.409	0.414	0.406	0.410	0.408
0.152	0.709	0.677	0.470	0.305	0.493	0.425	0.415	0.499	0.466	0.462	0.497	0.467	0.421	0.512	0.456	0.472
0.717	0.257	0.283	0.460	0.591	0.436	0.487	0.494	0.431	0.458	0.460	0.433	0.456	0.489	0.419	0.464	0.453
0.131	0.034	0.040	0.070	0.105	0.071	0.088	0.090	0.070	0.077	0.078	0.069	0.077	0.089	0.068	0.079	0.074
0.094	0.394	0.430	0.225	0.146	0.277	0.245	0.241	0.283	0.262	0.263	0.279	0.265	0.245	0.297	0.259	0.262
0.636	0.437	0.409	0.598	0.593	0.516	0.512	0.508	0.510	0.520	0.517	0.516	0.515	0.509	0.494	0.517	0.525
0.054	0.034	0.027	0.043	0.041	0.041	0.049	0.049	0.041	0.043	0.044	0.040	0.044	0.050	0.040	0.045	0.042
0.071	0.029	0.029	0.038	0.067	0.044	0.055	0.058	0.044	0.048	0.048	0.044	0.048	0.056	0.044	0.049	0.046
0.065	0.051	0.033	0.052	0.096	0.056	0.069	0.072	0.056	0.061	0.061	0.055	0.061	0.069	0.055	0.062	0.059
0.080	0.055	0.072	0.045	0.055	0.066	0.070	0.072	0.067	0.067	0.068	0.066	0.068	0.071	0.070	0.068	0.065
1.000	0.000	0.310	0.420	0.509	0.410	0.442	0.446	0.399	0.423	0.433	0.407	0.422	0.447	0.390	0.429	0.424
0.000	1.000	0.690	0.580	0.491	0.590	0.558	0.554	0.601	0.577	0.567	0.593	0.578	0.553	0.610	0.571	0.576
0.247	0.366	1.000	0.000	0.000	0.344	0.160	0.179	0.358	0.270	0.283	0.364	0.274	0.147	0.424	0.245	0.284
0.383	0.376	0.000	1.000	0.000	0.398	0.342	0.236	0.375	0.384	0.368	0.383	0.378	0.347	0.298	0.379	0.416

0.245	0.164	0.000	0.000	1.000	0.170	0.272	0.356	0.170	0.222	0.213	0.183	0.207	0.254	0.165	0.223	0.204
0.125	0.095	0.000	0.000	0.000	0.088	0.226	0.229	0.097	0.124	0.136	0.071	0.141	0.252	0.113	0.154	0.096
0.775	0.797	0.879	0.832	0.671	1.000	0.000	0.000	0.796	0.777	0.778	0.802	0.776	0.734	0.795	0.768	0.789
0.125	0.113	0.064	0.108	0.161	0.000	1.000	0.000	0.114	0.123	0.123	0.110	0.124	0.146	0.114	0.129	0.118
0.101	0.090	0.057	0.060	0.168	0.000	0.000	1.000	0.091	0.099	0.099	0.088	0.100	0.120	0.091	0.103	0.093
0.354	0.380	0.428	0.368	0.316	0.373	0.350	0.346	1.000	0.000	0.000	0.375	0.363	0.346	0.386	0.358	0.365
0.326	0.318	0.285	0.329	0.354	0.320	0.332	0.335	0.000	1.000	0.000	0.318	0.326	0.332	0.311	0.331	0.324
0.320	0.302	0.287	0.303	0.330	0.307	0.319	0.319	0.000	0.000	1.000	0.306	0.311	0.321	0.302	0.312	0.311
0.570	0.592	0.686	0.591	0.531	0.592	0.535	0.530	0.591	0.572	0.572	1.000	0.000	0.000	0.596	0.561	0.583
0.267	0.263	0.238	0.267	0.273	0.263	0.276	0.277	0.262	0.268	0.267	0.000	1.000	0.000	0.259	0.271	0.265
0.163	0.146	0.076	0.142	0.195	0.145	0.189	0.193	0.147	0.160	0.161	0.000	0.000	1.000	0.145	0.168	0.152
0.232	0.258	0.339	0.195	0.205	0.249	0.231	0.234	0.257	0.236	0.241	0.252	0.240	0.229	1.000	0.000	0.000
0.312	0.299	0.245	0.308	0.339	0.301	0.328	0.330	0.298	0.314	0.309	0.297	0.313	0.331	0.000	1.000	0.000
0.456	0.443	0.417	0.496	0.455	0.451	0.441	0.435	0.445	0.449	0.450	0.451	0.447	0.440	0.000	0.000	1.000
0.384	0.257	0.296	0.310	0.322	0.314	0.303	0.285	0.289	0.281	0.365	0.316	0.294	0.313	0.317	0.270	0.333
0.187	0.329	0.285	0.269	0.257	0.265	0.286	0.288	0.320	0.251	0.230	0.272	0.264	0.270	0.364	0.239	0.240
0.429	0.414	0.419	0.420	0.422	0.421	0.410	0.427	0.391	0.468	0.405	0.412	0.441	0.416	0.319	0.491	0.427
0.619	0.619	0.629	0.639	0.601	0.659	0.490	0.449	0.558	0.631	0.679	0.665	0.574	0.526	0.498	0.595	0.699
0.381	0.381	0.371	0.361	0.399	0.341	0.510	0.551	0.442	0.369	0.321	0.335	0.426	0.474	0.502	0.405	0.301
0.526	0.529	0.543	0.532	0.511	0.558	0.424	0.408	0.528	0.530	0.523	0.518	0.561	0.503	0.553	0.532	0.508
0.474	0.471	0.457	0.468	0.489	0.442	0.576	0.592	0.472	0.470	0.477	0.482	0.439	0.497	0.447	0.468	0.492
0.451	0.453	0.460	0.457	0.444	0.468	0.373	0.425	0.485	0.427	0.440	0.443	0.491	0.422	0.423	0.450	0.470
0.549	0.547	0.540	0.543	0.556	0.532	0.627	0.575	0.515	0.573	0.560	0.557	0.509	0.578	0.577	0.550	0.530
0.226	0.221	0.195	0.212	0.248	0.188	0.303	0.405	0.264	0.213	0.187	0.178	0.238	0.355	0.226	0.245	0.208
0.774	0.779	0.805	0.788	0.752	0.812	0.697	0.595	0.736	0.787	0.813	0.822	0.762	0.645	0.774	0.755	0.792
0.540	0.544	0.555	0.540	0.534	0.542	0.576	0.507	0.596	0.502	0.520	0.547	0.551	0.513	0.583	0.532	0.527
0.460	0.456	0.445	0.460	0.466	0.458	0.424	0.493	0.404	0.498	0.480	0.453	0.449	0.487	0.417	0.468	0.473
0.200	0.199	0.186	0.179	0.221	0.159	0.322	0.376	0.213	0.236	0.145	0.166	0.196	0.326	0.332	0.201	0.127
0.800	0.801	0.814	0.821	0.779	0.841	0.678	0.624	0.787	0.764	0.855	0.834	0.804	0.674	0.668	0.799	0.873
0.238	0.235	0.219	0.225	0.255	0.209	0.293	0.392	0.261	0.211	0.232	0.206	0.238	0.341	0.261	0.254	0.212
0.762	0.765	0.781	0.775	0.745	0.791	0.707	0.608	0.739	0.789	0.768	0.794	0.762	0.659	0.739	0.746	0.788

Extroversion		Facebook		mixi		Twitter		Google+		You Tube		Mobage		Ameba	
Outdoor	Indoor	Use	Not	Use	Not	Use	Not	Use	Not	Use	Not	Use	Not	Use	Not
0.603	0.577	0.592	0.591	0.5921	0.5915	0.592	0.5917	0.5902	0.5922	0.5919	0.5917	0.5901	0.5922	0.5908	0.5921
0.397	0.423	0.408	0.409	0.408	0.409	0.408	0.408	0.410	0.408	0.408	0.408	0.410	0.408	0.409	0.408
0.421	0.548	0.480	0.472	0.480	0.473	0.479	0.475	0.462	0.481	0.479	0.474	0.465	0.480	0.467	0.480
0.495	0.390	0.447	0.452	0.446	0.452	0.447	0.450	0.459	0.446	0.447	0.451	0.457	0.447	0.456	0.446
0.084	0.062	0.074	0.076	0.074	0.075	0.074	0.075	0.078	0.073	0.074	0.075	0.078	0.074	0.077	0.074
0.240	0.308	0.270	0.269	0.271	0.267	0.270	0.269	0.263	0.271	0.271	0.268	0.267	0.270	0.266	0.271
0.535	0.490	0.517	0.511	0.515	0.515	0.516	0.515	0.513	0.516	0.514	0.516	0.509	0.517	0.513	0.516
0.045	0.040	0.042	0.043	0.042	0.043	0.042	0.043	0.044	0.042	0.042	0.043	0.044	0.042	0.044	0.042
0.051	0.041	0.046	0.048	0.046	0.047	0.046	0.047	0.049	0.046	0.046	0.047	0.049	0.046	0.048	0.046
0.060	0.057	0.058	0.060	0.058	0.059	0.058	0.059	0.062	0.058	0.058	0.059	0.062	0.058	0.061	0.058
0.070	0.064	0.067	0.068	0.067	0.067	0.067	0.067	0.069	0.067	0.067	0.067	0.069	0.067	0.068	0.067
0.517	0.289	0.417	0.418	0.416	0.420	0.416	0.418	0.424	0.416	0.416	0.420	0.420	0.417	0.422	0.416
0.483	0.711	0.583	0.582	0.584	0.580	0.584	0.582	0.576	0.584	0.584	0.580	0.580	0.583	0.578	0.584
0.294	0.323	0.312	0.296	0.315	0.296	0.311	0.302	0.269	0.317	0.313	0.298	0.282	0.312	0.283	0.313
0.376	0.375	0.388	0.356	0.379	0.372	0.380	0.372	0.356	0.381	0.375	0.377	0.338	0.386	0.358	0.381
0.208	0.189	0.194	0.209	0.193	0.207	0.196	0.203	0.222	0.194	0.197	0.204	0.221	0.195	0.215	0.195
0.121	0.112	0.106	0.138	0.112	0.124	0.113	0.122	0.153	0.108	0.116	0.121	0.159	0.108	0.144	0.110
0.794	0.770	0.836	0.700	0.830	0.734	0.812	0.762	0.659	0.820	0.785	0.784	0.624	0.824	0.692	0.813
0.116	0.128	0.095	0.160	0.097	0.145	0.098	0.137	0.165	0.106	0.126	0.112	0.193	0.101	0.148	0.111
0.089	0.103	0.069	0.140	0.074	0.121	0.090	0.101	0.175	0.073	0.089	0.104	0.183	0.075	0.160	0.076

0.343	0.437	0.331	0.427	0.368	0.367	0.394	0.346	0.432	0.348	0.404	0.325	0.393	0.361	0.407	0.355
0.291	0.299	0.329	0.312	0.325	0.320	0.304	0.338	0.308	0.327	0.298	0.351	0.381	0.308	0.289	0.333
0.366	0.264	0.340	0.261	0.307	0.313	0.302	0.316	0.260	0.325	0.298	0.324	0.226	0.331	0.304	0.311
0.590	0.584	0.622	0.510	0.569	0.590	0.567	0.589	0.463	0.613	0.584	0.573	0.481	0.603	0.506	0.602
0.252	0.259	0.246	0.297	0.283	0.246	0.289	0.247	0.282	0.261	0.270	0.261	0.260	0.267	0.266	0.265
0.157	0.157	0.132	0.193	0.148	0.164	0.144	0.165	0.255	0.127	0.146	0.166	0.260	0.129	0.228	0.133
0.251	0.332	0.197	0.322	0.257	0.232	0.230	0.258	0.247	0.245	0.264	0.223	0.403	0.204	0.270	0.237
0.268	0.270	0.296	0.324	0.311	0.302	0.305	0.308	0.336	0.298	0.301	0.314	0.309	0.306	0.328	0.300
0.481	0.398	0.506	0.354	0.432	0.466	0.466	0.434	0.417	0.457	0.435	0.463	0.287	0.489	0.401	0.463
1.000	0.000	0.315	0.302	0.310	0.310	0.310	0.310	0.302	0.312	0.309	0.311	0.298	0.313	0.306	0.311
0.000	1.000	0.259	0.286	0.270	0.269	0.269	0.270	0.277	0.267	0.275	0.264	0.295	0.263	0.277	0.267
0.000	0.000	0.426	0.413	0.420	0.420	0.421	0.420	0.421	0.421	0.416	0.426	0.408	0.424	0.417	0.422
0.628	0.595	1.000	0.000	0.623	0.613	0.623	0.614	0.570	0.632	0.613	0.625	0.542	0.639	0.581	0.630
0.372	0.405	0.000	1.000	0.377	0.387	0.377	0.386	0.430	0.368	0.387	0.375	0.458	0.361	0.419	0.370
0.527	0.527	0.5311	0.5189	1.000	0.000	0.532	0.524	0.509	0.532	0.528	0.526	0.507	0.531	0.514	0.531
0.473	0.473	0.4689	0.4811	0.000	1.000	0.468	0.476	0.491	0.468	0.472	0.474	0.493	0.469	0.486	0.469
0.452	0.450	0.4556	0.4454	0.456	0.448	1.000	0.000	0.446	0.454	0.453	0.451	0.433	0.457	0.446	0.454
0.548	0.550	0.5444	0.5546	0.544	0.552	0.000	1.000	0.554	0.546	0.547	0.549	0.567	0.543	0.554	0.546
0.217	0.232	0.2056	0.2516	0.216	0.232	0.221	0.226	1.000	0.000	0.224	0.223	0.275	0.211	0.255	0.213
0.783	0.768	0.7944	0.7484	0.784	0.768	0.779	0.774	0.000	1.000	0.776	0.777	0.725	0.789	0.745	0.787
0.541	0.551	0.5369	0.5490	0.543	0.540	0.543	0.541	0.543	0.541	1.000	0.000	0.548	0.540	0.543	0.541
0.459	0.449	0.4631	0.4510	0.457	0.460	0.457	0.459	0.457	0.459	0.000	1.000	0.452	0.460	0.457	0.459
0.192	0.220	0.1730	0.2416	0.194	0.207	0.191	0.207	0.244	0.187	0.202	0.197	1.000	0.000	0.234	0.189
0.808	0.780	0.8270	0.7584	0.806	0.793	0.809	0.793	0.756	0.813	0.798	0.803	0.000	1.000	0.766	0.811
0.234	0.244	0.2220	0.2595	0.231	0.243	0.234	0.239	0.271	0.227	0.237	0.236	0.278	0.226	1.000	0.000
0.766	0.756	0.7780	0.7405	0.769	0.757	0.766	0.761	0.729	0.773	0.763	0.764	0.722	0.774	0.000	1.000

APPENDIX: Table B

Name	state	Prior	Gender		Age			Occupation				
			Male	Female	—30	—50	50—	Student	Company Employee	School Teacher/Staff	Independents	Part-timers
Gender	Male	0.592			0.000	0.000	0.000	0.014	0.102	-0.079	-0.047	-0.513
	Female	0.408			0.000	0.000	0.000	-0.014	-0.102	0.079	0.047	0.513
Age	—30	0.477	0.000	0.000				0.502	-0.150	-0.226	-0.415	-0.217
	—50	0.449	0.000	0.000				-0.435	0.135	0.209	0.357	0.133
	50—	0.075	0.000	0.000				-0.067	0.015	0.017	0.058	0.084
Occupation	Student	0.267	0.009	-0.007	0.286	-0.259	-0.240					
	Company Employee	0.542	0.063	-0.156	-0.189	0.129	0.079					
	School Teacher/Staff	0.040	-0.003	0.011	-0.017	0.022	0.012					
	Independents	0.042	0.001	0.010	-0.036	0.042	0.041					
	Part-timers	0.049	-0.041	0.084	-0.017	0.027	0.076					
	Others	0.061	-0.029	0.057	-0.027	0.038	0.030					
Married	Married	0.424	0.040	-0.073	-0.290	0.243	0.310	-0.277	0.089	0.104	0.211	0.044
	Single	0.576	-0.040	0.073	0.290	-0.243	-0.310	0.277	-0.089	-0.104	-0.211	-0.044
Usage condition	More than 5 times a day	0.368	-0.053	-0.076	0.096	-0.126	-0.201	0.180	-0.115	-0.156	-0.036	-0.182
	More than 1 times a day	0.408	-0.026	-0.014	-0.033	-0.020	-0.058	-0.086	0.033	-0.036	-0.039	-0.049
	More than 1 times a week	0.175	0.018	0.032	-0.059	0.091	0.100	-0.084	0.064	0.001	0.014	0.169
	Less than that	0.049	0.061	0.058	-0.003	0.056	0.158	-0.009	0.018	0.191	0.062	0.062
Relationship	Important	0.824	-0.036	-0.039	-0.002	-0.049	-0.081	0.007	-0.035	-0.072	-0.034	-0.067
	Ordinary	0.102	0.016	0.018	-0.002	0.022	0.039	-0.008	0.016	0.036	0.015	0.030
	Not	0.074	0.020	0.022	0.004	0.027	0.042	0.000	0.019	0.036	0.019	0.037
Sympathize	Important	0.385	-0.017	-0.017	0.004	-0.027	-0.040	0.011	-0.021	-0.032	-0.018	-0.032
	Ordinary	0.311	0.011	0.012	0.001	0.015	0.020	-0.004	0.014	0.016	0.010	0.020
	Not	0.304	0.006	0.005	-0.005	0.012	0.021	-0.007	0.006	0.016	0.008	0.012
Share & Spread	Important	0.614	-0.032	-0.034	0.002	-0.041	-0.076	0.013	-0.030	-0.073	-0.030	-0.053
	Ordinary	0.255	0.010	0.011	0.002	0.012	0.020	-0.001	0.010	0.020	0.010	0.015

	Not	0.131	0.022	0.023	-0.004	0.029	0.056	-0.012	0.020	0.053	0.020	0.038
Game	Important	0.254	-0.008	-0.010	0.014	-0.020	-0.027	0.026	-0.019	-0.018	-0.008	-0.025
	Ordinary	0.292	0.013	0.015	-0.005	0.019	0.034	-0.012	0.014	0.031	0.012	0.026
	Not	0.454	-0.005	-0.004	-0.009	0.001	-0.007	-0.013	0.005	-0.013	-0.004	-0.001
Extroversion	Outdoor	0.311	0.005	-0.009	-0.037	0.031	0.040	-0.035	0.011	0.013	0.027	0.006
	Indoor	0.269	-0.006	0.010	0.041	-0.035	-0.044	0.040	-0.013	-0.015	-0.030	-0.006
	Cannot choose either	0.421	0.000	-0.001	-0.005	0.003	0.004	-0.004	0.001	0.001	0.003	0.000
Facebook	Use	0.634	-0.014	-0.015	-0.009	-0.015	-0.024	-0.008	-0.011	-0.024	-0.013	-0.019
	Not	0.367	0.014	0.015	0.009	0.015	0.024	0.008	0.011	0.024	0.013	0.019
mixi	Use	0.495	0.033	0.032	0.038	0.031	0.027	0.040	0.033	0.028	0.033	0.028
	Not	0.505	-0.033	-0.032	-0.038	-0.031	-0.027	-0.040	-0.033	-0.028	-0.033	-0.028
Twitter	Use	0.422	0.031	0.030	0.033	0.030	0.027	0.034	0.031	0.027	0.031	0.028
	Not	0.578	-0.031	-0.030	-0.033	-0.030	-0.027	-0.034	-0.031	-0.027	-0.031	-0.028
Google+	Use	0.142	0.080	0.081	0.071	0.083	0.093	0.068	0.079	0.091	0.080	0.088
	Not	0.858	-0.080	-0.081	-0.071	-0.083	-0.093	-0.068	-0.079	-0.091	-0.080	-0.088
You Tube	Use	0.562	-0.020	-0.020	-0.016	-0.022	-0.024	-0.015	-0.021	-0.022	-0.020	-0.023
	Not	0.438	0.020	0.020	0.016	0.022	0.024	0.015	0.021	0.022	0.020	0.023
Mobage	Use	0.116	0.083	0.083	0.076	0.084	0.094	0.075	0.080	0.093	0.082	0.089
	Not	0.884	-0.083	-0.083	-0.076	-0.084	-0.094	-0.075	-0.080	-0.093	-0.082	-0.089
Ameba	Use	0.149	0.087	0.088	0.081	0.089	0.097	0.079	0.086	0.095	0.087	0.093
	Not	0.851	-0.087	-0.088	-0.081	-0.089	-0.097	-0.079	-0.086	-0.095	-0.087	-0.093

Married		Usage condition			Relationship			Sympathize			Share & Spread			Game		
Married	Single	More than 5 times a day	More than 1 times a day	More than 1 times a week	Important	Ordinary	Not	Important	Ordinary	Not	Important	Ordinary	Not	Important	Ordinary	Not
0.065	-0.047	0.017	-0.003	-0.019	0.001	-0.006	-0.008	0.001	-0.001	0.000	0.002	-0.001	-0.006	0.002	-0.002	0.000
-0.065	0.047	-0.017	0.003	0.019	-0.001	0.006	0.008	-0.001	0.001	0.000	-0.002	0.001	0.006	-0.002	0.002	0.000
-0.324	0.233	0.200	-0.006	-0.172	0.016	-0.051	-0.061	0.023	-0.011	-0.014	0.021	-0.010	-0.055	0.035	-0.020	-0.005
0.268	-0.192	-0.165	0.011	0.142	-0.012	0.038	0.046	-0.018	0.009	0.011	-0.015	0.007	0.040	-0.029	0.016	0.005
0.056	-0.041	-0.035	-0.005	0.030	-0.004	0.013	0.016	-0.005	0.002	0.003	-0.005	0.003	0.015	-0.006	0.005	0.000
-0.173	0.127	0.162	-0.042	-0.121	0.010	-0.022	-0.027	0.016	-0.006	-0.005	0.011	-0.002	-0.022	0.030	-0.008	-0.005
0.095	-0.105	-0.133	0.056	0.052	-0.026	-0.029	-0.034	-0.032	-0.022	-0.025	-0.025	-0.027	-0.033	-0.048	-0.025	-0.016
0.014	-0.005	-0.013	0.003	0.002	0.001	0.009	0.009	0.001	0.003	0.004	0.000	0.004	0.011	0.000	0.005	0.002
0.029	-0.013	-0.013	-0.004	0.026	0.002	0.013	0.016	0.002	0.006	0.007	0.002	0.006	0.014	0.002	0.008	0.004
