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## Conference Paper

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# A Consumer Adoption Model for Smart Phone – A survey on Japanese younger generation<sup>\*</sup>.

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***Key words:*** *Smart phone, conjoint analysis, SNS, switching cost, diffusion of innovation and system migration.*

## INTRODUCTION

As you know diffusion of smart phone is a market trend in most of the countries. It is true in general but not the case in Japan now. Her diffusion speed is relatively slow among most of the OECD countries though her high diffusion rate of 3G/4G. There are some previous studies about this issue. Most of them say there exists huge 'switching cost' in Japan. In other words there is a 'robust' ecosystem in conventional mobile phone world. So, they say, switching cost for migration for smart phone is relatively high. In this paper I'd like to show that this situation is dramatically changing especially in younger generation and in non-Tokyo Metropolitan Area by using revealed preference method.

In Japan so-called 'feature phones' are reasonable and high-specked; sometimes they are called as Galapagos phones. We can enjoyed flat rate data plan, NFC based mobile wallet, Wi-Fi, infrared data communication, mobile broadcasting service (so-called one-seg), high-speck digital camera, CHTML browsers, java based applications, carrier based e-mail, music/movie player, and so on with Japanese feature phones. They are highly customized for Japanese mobile phone market and most of their services are made as hardware solutions on handsets. So logically there are huge switching costs because of need for specialised R&D.

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But in my survey this is very limited in university students in Kyoto, in non-Tokyo Metropolitan Area (TMA). So this situation is, we can say, just a certain period.

## **SAMPLES AND THEIR FEATURES**

I had a pair wise conjoint analysis upon university students in Kyoto that is in second largest urban area (Kansai Area) in Japan. Sample number is 181 for conjoint analysis, 252 for usability survey. According to this survey younger generation (university students) tend to use new system although they used to use feature phones. For university students switching costs from feature phones to smart phone are relatively low and their willingness to pay for some types of applications are very high.

Most of them often use application LINE, use browsers, or play game with smart phone but very rare to use 'phone', carrier based e-mail, one-seg, mobile wallet. They just claim shortage of battery, costly usage fee, bad usability of the touch panels when they use smart phones.

They are highly attracted by LINE, a one-stop SNS application released after the Great East Japan Earthquake in 2011. Its diffusion rate for Japanese university student is almost 90% and it got over 1,000,000,000 users in 19 month all over the world (over 4,000,000,000 users in April 2014). This diffusion speed is quicker than that of Facebook. They use LINE instead of Facebook, GPS navigation, phone, e-mail, and/or file sharing applications, etc. This situation diminishes switching cost for migration with its strong network externalities. In other words killer applications help migration for smart phone.

In addition I'd like to add special issues. In TMA mobile contactless smart card payment based upon feature phone is relatively common especially in transportation (so-called mobile Suica) but not the case in other area. So this non-uniform spread causes different switching costs area by area.

## **CONJOINT ANALYSIS**

I'd like to reveal real weight of each function. Because when I ask important functions of mobile phones most of them are relatively high scored

(see Table 1).

Table 1. Import functions of mobile phones (in 7 scales)

Browsing	6.59
Carrier e-mail	5.68
SMTP e-mail	5.90
Any e-mail	5.82
GPS	5.81
LINE	5.91
Facebook	4.36
Twitter	4.67
Any SMS	5.53
Online game	4.42
Mobile wallet (FPF*)	3.27
Mobile TV (FPF)	3.40
Infrared communication (FPF)	4.66
All of FPFs	4.00

\* FPF: feature phone functions

So using this sample I adopt conditional logit in order to analyse answer results of selection type profile questionnaire. Our sample for conjoint is 1519 and its log-likelihood is -1025.200185.

Monthly fee: 3,000/7,000/10,000 yen Battery life: 5/20/30 hours Smart functions: GPS/+SNS/+GAME Feature phone functions: Yes/No Basic functions: Internet access/+e-mail
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Fig. 1 Four Profiles are shown from Listed Five Variables

Monthly fee: 3,000 yen Battery life: 30 hours Smart functions: GPS+SNS+GAME Feature phone functions: No Basic functions: Internet <u>access</u> +e-mail	Monthly fee: 7,000 yen Battery life: 5 hours Smart functions: GPS Feature phone functions: Yes Basic functions: Internet access
Monthly fee: 3,000 yen Battery life: 5 hours Smart functions: GPS Feature phone functions: No Basic functions: Internet access	Monthly fee: 3,000 yen Battery life: 10 hours Smart functions: GPS/+SNS Feature phone functions: Yes Basic functions: Internet <u>access</u> +e-mail
Non of them	

Fig.2 A Sample of Selection Cards

According to Table 2 instead of FEATURE, other variables are significant.

Table 2. Variables and its Statistic Values

Variables	Coefficient	t values	p values	
COST	-0.200667614	-15.24727762	6.10067E-49	***
HOURS	0.035464475	14.33509109	8.46923E-44	***
SMART	0.599918799	12.43746357	6.95526E-34	***
FEATURE	-0.031719369	-0.457029741	0.647715235	
BASIC	0.604994101	10.3418025	2.86571E-24	***

\*\*\*: 99%, \*\*: 95%, \*: 90%

Then I can calculate marginal WTP (Willingness to Pay) for each factor. According to Table 3 largest WTP is BASIC (Internet access, E-mail), and then SMART (GPS, SNS, Game) while FEATURE (mobile wallet, mobile TV, and Infrared communication) is negative. In other words they think FPF is just cost factor. As I mentioned previous section this sample shows that switching cost for them are very limited.

Table 3. Willingness to Pay

	Marginal WTP
HOURS	0.176732432
SMART	2.989614454
FEATURE	-0.158069197
BASIC	3.014906539

## DISCUSSIONS

I can summarise my study by using diffusion curve of Rogers. In TMA or other business district diffusion pattern is normal; innovators, early adopters, early majorities, late majorities, laggards. But in younger generation they can jump to volume zone by the support of LINE that has huge bandwagon effect. In other words for Japanese younger generation most killer service of smart phone is not Google map, not office suits, not wide blowers, but single application LINE. According to this survey, if there are a few attractive services for targeted segment we don't mind the diffusion stage of Rogers.

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