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How Much Do E-mail Users Feel Annoying With Spam Mail? : Measuring The Inconvenience Costs Of Spam Using Stated Preference Data

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가 2003 300 ,
가

가

, 가

가

가

3.373

As of 2003, thirty billion E-mails per day were sent over the Internet and also predicted that more than half of them are spam mails. Therefore, recently, spam mail becomes a global issue and the debates on toolkit for controlling spam are active. When spammers send out their e-mails, they never consider the E-mail users' disutility from receiving these messages, thus, spammers impose negative externalities on the E-mail users. As the results, there always exist excessive E-mails above social optimum. To solve the spam problem and evaluate which spam control measures will be appropriate, it is necessary to know about individuals' disutility. In this study we estimate E-mail users' overall inconvenience costs created by spam mails based on stated preference data using conjoint analysis. We hope our research shed light on reducing externalities of spam and suggest useful information to policy makers, network providers and E-mail service providers.

Keywords: spam mail, negative externality, inconvenience costs, conjoint analysis

I. (online) 가 ,

1990
2003 6 7
5 6 (ITU, 2003). 가 가 .⁴⁾

가 .¹⁾ 가

가 (零) 가
가 가 .⁵⁾

(spam mail)

가 (Unsolicited Commercial E-mail, UCE) .²⁾ (e-mail) (killer application) 가 . Shiman(1996)

가 /

2003 300 , 2006 600 () 가
가 (OECD, 2004). 가

phishing³⁾ ,

1) Jalava and Pohjola(2002) 가

2) 가

UCE (CAN Spam act) UCE 가

(FTC: Federal Trade Commission) 2003

3) phishing private data fishing (ITU, 2003).

4) Fallows(2003) , 25%가 52%가 가

5) Shiman(1996) 가

, Ferris Research “ Spam control: Problems and opportunities? ”(Ferris Research, 2003)

100 ((Korea Information Security Agency, KISA), 2003) 1 3,000

(, 2004)

5 9

가

가

(2003)

가 가 (Contingent Valuation

Method)

1

1,800

(2003)

.6)

(opt-in), (labeling)

(opt-out),

(filter)

가

가

가

가

. II

, III

IV

II.

1.

가

(stated preference)

.7)

가

가

(choice),

가

(ranking),

(rating)

, 1

5

가

(KISA, 2003)

10

50

(%)

가

.8)

가

가

가

가가

5

가

3

2004 5

15

59

1,000

screening

537

16

6) Rowe et al.(1980); Greenley et al.(1981); Brookshire et al. (1980)

가

vehicle

bias

7)

Green and Srinivasan(1978, 1990)

8) KISA(2003)

12.4%

0.3%

87.3%,

1.

	10	
	30	
	50	
	: 25%	
	: 75%	
	: 50%	
	: 50%	
	: 75%	
	: 25%	
	5Mbyte	
	20Mbyte	
	50Mbyte	
가	500 /	
	1500 /	
	2500 /	

8 A, B (part)
 가 A, B
 1, 가
 4

(2)

$$U_{nj} = \beta_1 X_{nj} + \beta_2 X_{nj} S_n + \epsilon_{nj} \quad (2)$$

2.

Rank Ordered Logit (Calfee et al., 2001; Chapman and Staelin, 1982)

$$U_{nj} = V_{nj} + \epsilon_{nj} = V(x_{nj}, s_n) + \epsilon_{nj} \quad (1)$$

x_{nj} , s_n
 가

가 β_1, β_2
 (1) (ϵ_{nj})
 (independent and identical type I extreme value distribution) 가 가

Pr(ranking r_1, \dots, r_J)

$$= \frac{e^{V_{nr_1}}}{\sum_{j=r_1, \dots, r_J} e^{V_{nj}}} \cdots \frac{e^{V_{nr_{J-1}}}}{\sum_{j=r_{J-1}, r_J} e^{V_{nj}}} \quad (3)$$

(ranking $r_1, r_2, r_3, \dots, r_J$) J

2.

<i>PRO_SELF</i>		0.52475	0.048025
<i>PRO_COM</i>		0.39265	0.059337
<i>ADULT</i>	(: /)	-0.00017	0.003641
<i>COMMERCIAL</i>	(: /)	0.02088	0.002732
<i>CAPACITY</i>	(: Mbyte)	0.00392	0.001184
<i>PRICE</i>	가 (/)	0.03612	0.002475
<i>ADULT_SNUM</i>	가 (ADULT × No. of SPAM)	-0.00064	0.000391
<i>ADULT_ANUM</i>	가 (ADULT × No. of ACCOUNT)	-0.00104	0.001283
<i>COMMERCIAL_ENUM</i>	가 (COMMERCIAL × No. of EMAIL)	-0.00002	0.000208
<i>COMMERCIAL_ANUM</i>	가 (COMMERCIAL × No. of ACCOUNT)	-0.00150	0.000561

3. 가

	가	(%)
	0.52	19.16
	1.31	48.01
	0.18	6.44
가	0.72	26.38

(3) (log-likelihood function) , 가
(maximum likelihood estimation method) ,

3. 가 가

2 가

가 가

가 가

가 가

(heterogeneity)가 가

4. 9)

	WTP (/)
	1,452.987
	1,087.221
(: /)	104.328
(: /)	79.689
(: Mbyte)	10.858

가
가
가

1,453 ,

1,087

10)

가

가 가

(3).

104.33 ,

가 , , 79.69 . KISA(2003)

가

2 가 12.7%

87.3%,

가 ,

3.373

가¹¹⁾

가 10

(monetary , 2003 3,000 (, 2003) 900

term) , 가 270

(willingness to pay) 가 (2)

가

가 12.5 50%

2 (KISA, 2003) 가

$$MWTP = \frac{U(X_{-PRICE})}{U(X_{PRICE})} \quad (4)$$

(2002, 2004) (, 2003)

X_{-PRICE} 가
X_{PRICE} 가

11)

9)
10) 가 (Herrmann et al., 2000; Poortinga et al., 2003).

$$WTP_{iADULT} = \frac{\beta_{ADULT} + \beta_{ADULT_SNUM} \overline{SNUM} + \beta_{ADULT_ANUM} \overline{ANUM}}{\beta_{PRICE}}$$

\overline{SNUM} \overline{ANUM}

[20] Robert D. Rowe, R. C. D'Arge, and D S. Brookshire,
 "An experiment on the economic value of visibility,"
Journal of Environmental Economics and Management,
 Vol. 7, issue 1, Mar. 1980, pp.1~19.



(Jeong-Dong Lee)

1990. 2:
 1992. 2:
 1996. 8:
 1999. 9 ~ :
 : (DEA, SFA, etc.), 가
 가(Real Options, etc.),
 (conjoint, discrete choice, etc.),

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2002. 2:
 2002. 3 ~ :
 :

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(Jongsu Lee)

1996. 2:
 1998. 2:
 2001. 2:
 2001. 3 ~ 2003. 11:
 2003. 12 ~ 2004. 2:
 2004. 7 ~ 2005. 2: (Syracuse)
 School of Information Studies

2005. 3 ~ :
 : 가,

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(Yeonbae Kim)

1991. 2:
 1994. 2:
 1998. 2:
 1998. 3 ~ 2001. 3:
 2001. 3 ~ 2004. 4:
 2004. 4 ~ 2005. 1:
 2005. 1 ~ :
 BK21

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