Bayesian Network Analysis and its Sensitivity Analysis 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. 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. They can be utilized effectively for marketing by clarifying the target customer through the sensitivity analysis.

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1   Introduction

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. 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 (Neapolitan, 2004).

●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. (2008) have analyzed preference mining on future home energy consumption. There are some papers concerning purchase behavior in the shop (Tatsuoka et al., 2008a, 2008b), 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. 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.

2   Outline of Questionnaire Research and Examinees

2.1 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) Collectio : number of distribution 1,500; number of collection 1,197 (collection rate 79.8%); Valid answer 1,098

   Analysis methods are as follows.

Questionnaire results are analyzed in two ways. First, analysis by Bayesian Network is executed in Section 3 in order to clarify and visualize the causal relationship among the items. Second, analysis by sensitivity analysis is executed in Section 4 in order to predict the prospective purchaser as is shown in Table 1.

Table 1: Analysis procedure

Step	Aim of analysis	Used method
①	Build Bayesian network in order to clarify and visualize the causal relationship among items	Bayesian network analysis
②	Predict the prospective purchaser	Sensitivity analysis

2.2 Outline of Examinees

   We show major single variable summary results in Table 2.

Table 2: 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)

3 Bayesian Network Analysis

3.1 Confirmation of Hypothesis by Utilizing Bayesian Network

Now, we examine the probabilistic inference of Bayesian network by picking up Hypothesis 1.

It is stated as follows. Theme 1: In integrated genre SNS such as Facebook, users feel interests by sharing the information of current condition with friends.

Null hypothesis: It is not clear whether users feel interests by sharing the information of current condition with friends in Integrated genre SNS such as Facebook.

Set "Facebook" as a parent node and "Relationship" as a child node (Figure 1).
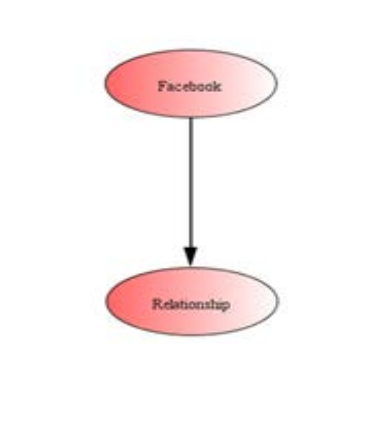
Figure 1: Node and parameter (Hypothesis 1)

As a result, we can see rather high value in Conditional Probability Table (CPT) (posterior probability in Table 3) for Facebook "Use" and Relationship "Important". This means that users of Facebook are the majority in these questionnaire answerers and they think it important for having relationships.

Building the model with Demographic, Geographic and Psychographic items, we show that SNS can be utilized for further effective marketing in the next section.

Table 3: Built model

Node	Parameter	Prior probability	Posterior probability
			Facebook
Facebook	Use	0.6335	1.0000
	Not use	0.3665	0.0000
Relationship	Important	0.8242	0.8942
	Ordinary level	0.1019	0.0679
	Not important	0.0739	0.0379

3.2 Model Structure

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 2.

Haga and Motomura (2005) restricted the range of search to the following 5 stages while building the model.

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$\Rightarrow$ (II) Extroversion and Usage condition $\Rightarrow$ (III) Purpose for Usage $\Rightarrow$ (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.
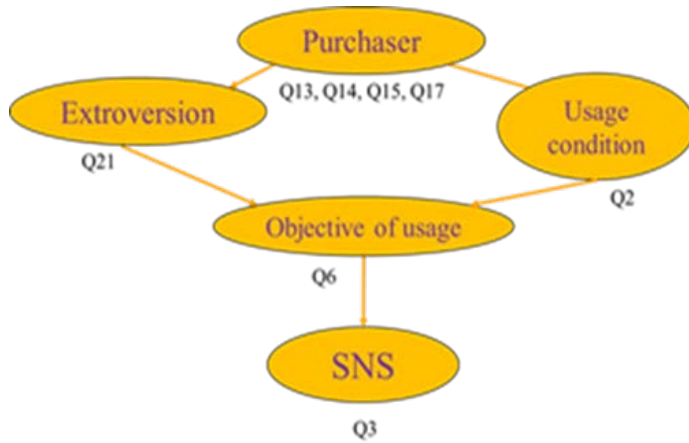
Source: Takahashi et al., 2008; revised by the writer

