

Use of Mobile Phone TV: With Respect to Youth Culture in Japan*

手機電視的使用：就日本青少年文化而言

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Abstract

Five years have passed since the digital TV broadcasting service for mobile phones (“one-seg” TV service) started in Japan. This paper examines how the youth in Japan uses mobile TV. Employing various types of data, we compared mobile TV with other functions of the mobile phone, such as Internet access and the built-in camera, used actively by the Japanese youth.

A survey was conducted with 310 randomly selected youth living in Tokyo. In addition, six focus groups including 19 mobile TV users were surveyed to examine usage details. The findings show that the ownership of mobile TV has little to do with the active use of other functions and that its usage is scarcely determined by demographics, suggesting that the active and constant uses of mobile TV cannot be warranted despite the extensive diffusion of the mobile phone among Japanese youth.

Keywords: DMB service, domestication of technology, Japanese youth, Keitai culture, mobile phone TV (one-seg TV service) , social construction of media

* This paper is based on the published paper (Korenaga & Komuro, 2009).

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Introduction

In the last two decades, the broad and rapid diffusion of the mobile phone has occurred in various parts of the world and has led to scores of new cultural phenomena, which have caught the attention of researchers in social and cultural studies. Japan is one of the societies that in recent decades have experienced dramatic changes brought about by the technological progress in mobile handsets. Numerous innovations, not only in audio communication but also in visual communication, have penetrated people's daily lives. Specifically, the mid 1990s was a pivotal period in the history of the mobile phone in Japan, when a business-oriented technology transformed into a personalised medium. *Keitai* is an abbreviation of the Japanese word *keitai* (mobile) denwa (phone). This new medium enables us to engage in various communication activities (Matsuda, 2005: 20; Daliot-Bul, 2007).

The potential that *keitai* has as a new medium is captured in the term 'multimedia', which means that the medium has the capability to interact fluently with various modes of communication, such as text, sounds and images, both still and moving (Okada, 2005). The capability of *keitai* as multimedia was enhanced and embraced by Japanese youth. The proportion of young users of the mobile phone and mobile Internet has been increasing and outpacing that of older users since 2001 (see Table 1). In addition to making voice calls and messaging, the youth uses mobiles for taking pictures of their friends, downloading their favourite music or images and accessing the Internet to read novels written specifically for reading on small *keitai* displays. In other words, the 'real' functions of the mobile phone are utilised by the youth, who use *keitai* for their smallest needs in their daily lives. Thus, the gamut of activities based around the mobile phone and its use by youth forms the unique *keitai* culture, which is 'deeply embedded in the context of Japan' (Matsuda, 2005).

Table 1

Proportions of mobile phone and Internet users in Japan

| | Mobile phone | | | Mobile internet | | | Overall internet | | |
|------|--------------|-------|-------|-----------------|-------|-------|------------------|-------|-------|
| | overall | 13–19 | 20–29 | overall | 13–19 | 20–29 | overall | 13–19 | 20–29 |
| 2001 | 41.9 | 49.2 | 71.8 | 21 | 30.7 | 41.3 | 46.7 | 72.8 | 68.5 |
| 2002 | 52.2 | 63.7 | 81 | 23.9 | 37.3 | 44.4 | 62 | 88.1 | 89.8 |
| 2003 | 57.4 | 67.4 | 84.7 | 35.9 | 48.9 | 63.7 | 67.8 | 91.6 | 90.1 |
| 2004 | 65.1 | 69.6 | 95.2 | 50.1 | 63.8 | 79.8 | 69.4 | 90.7 | 92.3 |
| 2005 | 71.9 | 81.6 | 96.6 | 57 | 76.2 | 84.8 | 74.9 | 93.9 | 95 |
| 2006 | 70.8 | 78.4 | 95.4 | 53.5 | 74.1 | 79.1 | 75.7 | 93 | 94.4 |
| 2007 | 73.9 | 85.4 | 96.7 | 55.4 | 77.3 | 82.9 | 74.4 | 94.7 | 94.8 |
| 2008 | 75.4 | 83.6 | 97.3 | 55.9 | 73.9 | 86.8 | 75.3 | 95.5 | 96.3 |
| 2009 | 74.8 | 84.0 | 97.3 | 60.5 | 79.5 | 90.5 | 78.0 | 96.3 | 97.2 |
| 2010 | 73.6 | 81.6 | 95.7 | 59.9 | 75.1 | 89.9 | 78.2 | 95.6 | 97.4 |

Source: Ministry of Public Management, Home Affairs, Posts and Telecommunications, Communication Trend Survey 2004, 2008

In the mid 2000s, the mobile phone assumed a new function as it came into use as a television set in Japan. Watching TV broadcasts on a mobile phone was expected to be one of the activities that would renew the Japanese *keitai* culture. The function was the digital terrestrial broadcasting service for mobile phones called ‘one-seg’, which was officially launched in April 2006.

However, there is little evidence that the youth actively watched one-seg TV in 2008, when the penetration rate of the mobile handset for one-seg increased to 42.2% of national households (Ministry of Public Management, Home Affairs, Posts and Telecommunications, 2009). On the other hand, we do not come across young people who watch one-seg TV in train cars or on the streets in Tokyo.

The goals of this paper are to investigate how the youth uses mobile TV and to describe the process of social construction in relation to the past activities that constituted the youth *keitai* culture (Okada, 2005).

According to the theory of the social construction of technology, 'technologies and technological practices are built in a process of social construction' (Bijker and Law, 2000: 13) First, reviewing past studies of the mobile phone in Japan, we provide an overview of the history of *keitai* culture. Second, we describe the current scenario of mobile TV usage based on statistics and nationwide surveys. Third, we provide empirical data to investigate the irregular use of mobile TV by Japanese youth. Finally, we discuss the possibility of a broadcasting service for mobile phones in Japan.

The Mobile phone and Japanese Youth Culture

In the following sections, we describe the features of the mobile phone that evolved during the last decade in Japan, focusing on the relationship of each function with Japanese youth culture.

Communication: Email with *Emoji*

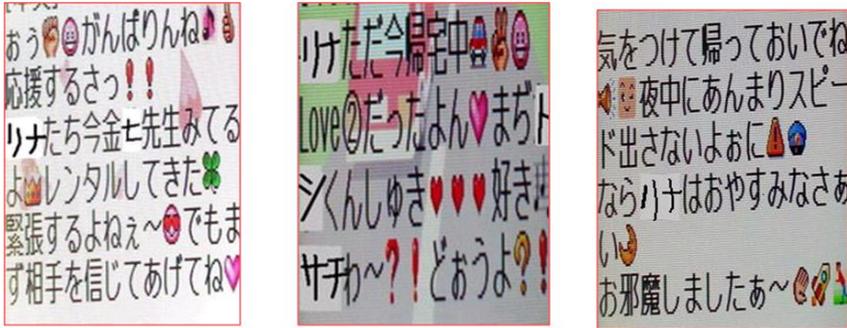
The most outstanding feature of the mobile phone in Japan is mobile Internet service launched first in 1999 as the 'i-mode' service. Despite a highly advanced technological infrastructure, Japan's Internet connectivity level remained low in the 1990s (Akiyoshi & Ono, 2008). Since its introduction in 1999, mobile Internet access has been increasing, thus raising the number of Japan's internet users in 2001 to twice that in 1999. In 2008, the estimated number of Internet users amounted to 90 million and 82.6% of them used mobile Internet. Although general attention has been focused on technology that contributed to the high Internet connectivity rate in Japan, the factor that enhanced the significance of the i-mode service for the youth was not the website service but the mobile texting service.

In addition to the Internet, SMS was another means of texting. However, there are few people in Japan who use this option. The reason for the mobile internet email service being so popular, especially among the youth, is that pictorial icon-marks (*emoji* in Japanese) are available to make text more expressive (Daliot-Bul, 2007). Mobile handsets equipped with colour displays were launched, and composing email with colourful and fancy *emoji* was possible by the end of the 1990s. In addition, texting practices were so popular among Japanese youth because text messaging by pager had experienced a boom, causing the number of pager subscribers to peak at 10 million in 1995 (Okada, 2005). Nearly 80% of

the new subscribers in 1993 were in their teens and twenties (Nakamura, 1996). Thus, email communication with colourful and fancy *emoji* was integrated into their daily settings, which formed the centre of *keitai* culture in the early 2000s.

Figure 1

Examples of *Emoji*



(Korenaga & Igarashi, 2005, p.138)

In contrast to the popularity of mobile internet email, the access to websites by mobile phones was limited largely to downloading ringtones and images. In fact, in 2002, 82% of the teens over the age of 15 years used a mobile phone for email, while website access had 32% of users at most, except for ringtone and image sites. Thus, the meaning and significance of the Internet was embedded in the youth's cultural practices of communication, because formerly there were fewer chances for the youth to recognise that they were in reality 'using the Internet' only when they accessed it for email.

Fashion: Camera

The first mobile phone with a built-in digital camera was launched in 1999. Now it is difficult to find a mobile handset without a camera, and photography is taken for granted as a basic function of the mobile phone in Japan. However, for many it seemed unusual to take a picture with a mobile phone, especially for those over 30 years of age. According to a 2003 survey of mobile phone subscribers in their teens and twenties, ownership of a camera-installed phone was as high as 43% and the percentage dropped to less than 30% for people over thirty (Okada, 2005).

Camera-installed phones were developed because the act of taking pictures at a Print Club (*puri-kura*) was popular among young people in the 1990s. *Puri-kura* is a photo booth which makes personalised stickers of portrait photographs. In 1997, 45,000 units were set up in arcades and other entertainment areas, and were enthusiastically welcomed by the youth. Youth traded these stickers of self-portraits to confirm relationships and camaraderie with friends.

Several researchers deduced an affinity between *puri-kura* and the mobile phone based on the fact that avid users of mobile communication devices were also enthusiastic *puri-kura* collectors (Kurita, 1999; Okada, 2005). However, we estimate another cultural meaning that is shared between *puri-kura* and *keitai*. Studies have pointed out that it was common for youth to place *puri-kura* stickers on their handsets along with other accessories in order to show their uniqueness (Okada, 2005). