Empirical Study on Privacy Concerns and the Acceptance of e-Money in Japan

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In contemporary society, many services are offered electronically. Electronically-available personal identification is used to identify the users of these services. e-Money, a potential medium that contains an eID, is widely used in Japan. Service providers encounter certain limitations both when collecting the attribute values related to such eIDs and when using them for analysis because of privacy concerns. A survey was conducted to clarify which of these trade-offs to consider before deploying e-Money privacy, economic value, benefit, or services. Regression analysis and conjoint analysis were performed. The results of the analyses of the questionnaires revealed that there was a preference for economic value, service, and privacy, in this order even though many people were anxious about privacy.

1. Introduction

Various Internet services exist that relate to social life and the economy. When users use these services, information such as purchase history and usage history may be accumulated by the service provider. The service provider uses this data to offer information that can improve convenience; for example, recommendations. On the other hand, a feeling of uneasiness of customers arises when user data is accumulated. If this uneasiness is not eliminated in the future, the use of services that profit from such information may not advance, which in turn will hinder the creation of further new services and the development of a networked society. By clarifying the attitudes and actions concerning users’ security and privacy, the Internet service environment can provide relief to users, and enhance the use of Internet services.

Privacy problems arise when information belonging to individuals (personal information) is used or provided to external entities (leaked) in an undesired or unexpected way. The loss of privacy leads to the violation of three rights, namely, “seclusion,” the right to be invisible (not recognized) to others; “solitude,” the right to be alone; and “self-determination,” the right to control one’s personal information1,2).

In Japan, the situation of privacy protection from the legal perspective can be described as follows. In a leading case named “Utage no ato” [Tokyo District Court Judgment (Sep. 28, 1964)], privacy is defined as “legal assurance or right for private life not to be published unreasonably.” It deals with facts that may be recognized as private, those that ordinary people do not want to disclose, and those that are unknown to ordinary people. In other words, privacy concerns depend on an individual’s sensibility. The “Protection of Personal Information Act” was enforced in 2005. Article 1 of this Act prescribes duties to be observed by entities that handle personal information. Legally, personal data is usually defined as “data that relates to a living person who can be identified from that data.” The data-protection law stipulates that a “data controller” should obey certain principles such as fairness, lawfulness, and adequateness. Therefore this Act covers the protection of some privacy concerns. To comply with this law, various enterprises have imposed strict rules concerning personal information. Therefore, Japanese businesses encounter difficulties when dealing with the appropriate use of personal information. In “Secure Japan 2008,” planned by the National Information Security Center, it is stated that enterprises are exhausted due to the implementation of security measures3).

1.1 Recognition by Subject Entity

Another aspect of privacy concerns is the recognition of risks of personal data by the subject entity. This appears in an investigation of uneasiness in the “White Paper on Telecommunications” by the Ministry of Internal Affairs and Communications, which deals with consumers’ anxiety regarding Internet privacy. It is reported that, in terms of Internet usage, “There is uneasiness in the protection of privacy information,” and that this is a top-ranking concern (71.2%)4). In this situation, it is essential to eliminate the privacy concerns of individuals, thereby enabling them to agree to the use of personal information. It is also very impor-
tant for users and the service providers to trust each other by making clear the status of individual’s perception and acceptance of risks on privacy.

1.2 e-Money in Japan
In Japan, e-Money, which is contained in electronic media and act like purses, is widespread. The spread of electronic money has accelerated, and the total number of e-Money cards now exceeds 130 million. This indicates ownership of more than one card per person. An increase of approximately 20% growth rate continues, compared to the previous year. These cards are frequently used not only for trains, but also in convenience stores, restaurants, bookstores, and grocery stores. Because of this wide usage, many companies intend to use cardholders’ information to develop new businesses. Thus, e-Money helps service providers actively generate business by using the personal information that is provided by users.