Figure 2: Node and parameter
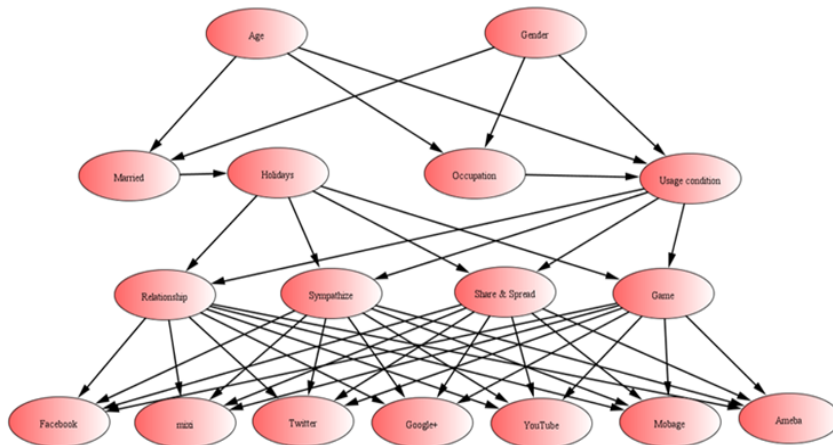
Figure 3: Built model

Table 4: Node and parameter

Group name	Node in group	Parameter					
		1	2	3	4	5	6
Purchaser	Gender	Male	Female	-	-	-	-
	Age	<30	<50	>50	-	-	-
	Occupation	Student	Company employee	School teacher/staff	Independents	Part-timers	Others
	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	Less than that	-	-
Object of Usage	Relationship, sympathize, share & spread, game	Important	Ordinary level	Not important	-	-	-
Extroversion	Holidays	Outdoor	Indoor	Cannot choose either	-	-	-
SNS	Facebook, mixi, Twitter, Google+, YouTube, Mobage, Ameba	Use	Do not use	-	-	-	-

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 3 are exhibited in Table 4.

To decrease the number of nodes, "Think so very much" and "Slightly think so" are condensed into one. So are "Do not think so" and "Slightly not think so". We have chosen 4 sites from Integrated Genre's SNS and 1 site each from Blog Genre SNS, Moving Picture Genre SNS, genre SNS and game genre SNS.

4　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 carried out for the demographic items and usage condition item, where nodes we analyze here are "Gender", "Age", "Occupation", "Married", "Usage condition". We prepare another paper for the latter half.

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 (Takahashi et al.).

Here, we pick up major parameters by the distance of node (Takeyasu et al.).

・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

The node where the value has increased is picked up for the analysis.

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.

4.1 Sensitively Analysis for "Gender"

4.1.1 Setting evidence to "Male"

①Node separated by 1 class

Occupation	Company Employee	0.102
Married	Married	0.065

②Node separated by 2 class

Extroversion	Outdoor	0.011

③Node separated by 3 class

No corresponding data

We can observe that "Those who are male, are outdoor typed married Company Employee".

4.1.2 Setting evidence to "Female"

① Node separated by 1 class

Occupation	School Teacher/Staff	0.079
	Independents	0.047
	Part-timers	0.513
Married	Single	0.047

②Node separated by 2 class

Relationship	Not	0.008
Share & Spread	Not	0.006

Extroversion	Indoor	0.014

③Node separated by 3 class

Google+	Use	0.002
Mobage	Use	0.002
Ameba	Use	0.001

We can observe that "Those who are female, are indoor typed single School Teacher/Staff, Independents, Part-timers, and do not esteem Relationship nor share of Spread, use Google+, Mobage and Ameba".

4.2 Sensitivity Analysis for "Age"

4.2.1 Setting Evidence to "—30"

①Node separated by 1 class

Occupation	Student	0.502
Married	Single	0.233
Usage condition	More than 5 times a day	0.200

②Node separated by 2 class

Relationship	Important	0.016
Sympathize	Important	0.023
Share & Spread	Important	0.021
Game	Important	0.035
Extroversion	Indoor	0.072

③Node separated by 3 class

Facebook	Use	0.003
mixi	Use	0.004
Twitter	Use	0.002
You Tube	Use	0.003

We can observe that "Those who are under 30, are indoor typed single

students who use more than 5times a day, esteem Relationship, Sympathize, Share & Spread and   Game, use Facebook, mixi, Twitter and You Tube".

