WILLINGNESS TO PAY TO BE FORGOTTEN ON INTERNET

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Abstract – This study aims to investigate public perception on the right to be forgotten, and to estimate the willingness to pay for it based on the stated preference data. The right to be forgotten means the right of the people to request information and communication providers to delete personal information related to them on Internet. According to the survey results, about 23% of Koreans have heard of the right to be forgotten and individual WTP for it is calculated about 1218 KRW per month on average.

Index Terms - Right to be Forgotten, Privacy, Willingness to Pay, Contingent Valuation Method

I. INTRODUCTION

In these days, the big data analysis is activated, especially on the collection of social big data generated by individuals through social network services (SNS) in everyday life. Public interest in protection of personal information, invasion of privacy or consumer data privacy is growing. There is a social problem of disclosure of the personal privacy to an unspecified number of people, as well as the privacy violation for famous entertainers and public officials. Therefore, the right to control the disclosure of personal information is necessary.

The right to be forgotten means the right of the people to request information and communication providers to delete personal information related to them on Internet [1]. According to the [2], the European privacy requests for search removals on Google are about 231,358 in March 2015. As the number of people asking for deletion of embarrassing or negative articles left in the past is increasing, discussions are underway on the introduction of the right to be forgotten also in South Korea.

The European Union established the Information Protection Act, which stipulated the world's first right to be forgotten in January 2012. Actually, the 1995 Data Production Directive already includes the principle underpinning the right to be forgotten. According to the Article 12, a person can ask for personal data to be deleted once that data is no long necessary [3].

The right to be forgotten became a social issue in May 2014, when the European Court of Justice ruled that it had the right to be forgotten. In 2010, Mario Gonzalez of Spain filed a lawsuit against Google on the portal site, saying newspaper articles about his own seized house are still being auctioned through google search. After a long fight, the European Court of Justice has the right to be forgotten acknowledged in 2014.

The Korea Communications Commission announced in March 2016 that it will request permission to search for posts, pictures and videos uploaded on the Internet in order to guarantee the right to be forgotten. The "Guidelines for Requesting Access Exclusion of Self-Created Internet Contents" has been prepared and implemented since June 2016.The core of these guidelines is the access exclusion, that is, search can be excluded if you prove that you wrote by yourself only in your posts. By the end of September 2016, more than 840 people claimed their right to be forgotten against 15 ICT providers such as “Naver” and “Cacao.”About 570 of them have actually been forgotten, that is, recovered their right to be forgotten.

Major issues of the right to be forgotten are as follows. Since the "right to know" is as important as the "right to be forgotten," the current guideline limits the scope of access exclusion to self-created contents. This has raised controversy over the effectiveness of the guidelines. The controversy over the right to be forgotten and its legalization is summarized in three broad categories: (i) the difficulty in the process of proving your own posts, (ii) the possibility to exclude the access of the information generated by others, and (iii) the restrictions on the right to know people such as criminal, sex offender, etc.

If the right to be forgotten is enacted, the victim can find the right to protect his/her personal information from unwanted disclosure. However, for the legalization of the right to be forgotten, social consensus needs to be drawn up and a lot of social cost may be required. Hence, the purpose of this research is to examine social perception towards the right to be forgotten based on public surveys, and to estimate the willingness to pay to ask for the right to be forgotten. The results of this study are expected to provide useful information for reference to various social and policy debates related to the right to be forgotten about the current rights guidelines in South Korea.

II. RESULTS OF PUBLIC SURVEY

We conducted public survey for total 1,008 respondents aged of 20-69, using nationwide stratified sampling and face-to-face interview in January 2017. Table 1 shows the socio-demographics of respondents. First question of the survey is about the usage of Internet services through PC or mobile phone. About 95% of Koreans are currently using Internet services

(n=957) and only 5% of respondents did not use Internet services.In particular, all respondents aged 30 to 39 reported using Internet services.About half of respondents use the Internet for an average of one hour to three hours a day.