0.016	0.002	-0.015	0.003	0.047	0.007	0.020	0.024	0.007	0.012	0.012	0.006	0.012	0.021	0.006	0.013	0.010
0.019	-0.006	0.011	-0.016	-0.006	0.005	0.009	0.011	0.006	0.006	0.007	0.005	0.007	0.010	0.009	0.007	0.004
		-0.114	-0.003	0.085	-0.014	0.019	0.023	-0.024	0.000	0.009	-0.017	-0.001	0.023	-0.033	0.005	0.001
		0.114	0.003	-0.085	0.014	-0.019	-0.023	0.024	0.000	-0.009	0.017	0.001	-0.023	0.033	-0.005	-0.001
-0.121	-0.002				-0.024	-0.208	-0.189	-0.010	-0.098	-0.085	-0.004	-0.094	-0.221	0.056	-0.123	-0.083
-0.025	-0.033				-0.010	-0.066	-0.172	-0.033	-0.024	-0.041	-0.026	-0.031	-0.061	-0.110	-0.030	0.007
0.071	-0.010				-0.004	0.098	0.181	-0.005	0.047	0.039	0.008	0.032	0.079	-0.010	0.048	0.029
0.076	0.046				0.039	0.177	0.180	0.048	0.075	0.087	0.022	0.092	0.203	0.064	0.105	0.047
-0.049	-0.027	0.055	0.008	-0.153				-0.029	-0.047	-0.046	-0.022	-0.048	-0.090	-0.030	-0.056	-0.035
0.023	0.011	-0.038	0.006	0.059				0.012	0.021	0.021	0.008	0.023	0.045	0.012	0.027	0.016
0.027	0.016	-0.017	-0.014	0.094				0.017	0.025	0.025	0.014	0.026	0.046	0.018	0.029	0.019
-0.031	-0.005	0.042	-0.017	-0.069	-0.012	-0.036	-0.039				-0.010	-0.022	-0.039	0.001	-0.028	-0.020
0.014	0.007	-0.026	0.018	0.043	0.008	0.021	0.024				0.007	0.015	0.021	0.000	0.020	0.012
0.017	-0.002	-0.017	-0.001	0.026	0.004	0.015	0.015				0.003	0.007	0.018	-0.001	0.008	0.008
-0.044	-0.022	0.072	-0.023	-0.083	-0.022	-0.079	-0.084	-0.023	-0.042	-0.042				-0.018	-0.053	-0.031
0.012	0.008	-0.017	0.012	0.019	0.008	0.021	0.022	0.008	0.014	0.012				0.004	0.016	0.010
0.032	0.014	-0.055	0.011	0.064	0.014	0.058	0.062	0.015	0.029	0.030				0.014	0.037	0.021
-0.022	0.004	0.085	-0.058	-0.048	-0.005	-0.023	-0.020	0.004	-0.018	-0.013	-0.002	-0.014	-0.025			
0.020	0.007	-0.048	0.016	0.047	0.009	0.036	0.038	0.006	0.022	0.017	0.005	0.021	0.039			

0.002	-0.011	-0.038	0.042	0.001	-0.003	-0.013	-0.019	-0.009	-0.005	-0.004	-0.003	-0.007	-0.014			
0.074	-0.054	-0.014	0.000	0.011	0.003	-0.007	-0.025	-0.021	-0.030	0.054	0.005	-0.016	0.003	0.006	-0.040	0.022
-0.082	0.060	0.016	0.001	-0.012	-0.004	0.018	0.019	0.051	-0.018	-0.039	0.004	-0.005	0.002	0.095	-0.030	-0.029
0.008	-0.007	-0.002	0.000	0.001	0.000	-0.011	0.006	-0.030	0.047	-0.015	-0.009	0.021	-0.005	-0.101	0.070	0.007
-0.015	-0.015	-0.004	0.006	-0.033	0.026	-0.144	-0.185	-0.076	-0.002	0.045	0.031	-0.060	-0.107	-0.136	-0.038	0.065
0.015	0.015	0.004	-0.006	0.033	-0.026	0.144	0.185	0.076	0.002	-0.045	-0.031	0.060	0.107	0.136	0.038	-0.065
0.031	0.034	0.048	0.037	0.016	0.063	-0.071	-0.087	0.033	0.035	0.028	0.023	0.066	0.008	0.058	0.037	0.013
-0.031	-0.034	-0.048	-0.037	-0.016	-0.063	0.071	0.087	-0.033	-0.035	-0.028	-0.023	-0.066	-0.008	-0.058	-0.037	-0.013
0.029	0.031	0.038	0.035	0.022	0.046	-0.049	0.003	0.063	0.005	0.018	0.021	0.069	0.000	0.001	0.028	0.048