4.2.2 Setting evidence to "—50"

①Node separated by 1 class

Occupation	Company Employee	0.135
	School Teacher/Staff	0.209
	Independents	0.357
	Part-timers	0.133
Married	Married	0.268
Usage condition	More than 1 times a week	0.142

②Node separated by 2 class

Relationship	Not	0.046
Sympathize	Not	0.011
Share & Spread	Not	0.040
Game	Not	0.005
Extroversion	Outdoor	0.046

③Node separated by 3 class

Google+	Use	0.011
Mobage	Use	0.008
Ameba	Use	0.007

We can observe that "Those who are under 50,are outdoor typed married Comparing Employee, School Teacher/Staff, Independents, and Part-timers, who use more than 1 times a week, do not esteem Relationship, Sympathize,   Share & Spread nor Game. Use Google+, Mobage and Ameba".

4.2.3 Setting evidence to "50—"

①Node separated by 1 class

Occupation	Independents	0.058
	Part-timers	0.084
Married	Married	0.056
Usage condition	More than 1 times a week	0.030

②Node separated by 2 class

Relationship	Not	0.016
Share & Spread	Not	0.015
Extroversion	Outdoor	0.010

③Node separated by 3 class

Google+	Use	0.004
Mobage	Use	0.004
Ameba	Use	0.003

We can observe that "Those who are more than are outdoor typed married Independents, Part-timers, who use more than 1 times a week, do not   esteem Relationship, Share & Spread, use Google+, Mobage and Ameba".

4.3 Sensitivity Analysis for "Occupation"

4.3.1 Setting evidence to "Student"

①Node separated by 1 class

Age	―30	0.286
Usage condition	More than 5 times a day	0.162

②Node separated by 2 class

Married	Single	0.127
Relationship	Important	0.010
Sympathize	Important	0.016
Share & Spread	Important	0.011
Game	Important	0.030

③Node separated by 3 class

Extroversion	Indoor	0.041
Facebook	Use	0.003
mixi	Use	0.004
Twitter	Use	0.003
You Tube	Use	0.004

We can observe that "Those who are student, are Indoor typed single under 30, who use more than 5 times a day, esteem Relationship, Sympathize, Share & Spread, Game, use Facebook, mixi, Twitter and You Tube".

4.3.2 Setting evidence to "Company Employee"

①Node separated by 1 class

Gender	Male	0.063
Age	—50	0.129
	50—	0.079
Usage condition	More than 1 times a day	0.056
	More than 1 times a week	0.052

②Node separated by 2 class

Married	Married	0.095

③Node separated by 3 class

No corresponding data

We can observe that "Those who are company employee, are married male of under 50 or over 50, who use more than 1 times a day a week".

4.3.3 Setting evidence to "School Teacher/Staff"

①Node separated by 1 class

Age	—50	0.022

②Node separated by 2 class

Married	Married	0.014
Relationship	Not	0.009
Share & Spread	Not	0.011

③Node separated by 3 class

Extroversion	Outdoor	0.005
Google+	Use	0.005
Mobage	Use	0.005
Ameba	Use	0.004

We can observe that "Those who are school teacher/staff, are outdoor typed married person under 50, do not esteem Relationship, Share & Spread, use Google+, Mobage and Ameba".

4.3.4 Setting evidence to "Independents"

①Node separated by 1 class

Age	―50	0.042
Usage condition	More than 1 times a week	0.026

②Node separated by 2 class

Married	Married	0.029
Relationship	Not	0.016
Sympathize	Not	0.007
Share & Spread	Not	0.014

③Node separated by 3 class

Extroversion	Outdoor	0.009
Google+	Use	0.007
You Tube	Use	0.005
Mobage	Use	0.007
Ameba	Use	0.007

We can observe that "Those who are independents, are outdoor typed married person under 50, who use more than 1 times a week, do not esteem Relationship, Sympathize, Share & Spread, use Google+, You Tube, Mobage and Ameba ".

4.3.5 Setting evidence to "Part-timers"

①Node separated by 1 class

Gender	Female	0.084
Age	—50	0.027
	50—	0.076
Usage condition	More than 1 times a week	0.047

②Node separated by 2 class

Married	Married	0.016
Relationship	Not	0.024
Sympathize	Not	0.012
Share & Spread	Not	0.021
Game	Not	0.010

③Node separated by 3 class

Extroversion	Outdoor	0.011
Google+	Use	0.013
Mobage	Use	0.013
Ameba	Use	0.012

We can observe that "Those who are part-timers, are outdoor typed married Female of under 50 or more than 50, who use more than 1 times a week, do not esteem Relationship, Sympathize, Share & Spread, Game, use Google+, Mobage and Ameba".

4.4 Sensitivity Analysis for "Married"

4.4.1 Setting evidence to "Married"

①Node separated by 1 class

Gender	Male	0.040
Age	—50	0.242
	50—	0.310
Extroversion	Outdoor	0.094

②Node separated by 2 class

Occupation	Company Employee	0.089
	School Teacher/Staff	0.104
	Independents	0.211
	Part-timers	0.044
Usage condition	More than 1 times a week	0.085
Relationship	Not	0.023
Sympathize	Not	0.009
Share & Spread	Not	0.023

③Node separated by 3 class

No corresponding data

We can observe that "Those who are married, are outdoor typed Company Employee, School Teacher/Staff, Independents, Part-timers of more than 50 or less than 50, who use more than 1 times a week, do not esteem Relationship, Sympathize, Share & Spread".

4.4.2 Setting evidence to "Single"

①Node separated by 1 class

Gender	Female	0.073
Age	—30	0.290
Extroversion	Indoor	0.135

②Node separated by 2 class

Occupation	Student	0.277
Usage condition	More than 5 times a day	0.114
Relationship	Important	0.014
Sympathize	Important	0.024
Share & Spread	Important	0.017
Game	Important	0.033

③Node separated by 3 class

Facebook	Use	0.006
mixi	Use	0.008
Twitter	Use	0.007
You Tube	Use	0.008

We can observe that "Those who are single, are indoor typed female students under 30, who use more than 5 times a week, esteem Relationship, Sympathize, Share & Spread and Game, use Facebook, mixi, Twitter and You Tube".

4.5 Sensitivity Analysis for "Usage condition"

4.5.1 Setting evidence to "More than 5 times a day"

①Node separated by 1 class

Age	―30	0.096
Occupation	Student	0.180
Game	Important	0.056

②Node separated by 2 class

No corresponding data

③Node separated by 3 class

No corresponding data

We can observe that "Those who use more than 5 times a day, are stdents under 30, esteem Game".

4.5.2 Setting evidence to "More than 1 times a day"

①Node separated by 1 class

Occupation	Company Employee	0.033

②Node separated by 2 class

No corresponding data

③Node separated by 3 class

No corresponding data

We can observe that "Those who use more than 1 times a day, are Company Employee".

4.5.3 Setting evidence to "More than 1 times a week"

①Node separated by 1 class

Gender	Female	0.032
Age	—50	0.091
	50—	0.100
Occupation	Company Employee	0.064
	Part-timers	0.169
Relationship	Not	0.181
Sympathize	Not	0.039
Share & Spread	Not	0.079
Game	Not	0.029

②Node separated by 2 class

Married	Married	0.071
Google+	Use	0.047
Mobage	Use	0.047
Ameba	Use	0.041

③Node separated by 3 class

Extroversion	Outdoor	0.034

We can observe that "Those who use more than 1 times a week, are outdoor typed company employee, part-timers under 50 or over 50, do not esteem Game, use Google+, Mobage and Ameba".

4.5.4 Setting evidence to "Less than that"

①Node separated by 1 class

Gender	Male	0.061
	Female	0.058
Age	—50	0.056
	50—	0.158
Occupation	School Teacher/Staff	0.191
	Independents	0.062
	Part-timers	0.062
Relationship	Not	0.180
Sympathize	Not	0.087
Share & Spread	Not	0.203
Game	Important	0.064

②Node separated by 2 class

Married	Married	0.076
Google+	Use	0.104
Mobage	Use	0.110
Ameba	Use	0.095

③Node separated by 3 class

Extroversion	Outdoor	0.072

We can observe that "Those who use less than one times a week, are outdoor typed married Male or Female of School Teacher/Staff, Independents, Part-timers under 50 or over 50, do not esteem   Relationship, Sympathize, Share & Spread, esteem Game, use Google+, Mobage and Ameba".

5   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) There is a tendency that Female does not esteem Relationship, Share & Spread.

(2) Single students under 30 often use SNS and esteem Game especially. As the ages grow higher, usage does not become frequent and the usage objective becomes vague.

(3) We could confirm that integrated genre SNS (Face book, mixi, Twitter) are often used simultaneously with Moving Picture game SNS (You Tube). These are frequently used by indoor typed young. Google+, Mobage and Ameba are also used simultaneously.

(4) School teacher/staff, Independents and Part-timers had common feature in the low frequency of usage, the objective they have and the sites they use. By classifying the volume of change, we could obtain detailed new insights.