2. Related Studies
Many studies have been performed related to various aspects of privacy, including Privacy Enhancement Technology, privacy from legal or economic perspectives, or sociology, as listed in documents from a prime life project. Privacy protection is also described in research documents from the viewpoint of recognition by the individual. There are studies such as Ref. 10), which conducted a survey across four countries including Japan, and revealed that, compared to people from other countries, Japanese people consider it more risky to disclose their individual information.

The privacy concern of individuals with regard to direct marketing has also been investigated. In return for the reporting of financial news, the consumer may willingly offer demographic data. There are situations in which an individual may gladly offer information if it saves time. Another survey has indicated that the media flair surrounding the Internet has a negative influence on the recognition of risks in online purchases and that the recognition of privacy influences online transactions.

The EU conducted an interesting survey in terms of the user’s recognition of using new emerging services such as Social Networking Service (SNS). This survey discusses four paradoxes: the privacy paradox, the control paradox, the responsibility paradox, and the awareness paradox. It is noted that paradoxes exist in cases in which individuals must select a service despite privacy concerns. The individuals solve the contradiction themselves and decide their preferences to privacy and other factors. This situation must be clear for the efficient promotion of the use of personal data. To solve this situation, two main standpoints can be outlined: one focusing on personal interest and the other on economic interest.

Studies on privacy and economics have been conducted from the perspective of individual behavior. Research in this area, called privacy economics, has been performed. Reference 16) reveals the way in which people recognize risks by using the theories of time inconsistency, hyperbolic discounting, and self-control bias. In a case related to eID, the research investigated of the relationship between the level of authentication technology and economic value. This research is remarkable because of its use of conjoint analysis as a survey technique. There is another study which deploys conjoint analysis. In this research, people are classified into three categories: privacy guardians, information sellers, and convenience seekers. Another study surveyed the attitudes of Internet users in which people disclose their own personal information in a trade-off against economic value.

Unfortunately, a research that scientifically conducts an investigative analysis on the privacy concerns of individuals in the Japanese online environment does not exist, as far as we know. This research has been avoided because media such as newspapers have been strongly against it as an invasion of privacy, for example, in 2000, a so-called basic resident register code of IDs to citizens was introduced which was targeted by the media. It is necessary to recognize privacy concerns in order to investigate how it applies in Japan, since this phenomenon varies from to country.

3. Survey Design
A questionnaire was conducted to clarify individual concerns and preferences regarding privacy and other factors. This chapter describes the goal of the research, the methodology adopted, concrete questionnaires, and the scenario.

3.1 The Goal of the Research
Based on the aforementioned analysis involving e-Money and the related stud-
ies, the goal of this research is to study the relationship between privacy or secur-
ity and the user’s behavior with respect to e-service. In order to take appropriate
security measures, enterprises should have the knowledge of an individual’s secu-
rity or privacy concerns as well as that of factors that can help eliminate these
cconcerns. It would be helpful for a service provider in Japan to make sugges-
tions to promote e-services through a statistical survey of users’ recognition of
adopters’ characteristics, the recognition of risks, and the factors affecting such
recognitions.

We aim to answer the following questions in this paper:
a) What are Japanese people’s concerns about privacy?
b) Which factors affect the use of e-Money that also request personal infor-
mation? Some factors include the respondents’ potential risks, benefit, and
cost, as introduced by existing studies.
c) What is the order of preference of economic value, service, and privacy in
terms of using e-Money? How is this preference related to the level of privacy
concerns?

3.2 Methodology

3.2.1 Survey Outline

An Internet survey is considered to be appropriate for investigating the recog-
nition and acceptance of the risks of privacy. This is because the target samples
are Internet users, who can easily understand the environment of the e-Money
scenario. For this reason, samples from the survey are not generalized. These
questionnaires combine a portion of the IPTS (Institute for Prospective Tech-
nology Studies) questionnaires, with an original scenario for e-Money that we
created, for another purpose cross-cultural experiments.