Table 1. Demographics of respondents

Characteristics		Sample	%	Characteristics		Sample	%
Gender	male	513	50.9	Education level	High school	505	50.1
	female	495	49.1		College	503	49.9
Age	20-29	187	18.6	Monthly household income (thousand KRW)	under 2,990	209	20.7
	30-39	209	20.7		3,000-3,990	187	18.6
	40-49	237	23.5		4,000-4,990	239	23.7
	50-59	229	22.7		5,000-6,990	275	27.3
	60-69	146	14.5		Over 7,000	98	9.7
Job	Self-employed	252	25.0	Number of family	One	59	5.9
	Blue-collar	305	30.3		Two	179	1.8
	White-collar	228	22.6		Three	238	23.6
	Etc.	223	22.1		Over four	532	52.7

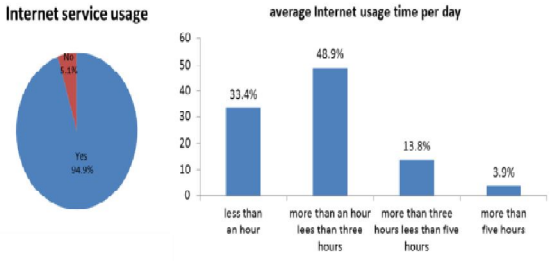
Second question of the survey is the usage of Social Network Services such as Facebook, Twitter, Instagram, etc. Of those using Internet services, 53% is using Social Network Services (n=506) and 80% of SNS users have uploaded their own posts including personal information (n=406). When uploading SNS posts, 62.6% of people have limited information to friends. However, of the 406 people, 15.5% disclose all SNS information.

According to the third question, 36.5% of Internet users answered that they wanted to delete information about themselves on the Internet. It means their wish to be forgotten on Internet. Next, we investigate their thought about the current level of social disclosure. About the level of current social information disclosure, more than 67% of the respondents thought that it was open to the public.And only 26% answered that it was appropriate. Fig. 1 shows the basic results of this public survey.

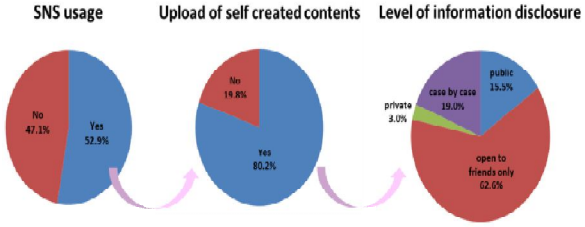
Fourth question of the surveyis about the experience of personal information leakage. Actually, 12.7% of the total respondents were victims of personal information leakage (n=128). However, unfortunately, 83% of respondents did not anything when their personal information was leaked. Only 9.4% of the respondents had a request for legal investigation or punishment.Among the various types of private information, Koreans perceive the most serious when personal information (ex:social registration number, name) and financial information (ex: password, credit card, bank account) are leaked.

Finally, we asked about awareness of the right to be forgotten. Currently, about 23% of Koreans have heard of the right to be forgotten. For the question “Are you willing to pay an additional service fee for the right to be forgotten?”only 22.8% were willing to pay additional service fees to claim the right to forget.Very surprisingly, we can find that awareness and willingness to pay for the right were exactly the same.Average monthly telecommunication service spending of respondents is around $ 60, for reference. The interest thing is that awareness of the right to be forgotten is different according to the demographics. Table 2 shows that men are more aware of the right to be forgotten than women. And the older they are and the higher education level, the higher their awareness. It is also characteristic that the white collar group has the highest recognition.