6   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. Sensitivity analysis is carried out by setting evidence to all items. 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. They can be utilized effectively for marketing by clarifying the target customer through the sensitivity analysis. To confirm instructions and their results would be our next step investigation.

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?

Importance	think so very much	think so somewhat	level	do not think so very much	Do not think so
Q6 ①Able to communicate with each other by diary and tweets					
②Obtained much opportunities to contact with friends and acquaintances who were under rare contact					
③Able to find new friend who has the same hobby and interest via the Net					
④Able to get a feeling of intimacy by browsing artists/ celebrities' comments					
⑤Able to collect news and information efficiently					
⑥Able to share sympathy by joining a group					
⑦Able to share hobby and interests with friends and acquaintances	①	②	③	④	⑤
⑧Able to let others know about myself well					
⑨Able to control the information for public, which is different from blog					
⑩Able to retain the thinking of our own opinion and to make the record					
⑪Rich online game					
⑫Good for killing time					
⑬Miscellaneous ( )					

7. How did you come to use the SNS?

Q7 ①To create a new network

②Agree with/ appreciate the valuable information

③To collect information

④Utilize to my business

⑤To apply for the campaign

⑥To Put out and share the information

⑦Sound like fun by posting everything

⑧More easy to handle than those by phone and e-mail

⑨Suggestion by the friends and acquaintances

⑩Acquaintances and friends use them

⑪Became current topics

⑫Miscellaneous (　　)

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

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

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

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

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

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

⑳Miscellaneous (　　)

10. Why is it?

Q10 ①Want to enrich communication with friends and acquaintances

②Want to seek old friends and acquaintances

③Want to seek new friends and acquaintances

④Want to agree with/ appreciate the valuable information

⑤Want to collect beneficial and delightful information

⑥Want to browse artists/ celebrities' comments

⑦Want to apply for the campaign

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

⑨Want to collect/ put out hobby and interesting information

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

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

⑫Miscellaneous (　　)

11. Why don't you use the SNS?

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

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

Importance	much	so	level	think so	think so	not

	①	②	③	④	⑤
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 ( )					

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 4: On-line data gathering Form for Questionnaire Investigation,

https://docs.google.com

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

		Use/Not											
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		
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
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
0.343	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
0.152	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
0.717	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
0.131	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
0.094	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
0.636	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
0.054	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
0.071	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
0.065	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
0.080	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
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
0.000	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
0.247	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
0.383	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
0.245	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
0.125	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
0.775	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
0.125	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
0.101	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
0.354	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
0.326	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
0.320	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
0.570	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
0.267	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
0.163	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
0.232	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
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
0.456	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
0.384	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
0.187	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
0.429	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
0.619	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
0.381	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
0.526	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
0.474	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
0.451	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
0.549	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
0.226	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
0.774	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
0.540	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
0.460	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
0.200	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
0.800	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
0.238	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
0.762	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

Game			Extroversion		Facebook		mixi		Twitter		Google+		You Tube		Mobage		Ameba	
Important	Ordinary	Not	Outdoor	Indoor	Use	Not	Use	Not	Use	Not	Use	Not	Use	Not	Use	Not	Use	Not
0.594	0.590	0.592	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
0.406	0.410	0.408	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
0.512	0.456	0.472	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
0.419	0.464	0.453	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
0.068	0.079	0.074	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
0.297	0.259	0.262	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
0.494	0.517	0.525	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
0.040	0.045	0.042	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
0.044	0.049	0.046	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
0.055	0.062	0.059	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	0.068	0.065	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
0.390	0.429	0.424	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
0.610	0.571	0.576	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
0.424	0.245	0.284	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
0.298	0.379	0.416	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
0.165	0.223	0.204	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
0.113	0.154	0.096	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
0.795	0.768	0.789	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
0.114	0.129	0.118	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
0.091	0.103	0.093	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
0.386	0.358	0.365	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
0.311	0.331	0.324	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
0.302	0.312	0.311	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
0.596	0.561	0.583	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
0.259	0.271	0.265	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
0.145	0.168	0.152	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
1.000	0.000	0.000	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
0.000	1.000	0.000	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
0.000	0.000	1.000	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
0.317	0.270	0.333	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
0.364	0.239	0.240	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
0.319	0.491	0.427	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
0.498	0.595	0.699	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
0.502	0.405	0.301	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
0.553	0.532	0.508	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
0.447	0.468	0.492	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
0.423	0.450	0.470	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
0.577	0.550	0.530	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
0.226	0.245	0.208	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
0.774	0.755	0.792	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
0.583	0.532	0.527	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
0.417	0.468	0.473	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
0.332	0.201	0.127	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
0.668	0.799	0.873	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
0.261	0.254	0.212	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
0.739	0.746	0.788	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