3.2.2 Conjoint Analysis

Because it is assumed that individuals decide about their privacy concerns by
weighting against other factors, we believe that conjoint analysis based on ex-
perimental design was appropriate. This method involves the presentation of a
card defined by an orthogonal table to the respondent, and the selection of a card
that is suitable, in order of preference. It is possible to design a combination of
attributes using the orthogonal table more efficiently than by compiling all com-
binations of all attributes. The user decides the order of each card, and each card
is given a preference score. This score is assumed to be a whole utility. A whole
utility is set as a dependent variable and the influence level (the coefficient) of
each attribute is measured by using the regression analysis. A “part-worth utility
value” can be calculated from this coefficient. Eventually, a relative importance
and preference-order are extracted from the part-worth utility.

Conjoint analysis also has a feature that allows it to cater to the preference
order among items, by comparing against a survey that respectively registers the
level of the individual items of preference. Many people tend to prefer that the
measures of security and privacy protection are set at the highest level. Therefore,
when it is necessary to balance out the level of realistic measures, it is essential to
declare the order of preference. Conjoint analysis, which can decide the order of
preference among items, is a technique that is appropriate for the present study.

3.3 Survey on an Individual’s Recognition of the Risks to Privacy

To understand how an individual recognizes the risks to privacy on the Internet,
general questionnaires were designed as follows.

3.3.1 General Privacy Concerns

This question concerns the recognition of the way in which personal information
is treated, for ensuring the individual understands the risks related to privacy
online.

Q1: How concerned are you about the following risks in relation to your personal
information?
The risks are indicated in eleven sentences; the scale ranges from Very concerned
(1) to Not at all concerned (5). The sentences and results are shown in Table 3.

3.4 Survey Based on e-Money Scenario

Next, a survey based on a scenario that sets up an environment for using e-
Money was conducted. Electronic money is defined as the data used for the
settlement of a bill or a means of payment for things with monetary value. Here
the user can enjoy the merits of being able to complete transactions that usually
involve small settlement amounts within no time. By using e-Money instead of
cash, the user can enjoy the above-mentioned advantage while remaining anony-
mous. On the other hand, if the user provides an address, full name, and his/her
personal information to the public transportation provider, he/she can accept
security services and/or gain economic benefits (e.g., a price reduction). In such
situations, questions regarding the risks, benefits, and characteristics of e-Money, and the attitude toward the use of e-Money are asked.

3.4.1 e-Money Scenario
Figure 1 describes the e-Money Scenario, which assumes the situation of a public transportation card that is actually used in Japan and can be easily imagined by the respondents.

3.4.2 Potential Risks, Characteristics of Scenario, Benefits of the Service, and Intention to Adopt
a) Scenario Adoption Enablers
Q2: What would make the service attractive?
The answer is selected from Yes/No/Don’t know for each of six statements. These statements and the results are presented in Table 4.

b) Characteristics of the Service
Q3: To what extent do you agree with the following description of the service?
The answer is selected from a scale ranging from Strongly Disagree (1) to Strongly Agree (7) for each of seven statements. These statements and the results are presented in Table 5.

c) Potential Risks
Q4: What are the potential risks that you would want to mention to Daisuke?
The answer is selected from a scale ranging from Strongly Disagree (1) to Strongly Agree (7) for each of nine statements. These statements and the results are presented in Table 6.

d) Benefits of the Service
Q5: What are the potential benefits that you would want to mention to a friend?
The answer is selected from Yes/No/Don’t know for each of seven statements. These statements and the results are presented in Table 7.

e) Intention to Adopt
Q6: Overall, do you think the use of the card is a good/bad idea, a wise/foolish idea, attractive/non attractive, or like/dislike?
The answer is selected from a scale of five levels for each sentence.

3.4.3 Profile Cards for Conjoint Analysis
Respondents are asked to select their preferred order of cards. Table 1 shows the attributes and levels used in the profile cards.

