



Quantifying the Benefits to Internet Users Derived from Online Applications

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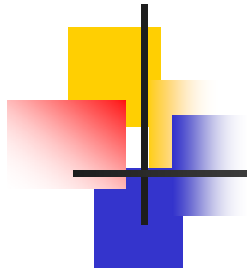
Introduction

- Back ground of this study
 - Flat-rate scheme is common for broadband access
 - Many online applications are available with free of charge
 - User-sensitive market price does not exist and it is difficult to measure consumer surplus
- Purpose of this study
 - Measure the Willingness to Pay (WTP) for each online applications
 - Estimate the benefits which internet users can get



Method

- Stated Preference (SP) method
 - It can be applied even to the measurement of consumer benefits of nonexistent goods
- Conjoint Analysis
 - One of the stated preference method
 - Make hypothetical bundles of several attributes describing the characteristics of a commodity or a service
 - Ask respondents to state their preferences for some hypothetical alternatives



Profile of Conjoint Analysis

		Levels					
		1	2	3	4	5	6
Attributes	Monthly charges	¥100	¥500	¥2,500	¥5,000	¥10,000	¥20,000
	Terminal devices	PC & mobile	PC only	mobile only			
	Access speeds	10M bps	1 M bps	128k bps			
	e-mailing	no-limit	with-limit	None			
	Web browsing	Available	None				
	Content downloading	Music & Video	Music only	Video only	None		



Model

- Random Parameter Logit Model
 - An evaluation for each online applications may vary among individuals
 - Introduce stochastic terms into the coefficients in order to capture the variations of preferences
- Specify the utility function

$$\begin{aligned} U_{nj}(\beta_{nj}, X_j) = & \beta_{device} + \beta_{n,sp} SPEED_j + \beta_{n,ml} MAIL_j \\ & + \beta_{n,web} WEB_j + \beta_{n,dlm} DLM_j + \beta_{n,dlv} DLV_j \\ & + \beta_{price} PRICE_j + \varepsilon_{nj} \end{aligned}$$



Data

- Online survey
 - Feb 26-28, 2007
 - 16 face sheet questions + 12 choice questions
 - 1,000 respondents who had registered in advance as a member of a survey panel
- Possible bias correction
 - Age/sex: calculate the weight according to the distribution of the Internet users in Japan
 - The estimation might have upward bias as respondents are Internet users (who may have preference toward using Internet applications)
 - Limitation of data collection in Japan (Personal Information Protection Law)

Estimation Results 1

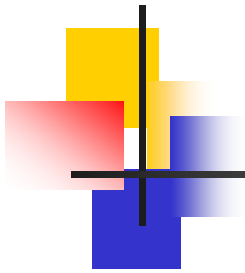
p<0.10 *, p<0.05 **, p<0.01 ***

Variable	Value	S. E.	t-value	p-value	
PSPEED	-0.01097	0.0055	-1.9990	0.0456	**
MSPEED	0.00022	0.0050	0.0440	0.9647	
PMAIL	0.13417	0.0513	2.6150	0.0089	***
MMAIL	-0.14383	0.0553	-2.6010	0.0093	***
PWEB	0.32345	0.0461	7.0190	0.0000	***
MWEB	-0.20171	0.0441	-4.5710	0.0000	***
PDLM	0.00055	0.0457	0.0120	0.9905	
PDLV	0.01240	0.0493	0.2520	0.8013	
MDLM	0.08082	0.0457	1.7700	0.0768	*
MDLV	-0.06292	0.0472	-1.3340	0.1823	
PC	-0.73862	0.0632	-11.6950	0.0000	***
MOB	-0.35453	0.0634	-5.5890	0.0000	***
PRICE	-0.00004	0.0000	-9.3000	0.0000	***

Estimation Results 2

p<0.10 *, p<0.05 **, p<0.01 ***

Variable	Value	S. E.	t-value	p-value	
PSPEED	-0.0091	0.0055	-1.652	0.099	
MSPEED	-0.0018	0.0052	-0.348	0.728	
PMAIL	0.1180	0.0522	2.260	0.024	**
MMAIL	0.1128	0.1732	0.651	0.515	
PWEB	0.3263	0.0487	6.705	0.000	***
MWEB	-0.1227	0.1580	-0.776	0.438	
PDLM	-0.0130	0.0465	-0.280	0.780	
PDLV	-0.0152	0.0503	-0.302	0.763	
MDLM	0.0718	0.1518	0.473	0.636	
MDLV	0.0198	0.1644	0.121	0.904	
PC	-0.7302	0.0631	-11.570	0.000	***
MOB	-0.3559	0.0634	-5.614	0.000	***
PRICE	0.0000	0.0000	-9.319	0.000	***
NMAIL	-0.2691	0.1725	-1.560	0.119	
NMWEB	-0.0795	0.1597	-0.498	0.619	
NMDLM	0.0194	0.1540	0.126	0.900	
NMDLV	-0.0912	0.1665	-0.548	0.584	



Conclusion

WTP (JPY)

PMAIL	3,567	***
MMAIL	-3,823	***
PWEB	8,598	***
MWEB	-5,362	***
PDLM	15	
PDLV	330	
MDLM	2,149	*
MDLV	-1,673	

- WTP for e-mail and web browsing via PC exceed the cost of broadband access.
- Downloading music applications is a key element in using mobile for the Internet.
- New services (downloading music, watching video etc.) have not been considered as the main applications to gain advantage.
- There are some difficulties in interpreting results such as non-positive coefficients with statistically significant for mobile e-mail and mobile web browsing.
- For future research; consider opportunity cost, network externality etc.