-0.029	-0.031	-0.038	-0.035	-0.022	-0.046	0.049	-0.003	-0.063	-0.005	-0.018	-0.021	-0.069	0.000	-0.001	-0.028	-0.048
0.083	0.078	0.053	0.069	0.105	0.046	0.161	0.262	0.122	0.071	0.045	0.036	0.096	0.213	0.084	0.103	0.066
-0.083	-0.078	-0.053	-0.069	-0.105	-0.046	-0.161	-0.262	-0.122	-0.071	-0.045	-0.036	-0.096	-0.213	-0.084	-0.103	-0.066
-0.022	-0.018	-0.007	-0.021	-0.028	-0.020	0.014	-0.055	0.034	-0.059	-0.042	-0.015	-0.011	-0.048	0.021	-0.030	-0.035
0.022	0.018	0.007	0.021	0.028	0.020	-0.014	0.055	-0.034	0.059	0.042	0.015	0.011	0.048	-0.021	0.030	0.035
0.084	0.083	0.070	0.063	0.105	0.043	0.206	0.260	0.097	0.120	0.030	0.050	0.080	0.210	0.216	0.086	0.011
-0.084	-0.083	-0.070	-0.063	-0.105	-0.043	-0.206	-0.260	-0.097	-0.120	-0.030	-0.050	-0.080	-0.210	-0.216	-0.086	-0.011
0.089	0.086	0.070	0.076	0.107	0.061	0.144	0.244	0.113	0.063	0.083	0.057	0.089	0.192	0.112	0.105	0.063
-0.089	-0.086	-0.070	-0.076	-0.107	-0.061	-0.144	-0.244	-0.113	-0.063	-0.083	-0.057	-0.089	-0.192	-0.112	-0.105	-0.063

Extroversion		Facebook		mixi		Twitter		Google+		You Tube		Mobage		Ameba	
Outdoor	Indoor	Use	Not	Use	Not	Use	Not	Use	Not	Use	Not	Use	Not	Use	Not
0.011	-0.014	0.000	-0.001	0.000	0.000	0.000	0.000	-0.002	0.000	0.000	0.000	-0.002	0.000	-0.001	0.000
-0.011	0.014	0.000	0.001	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.002	0.000	0.001	0.000
-0.056	0.072	0.003	-0.005	0.004	-0.004	0.002	-0.002	-0.014	0.004	0.003	-0.003	-0.012	0.003	-0.010	0.003
0.046	-0.059	-0.002	0.003	-0.003	0.003	-0.002	0.001	0.011	-0.003	-0.002	0.002	0.008	-0.002	0.007	-0.002
0.010	-0.012	-0.001	0.002	-0.001	0.001	-0.001	0.000	0.004	-0.001	-0.001	0.001	0.004	-0.001	0.003	-0.001
-0.028	0.041	0.003	0.002	0.004	0.000	0.003	0.002	-0.004	0.004	0.004	0.000	0.000	0.003	-0.001	0.003
-0.007	-0.051	-0.024	-0.030	-0.027	-0.026	-0.026	-0.027	-0.029	-0.026	-0.027	-0.026	-0.033	-0.025	-0.029	-0.026
0.005	0.000	0.002	0.004	0.002	0.003	0.002	0.003	0.005	0.002	0.002	0.003	0.005	0.002	0.004	0.002
0.009	-0.001	0.004	0.006	0.004	0.005	0.005	0.005	0.007	0.004	0.005	0.005	0.007	0.004	0.007	0.004
0.011	0.008	0.009	0.011	0.009	0.011	0.009	0.010	0.013	0.009	0.009	0.010	0.013	0.009	0.012	0.009
0.009	0.003	0.006	0.007	0.006	0.006	0.006	0.006	0.008	0.006	0.006	0.006	0.008	0.006	0.007	0.006
0.094	-0.135	-0.006	-0.006	-0.008	-0.004	-0.007	-0.005	0.000	-0.008	-0.008	-0.004	-0.003	-0.007	-0.002	-0.007
-0.094	0.135	0.006	0.006	0.008	0.004	0.007	0.005	0.000	0.008	0.008	0.004	0.003	0.007	0.002	0.007
-0.074	-0.045	-0.056	-0.072	-0.053	-0.071	-0.057	-0.066	-0.099	-0.051	-0.055	-0.070	-0.086	-0.056	-0.085	-0.055
-0.032	-0.033	-0.020	-0.052	-0.029	-0.036	-0.028	-0.036	-0.052	-0.027	-0.034	-0.031	-0.070	-0.023	-0.050	-0.027
0.034	0.015	0.020	0.035	0.019	0.033	0.022	0.029	0.047	0.019	0.022	0.030	0.047	0.020	0.041	0.021
0.072	0.063	0.057	0.089	0.063	0.075	0.064	0.073	0.104	0.059	0.067	0.072	0.110	0.059	0.095	0.061
-0.030	-0.054	0.012	-0.124	0.005	-0.090	-0.012	-0.062	-0.165	-0.004	-0.040	-0.040	-0.200	0.000	-0.132	-0.012
0.015	0.026	-0.007	0.058	-0.005	0.043	-0.004	0.036	0.064	0.005	0.025	0.010	0.091	0.000	0.046	0.009
0.015	0.029	-0.005	0.066	0.000	0.047	0.016	0.027	0.102	0.000	0.015	0.030	0.109	0.001	0.086	0.002
-0.043	0.051	-0.054	0.041	-0.017	-0.018	0.009	-0.039	0.046	-0.037	0.019	-0.061	0.008	-0.024	0.022	-0.030
-0.020	-0.012	0.018	0.001	0.014	0.009	-0.007	0.027	-0.003	0.016	-0.013	0.040	0.070	-0.003	-0.023	0.022
0.062	-0.040	0.036	-0.042	0.004	0.009	-0.001	0.013	-0.043	0.021	-0.006	0.021	-0.078	0.027	0.001	0.008
-0.024	-0.030	0.008	-0.104	-0.045	-0.024	-0.047	-0.025	-0.151	-0.001	-0.030	-0.041	-0.133	-0.011	-0.108	-0.012
-0.002	0.004	-0.009	0.042	0.028	-0.008	0.034	-0.008	0.027	0.006	0.015	0.006	0.005	0.012	0.012	0.010
0.026	0.026	0.001	0.062	0.017	0.032	0.013	0.033	0.124	-0.005	0.015	0.035	0.128	-0.002	0.096	0.002
-0.002	0.078	-0.057	0.068	0.003	-0.022	-0.024	0.004	-0.007	-0.009	0.010	-0.031	0.150	-0.049	0.017	-0.017
-0.024	-0.022	0.004	0.032	0.019	0.010	0.013	0.016	0.044	0.006	0.008	0.022	0.017	0.014	0.036	0.008
0.027	-0.056	0.052	-0.100	-0.022	0.012	0.012	-0.020	-0.037	0.003	-0.019	0.009	-0.167	0.035	-0.053	0.009
		0.004	-0.009	-0.001	0.000	-0.001	-0.001	-0.009	0.002	-0.001	0.000	-0.013	0.002	-0.004	0.000
		-0.009	0.017	0.001	0.001	0.000	0.002	0.008	-0.002	0.006	-0.005	0.026	-0.006	0.008	-0.002
		0.005	-0.008	0.000	0.000	0.001	-0.001	0.000	0.000	-0.005	0.005	-0.013	0.004	-0.004	0.001
-0.005	-0.038			-0.010	-0.021	-0.010	-0.019	-0.064	-0.001	-0.021	-0.009	-0.091	0.005	-0.053	-0.003

0.005	0.038			0.010	0.021	0.010	0.019	0.064	0.001	0.021	0.009	0.091	-0.005	0.053	0.003
0.032	0.032	0.036	0.024			0.037	0.029	0.014	0.037	0.033	0.031	0.012	0.036	0.019	0.036
-0.032	-0.032	-0.036	-0.024			-0.037	-0.029	-0.014	-0.037	-0.033	-0.031	-0.012	-0.036	-0.019	-0.036
0.030	0.028	0.034	0.023	0.034	0.026			0.024	0.032	0.031	0.029	0.012	0.035	0.024	0.032
-0.030	-0.028	-0.034	-0.023	-0.034	-0.026			-0.024	-0.032	-0.031	-0.029	-0.012	-0.035	-0.024	-0.032
0.075	0.090	0.063	0.109	0.074	0.089	0.078	0.084			0.082	0.081	0.133	0.069	0.113	0.071
-0.075	-0.090	-0.063	-0.109	-0.074	-0.089	-0.078	-0.084			-0.082	-0.081	-0.133	-0.069	-0.113	-0.071
-0.021	-0.010	-0.025	-0.013	-0.019	-0.021	-0.019	-0.021	-0.019	-0.020			-0.014	-0.021	-0.018	-0.021
0.021	0.010	0.025	0.013	0.019	0.021	0.019	0.021	0.019	0.020			0.014	0.021	0.018	0.021
0.076	0.104	0.057	0.126	0.078	0.091	0.075	0.091	0.128	0.071	0.086	0.081			0.119	0.073
-0.076	-0.104	-0.057	-0.126	-0.078	-0.091	-0.075	-0.091	-0.128	-0.071	-0.086	-0.081			-0.119	-0.073
0.085	0.095	0.073	0.111	0.083	0.094	0.085	0.091	0.122	0.078	0.089	0.087	0.130	0.078		
-0.085	-0.095	-0.073	-0.111	-0.083	-0.094	-0.085	-0.091	-0.122	-0.078	-0.089	-0.087	-0.130	-0.078		