It can be seen that privacy attributes are divided into three levels: anonymous, security consent, and marketing use. Anonymous implies that the subject entity does not want to reveal any personal information. Security consent implies that the subject entity provides personal information only for the purpose of security. Marketing use implies that the subject entity provides personal information for the purpose of marketing use. Service is broken down into three levels: discount (1%), insurance, and none. Fee is an economic parameter with 3 choices: incentive, free, and 105 yen/month. Nine profiles are defined in Fig. 2 based on a $3 \times 3$ orthogonal table.

4. Survey Results
The survey was conducted online by NTT Resonant Inc. from April 6 to April 8, 2010. The survey was entitled “Survey about e-Money.” The total number of
valid responses was 114 samples that comprised of 62 males and 52 females. The distribution of age range is presented in Table 2.

The survey indicated that approximately two thirds of the respondents (67%) have used at least one type of e-Money, while it was 29.6% in the public survey, “Telecommunication Usage Survey in Japan” conducted by Ministry of Internal Affairs and Communication. For the period in which e-Money is used, the majority (78%) of the respondents had been using e-Money for more than one year. Moreover, 41% of the respondents had used e-Money for one to three years, while 25% had used it for three to five years.

4.1 Results Based on Scenario

The results from the survey on general privacy and other factors based on the given scenario are described in the following sections. Factor analysis was executed in order to use factor loading for the multiple regression analysis in Section 4.1.7. All factor analyses were executed using the Principal Component Method with Squared Multiple Correlation (SMC) and Varimax rotation.

### 4.1.1 General Privacy Concern

Respondents are significantly concerned about the numerous possible consequences in privacy due to the spread of personal data. They are mostly concerned about stealth use and the improper sharing of their personal information. However, they are less concerned about their reputation being damaged by the leak of online personal information. The survey confirms this skepticism in regards to the safety of the Internet and privacy. Most people are “concerned” or “very concerned” about threats to their privacy online. The result of the factor analysis is also presented in Table 3. There are two factors extracted, called “Loss of Control” and “Identity Damage.” The value of Cronbach’s alpha is 0.926, which
implies that the questions have internal consistency.

4.1.2 Scenario Adoption Enablers

In terms of the service adoption enablers in the scenario (see Table 4), a range of factors may encourage respondents. These enablers should have a central position in any initiative to try to promote the consumption of e-services. It is remarkable that people lay great emphasis on whether the service preserves their privacy in the scenario (76%). Free service and the ease of subscription are also attractive in the scenario. In the scenario, a friend’s recommendation is less influential in terms of service adoption.

4.1.3 Characteristics of the Service

Concerning e-service characteristics, there are relatively negative views regarding trust, system reliability, fit with lifestyle, and apparent benefits (see Table 5). Three factors are extracted, called “trust”, “ease of use”, and “preference”.

4.1.4 Potential Risks

The recognition of risks in the use of the scenario is surveyed as potential risks. Because the mean value exceeds 5.0, the recognition of risks is said to be high (see Table 6). Two factors are extracted, called “explicit risk” and “implicit risk”. “Explicit risk” implies that the risk will directly influence the respondent; the other risk does not result in a direct influence.

4.1.5 Benefits of the Service

Concerning costs or benefits, most people judge the services described in the scenario as relatively easy to use, secure, and, to a much lesser degree, as a means to save money (see Table 7). There are a high percentage of “I don’t know” answers (30 to 56%), which possibly implies that people need to witness and try the system to be able to answer. The results from the factor analysis indicates

<table>
<thead>
<tr>
<th>Adoption enablers</th>
<th>Yes</th>
<th>30%</th>
<th>68%</th>
<th>62%</th>
<th>55%</th>
<th>67%</th>
<th>76%</th>
</tr>
</thead>
<tbody>
<tr>
<td>If other friends strongly recommend he/she use it</td>
<td>Yes</td>
<td>30%</td>
<td>68%</td>
<td>62%</td>
<td>55%</td>
<td>67%</td>
<td>76%</td>
</tr>
<tr>
<td>If the service is free</td>
<td>Yes</td>
<td>30%</td>
<td>68%</td>
<td>62%</td>
<td>55%</td>
<td>67%</td>
<td>76%</td>
</tr>
<tr>
<td>If one can choose the personal data he/she wants to give</td>
<td>Yes</td>
<td>30%</td>
<td>68%</td>
<td>62%</td>
<td>55%</td>
<td>67%</td>
<td>76%</td>
</tr>
<tr>
<td>If the service saves time</td>
<td>Yes</td>
<td>30%</td>
<td>68%</td>
<td>62%</td>
<td>55%</td>
<td>67%</td>
<td>76%</td>
</tr>
<tr>
<td>If it is very easy to subscribe</td>
<td>Yes</td>
<td>30%</td>
<td>68%</td>
<td>62%</td>
<td>55%</td>
<td>67%</td>
<td>76%</td>
</tr>
<tr>
<td>If privacy is fully preserved</td>
<td>Yes</td>
<td>30%</td>
<td>68%</td>
<td>62%</td>
<td>55%</td>
<td>67%</td>
<td>76%</td>
</tr>
</tbody>
</table>

Table 4 e-Service adoption enablers by scenario.

<table>
<thead>
<tr>
<th>To what extent do you agree with the following description of the service?</th>
<th>Strongly Agree</th>
<th>Average</th>
<th>Trust</th>
<th>Ease of Use</th>
<th>Preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning to use such service would be easy for me</td>
<td>0.184</td>
<td>4.54</td>
<td>0.091</td>
<td>0.937</td>
<td>0.115</td>
</tr>
<tr>
<td>I would find this service easy to use</td>
<td>0.175</td>
<td>4.54</td>
<td>0.261</td>
<td>0.911</td>
<td>0.072</td>
</tr>
<tr>
<td>I would trust the system</td>
<td>0.088</td>
<td>4.54</td>
<td>0.839</td>
<td>0.203</td>
<td>0.271</td>
</tr>
<tr>
<td>I think the service would be reliable</td>
<td>0.105</td>
<td>4.55</td>
<td>0.770</td>
<td>0.140</td>
<td>0.464</td>
</tr>
<tr>
<td>I think using this system would fit well with the way which prevent third party’s abuse</td>
<td>0.088</td>
<td>4.53</td>
<td>0.618</td>
<td>0.150</td>
<td>0.221</td>
</tr>
<tr>
<td>Using this system would fit into my lifestyle</td>
<td>0.053</td>
<td>4.53</td>
<td>0.355</td>
<td>0.093</td>
<td>0.817</td>
</tr>
<tr>
<td>The benefits of using this system are apparent to me</td>
<td>0.105</td>
<td>4.52</td>
<td>0.567</td>
<td>0.136</td>
<td>0.641</td>
</tr>
</tbody>
</table>

Table 5 Characteristics of the service.

<table>
<thead>
<tr>
<th>What are the potential risks you would mention to Daisuke?</th>
<th>Strong Agree, Somewhat Agree</th>
<th>Average</th>
<th>Explicit</th>
<th>Implicit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your activities may be monitored</td>
<td>39</td>
<td>5.096</td>
<td>0.418</td>
<td>0.740</td>
</tr>
<tr>
<td>Information may be collected that could be used against you in future life</td>
<td>39</td>
<td>5.097</td>
<td>0.549</td>
<td>0.764</td>
</tr>
<tr>
<td>Someone may hack into the system and steal your personal information</td>
<td>42</td>
<td>5.107</td>
<td>0.606</td>
<td>0.680</td>
</tr>
<tr>
<td>You may get unauthorized changes on credit card</td>
<td>41</td>
<td>5.117</td>
<td>0.780</td>
<td>0.390</td>
</tr>
<tr>
<td>Someone may use your identity instead of you</td>
<td>36</td>
<td>5.100</td>
<td>0.821</td>
<td>0.386</td>
</tr>
<tr>
<td>You will receive unwanted commercial offers</td>
<td>55</td>
<td>5.110</td>
<td>0.338</td>
<td>0.775</td>
</tr>
<tr>
<td>Your privacy may be at risk: resulting in embarrassment</td>
<td>43</td>
<td>5.093</td>
<td>0.667</td>
<td>0.656</td>
</tr>
<tr>
<td>Your privacy may be at risk: resulting in serious personal consequences</td>
<td>39</td>
<td>5.093</td>
<td>0.748</td>
<td>0.517</td>
</tr>
<tr>
<td>Your personal data will be shared with unauthorized persons</td>
<td>37</td>
<td>5.094</td>
<td>0.719</td>
<td>0.581</td>
</tr>
</tbody>
</table>

Table 6 Potential risks.
that three factors are extracted, called, “secure”, “benefit”, and “easiness”.

### 4.1.6 Intent to Adopt and Attitude

Finally, it was asked whether the respondent had a positive attitude, or an intent to adopt the scenario. The mean values, which are from 2.825 to 3.009 indicate a positive attitude toward adopting the scenario (see Table 8).

### 4.1.7 Effect of Factors on the Intent to Adopt and the Attitude

All three variables (risk, benefit, and characteristics) could constitute a complete picture for motivating e-service adoption. Multiple regression analysis was executed, “intent to adopt” is set as a dependent variable, and “benefit”, “characteristics of service”, and “potential risk” are set as independent variables (see Table 9).

### 4.2 Result of Conjoint Analysis

Table 10 presents the results of the conjoint analysis based on the profile cards.
Table 10 Part-worth and relative importance.

<table>
<thead>
<tr>
<th>Levels</th>
<th>Attributes</th>
<th>Part-Worth</th>
<th>Relative Importance (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Weak</td>
<td>Strong</td>
</tr>
<tr>
<td>Privacy</td>
<td>anonymity</td>
<td>0.486</td>
<td>0.211</td>
</tr>
<tr>
<td></td>
<td>security purpose consent</td>
<td>0.194</td>
<td>0.573</td>
</tr>
<tr>
<td></td>
<td>marketing agreement</td>
<td>-0.672</td>
<td>-0.781</td>
</tr>
<tr>
<td>Service</td>
<td>discount service (%)</td>
<td>0.443</td>
<td>0.903</td>
</tr>
<tr>
<td></td>
<td>insurance service</td>
<td>0.155</td>
<td>0.184</td>
</tr>
<tr>
<td></td>
<td>no service</td>
<td>-0.598</td>
<td>-0.567</td>
</tr>
<tr>
<td>Fee</td>
<td>105 yen incentive</td>
<td>1.201</td>
<td>0.825</td>
</tr>
<tr>
<td></td>
<td>free</td>
<td>1.006</td>
<td>1.059</td>
</tr>
<tr>
<td></td>
<td>105 yen/month</td>
<td>-2.207</td>
<td>-1.883</td>
</tr>
</tbody>
</table>

mentioned in Section 3.3.3. A decision coefficient indicates a value exceeding 0.9995, which is extremely high and sufficient. There are two groups: strong-risk perception and weak-risk perception, which are divided according to the mean value of the general privacy concerns stated in Section 4.1.1, Table 3.

The “part-worth” represents the level of utility for the respondents. For all samples, the monthly charge is considered to be an element that discourages its use, according to the value of part-worth in Table 10. In addition, users show a strong opposition to the use of their personal information for marketing purposes. On the other hand, it is indicated that “incentive”, “fee of charge”, and “discount service” are positive for evaluating its utility. Users do not prefer to pay usage charges every month. An incentive of 105 yen and free are both positive effects to the utility. Respondents evaluate the disclosure of their personal information for marketing use as a negative utility. However, they will reveal their personal information if it is to be used for security purposes. No service on e-Money will have a negative effect on utility for the respondents.