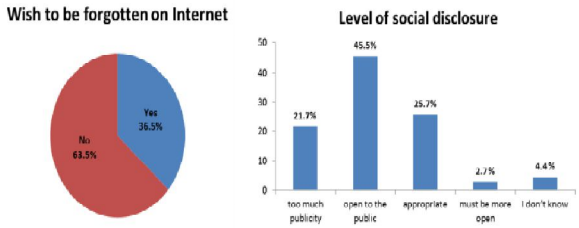
(a) Usage of Internet Services



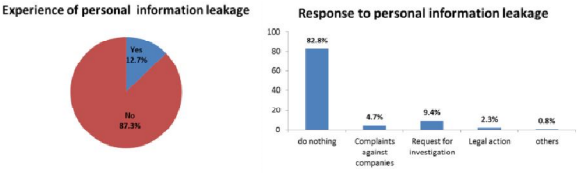
(b) Usage of Social Network Services



(c) Current Level of Information Disclosure



(d) Personal Information Leakage



(e) Right to be Forgotten

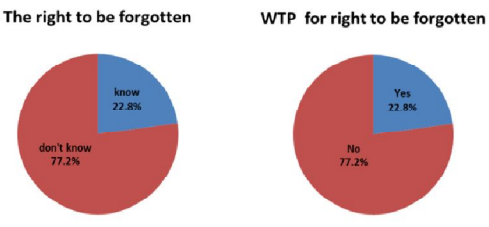


Figure 1. Basic Results of the Survey

Table 2.Awareness of the Right to be Forgotten

Characteristics		"know"	% in group	Characteristics		"know"	% in group
Gender	male	130	25.3	Education level	~ High school	65	12.9
	female	100	20.2		College~	165	32.8
Age	20-29	73	39.0	Monthly household income (thousand KRW)	under 2,990	39	16.7
	30-39	63	30.1		3,000-3,990	45	24.1
	40-49	48	20.3		4,000-4,990	54	22.5
	50-59	33	14.4		5,000-6,990	61	22.2
	60-69	13	8.9		Over 7,000	31	31.6
Job	Self-employed	55	21.8	Number of family	One	17	28.8
	Blue-collar	57	18.7		Two	22	12.3
	White-collar	73	32.0		Three	57	23.9
	Etc.	45	20.2		Over four	134	25.2

III. ESTIMATION RESULTS OF WILLINGNESS TO PAY

A. Methodology

Based on these survey data, we want to estimate the willingness to pay for the right to be forgotten quantitatively. The economic value of the right to be forgotten can be measured by estimating people's willingness to pay for it.For this purpose, a contingent valuation method (CVM) can be applied with stated preference data[4].

A contingent valuation method is a kind of analysis method based on consumer's stated preference data without revealed preference data in the real market [5]. In other words, some hypothetical situations are set up in a specially designed questionnaire, and all respondents express their preference for non-commodity under given conditions. This method has an advantage as it can be applied to various types of non-commodity. Also, the estimated results are theoretically precise from a viewpoint of welfare economics.

There are also various econometric models to measure consumers' WTP in a contingent valuation method, and the assumption on them can affect the estimated results significantly. In addition, the CVM survey can be conducted by several types such as bidding game, open ended question, payment card, and dichotomous choice. The most common models are single-bounded dichotomous choice (SBDC) model and double-bounded dichotomous choice (DBDC) model[6]. However, this study uses the spike model to consider the willingness to pay of zero [7], because of the limitation of econometric estimation.

B. Estimation Results

Table 3 shows the estimation results of spike model with a logistic distribution $G(A)=1/\left[1+\exp(a-bA)\right]$, accounting for many zero-WTP answers. In other words, the estimated coefficients "a" and "b" are the parameters of the logistic distribution, and variable "A" means the initial value of CVM survey. In this case, the average WTP can be calculated as $(1/b)\ln\left[1+\exp(a)\right]$.

As a result, a respondent in South Korea is willing to pay for additional telecommunication service fee by 1218 KRW per month, to delete his/her personal information on the Internet and to recover the right to be forgotten. The estimated WTP is about 1.8 percent of average monthly telecommunication service fee. The WTP value can be understood as the economic value of the right to be forgotten which is granted by individual in South Korea.

Parameter	Spike model		Mean WTP
	Estimate	p-value	
a	-1.2410 **	0.0000	1218.4 ** KRW / month
b	0.0002 **	0.0000	
**, *: Statistically significant at the 99% and 95% level			

Table 3. Estimation Results of WTP

CONCLUSION

This study investigates social perception towards the right to be forgotten, and measures the willingness to pay delete personal information on the Internet. Currently, the awareness of the right to be forgotten is not high and willingness to pay for it is also low in South Korea. However, the perception of the right to be forgotten will be improved, because of high level of internet usages and increasing number of problems caused by personal information leakage.

From the estimation results through CVMs, individuals in South Korea are willing to pay about 1218 KRW per month on average, to ask for the right to be forgotten. In this research, we assume that this WTP is charged by the additional telecommunication service fee. By estimating the WTP of the socially controversial right to be forgotten, we will be able to compare it to the various results which have measured in the previous literature, especially for the personal information.

In the meantime, many studies on consumer privacy have been carried out, but most of them have a lot of importance in legal research and investigation of privacy invasion. The attempt to approach the right to be forgotten in terms of economic value besides the legal and social issues is not enough, so results of this study are expected to provide significant information that can be referenced in various social and policy debates. Especially, as the number of legal cases involving personal information infringement is increasing, and the quantitative data on damages compensation are absolutely lacking, the WTP value for the right to be forgotten may provide useful information.

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