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		
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
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
-0.065	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
-0.324	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
0.268	-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
0.056	-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
-0.173	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
0.095	-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
0.014	-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
0.029	-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
0.016	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
0.019	-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
		-0.114	-0.003	0.085	-0.014	0.019	0.023	-0.024	0.000	0.009	-0.017	-0.001	0.023
		0.114	0.003	-0.085	0.014	-0.019	-0.023	0.024	0.000	-0.009	0.017	0.001	-0.023
-0.121	-0.002				-0.024	-0.208	-0.189	-0.010	-0.098	-0.085	-0.004	-0.094	-0.221
-0.025	-0.033				-0.010	-0.066	-0.172	-0.033	-0.024	-0.041	-0.026	-0.031	-0.061
0.071	-0.010				-0.004	0.098	0.181	-0.005	0.047	0.039	0.008	0.032	0.079
0.076	0.046				0.039	0.177	0.180	0.048	0.075	0.087	0.022	0.092	0.203
-0.049	-0.027	0.055	0.008	-0.153				-0.029	-0.047	-0.046	-0.022	-0.048	-0.090
0.023	0.011	-0.038	0.006	0.059				0.012	0.021	0.021	0.008	0.023	0.045
0.027	0.016	-0.017	-0.014	0.094				0.017	0.025	0.025	0.014	0.026	0.046
-0.031	-0.005	0.042	-0.017	-0.069	-0.012	-0.036	-0.039				-0.010	-0.022	-0.039
0.014	0.007	-0.026	0.018	0.043	0.008	0.021	0.024				0.007	0.015	0.021
0.017	-0.002	-0.017	-0.001	0.026	0.004	0.015	0.015				0.003	0.007	0.018
-0.044	-0.022	0.072	-0.023	-0.083	-0.022	-0.079	-0.084	-0.023	-0.042	-0.042			
0.012	0.008	-0.017	0.012	0.019	0.008	0.021	0.022	0.008	0.014	0.012			
0.032	0.014	-0.055	0.011	0.064	0.014	0.058	0.062	0.015	0.029	0.030			
-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
-0.082	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
0.008	-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
-0.015	-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
0.015	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
0.031	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
-0.031	-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
0.029	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
-0.029	-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
0.083	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
-0.083	-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
-0.022	-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
0.022	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
0.084	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
-0.084	-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
0.089	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
-0.089	-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

Game			Extroversion		Facebook		mixi		Twitter		Google+		You Tube		Mobage		Ameba	
Important	Ordinary	Not	Outdoor	Indoor	Use	Not	Use	Not	Use	Not	Use	Not	Use	Not	Use	Not	Use	Not
0.002	-0.002	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
-0.002	0.002	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
0.035	-0.020	-0.005	-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
-0.029	0.016	0.005	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
-0.006	0.005	0.000	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
0.030	-0.008	-0.005	-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
-0.048	-0.025	-0.016	-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
0.000	0.005	0.002	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
0.002	0.008	0.004	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
0.006	0.013	0.010	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	0.007	0.004	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
-0.033	0.005	0.001	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
0.033	-0.005	-0.001	-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
0.056	-0.123	-0.083	-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
-0.110	-0.030	0.007	-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
-0.010	0.048	0.029	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
0.064	0.105	0.047	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	-0.056	-0.035	-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
0.012	0.027	0.016	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
0.018	0.029	0.019	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
0.001	-0.028	-0.020	-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
0.000	0.020	0.012	-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
-0.001	0.008	0.008	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
-0.018	-0.053	-0.031	-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
0.004	0.016	0.010	-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
0.014	0.037	0.021	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
0.006	-0.040	0.022			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
0.095	-0.030	-0.029			-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
-0.101	0.070	0.007			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
-0.136	-0.038	0.065	-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
0.136	0.038	-0.065	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
0.058	0.037	0.013	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
-0.058	-0.037	-0.013	-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
0.001	0.028	0.048	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
-0.001	-0.028	-0.048	-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
0.084	0.103	0.066	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
-0.084	-0.103	-0.066	-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	-0.030	-0.035	-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	0.030	0.035	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
0.216	0.086	0.011	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
-0.216	-0.086	-0.011	-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
0.112	0.105	0.063	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		
-0.112	-0.105	-0.063	-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		

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