Compared to the differential of risk extent, anonymity has a greater effect on utility for a weak-risk group than that for a strong-risk group. On the other hand, respondents in a strong group show a higher positive effect for “security purpose consent” than a weak group.

The relative importance, which represents the level of the respondents’ preferences, is 58.4% for “fee”, 21.1% for “service”, and 20.5% for “privacy” (see Table 10). This result is different from that of the scenario adoption enablers described in Section 4.2.1, which states that the most important aspect is “privacy”. Compared with risk extent, the orders of relative importance are the same, regardless of privacy concerns. The following shows a comparison of the strong group against the weak group:

- A strong group places a higher importance on “privacy” than a weak group.
- A weak group places a higher importance on “fee” than a strong group.

5. Findings

5.1 Factors Affecting the Use of e-Money and Preference Order

Findings from the result of the general questionnaires on the recognition of privacy risk are as follows. It was indicated that there were two main factors concerning privacy: the loss of control, and the potential damage to one’s identity. In particular, the respondents were anxious about the damage to their identity, because it relates to a loss of control. Moreover, it was shown that most respondents indicated that privacy was the most important factor in using the system. In addition, the “privacy is fully preserved” answer was most preferred in response to the question regarding the scenario of using e-Money as protection.

The analysis of the factors that influence the intent to adopt indicates the benefit has a more positive effect than risk perception. It is also considered that risk is evaluated less than it has been in the past. In other words, it is possible to say that the benefit dominates risks in certain cases.

The adoption enablers’ order of preference was privacy, price, and easiness; however, in conjoint analysis, the order was price, service, and privacy. This indicates that the individual has determined a trade-off between price and privacy. The analysis provides interesting results in terms of the individual’s decision of preference among privacy, economic value, and services. Comparing the extent of risk perception, the strong-risk group evaluates the utility of security consent more than anonymity; for the weak group, it is the opposite. This implies that strong-risk groups understand risks more appropriately and need a logical way to protect their personal information than weak groups, which prefer anonymity. As for preference order, it is the same order for risk perception differences. However, the weak group evaluates economic value more than the strong group.
A limitation of this survey is that it is not necessarily sufficient because the sample number is 114 and the samples are not generalized. It is not claimed that the result of this survey covers average citizens in Japan. We intend to conduct the survey on a larger scale to further generalized it. It is also considered that the design of the conjoint card also needs a more detailed evaluation. In conjoint cards, similar economic parameters exist in terms of service and fee level, and it might suffer from evaluating them in order of preference. It is also expected that the survey will be conducted in situations other than for e-Money.

5.2 Implication on Policy Makers and Service Providers
As mentioned, Japanese enterprises are too exhausted to comply with the personal information protection law. The Act uniformly decides information and disregards the types of services and individuals’ cognition. To promote business by using personal information, it is necessary for policy makers to consider individuals’ concerns about the perception of privacy risks and acceptance.

This study proves that individuals are willing to provide their personal information, and that they recognize the benefits and economic value, even if they are anxious with respect to privacy. It is preferable that the service provider presents factors that indicate benefits for promoting the adoption of their services.

6. Conclusion
This study investigated the way in which individuals perceive the risks and advantages of the use of private information online, so that service providers can optimally utilize individual information. In the investigation, most respondents were anxious about privacy. According to the analysis, individuals evaluate their trade-offs in terms of benefits and cost when deciding whether to adopt a service. Next, the order of the preferences of privacy, service, and economic value become clearer enough the use of conjoint analysis. As a result, the highest level of importance was indicated in terms of the provided economic value, service, and privacy.

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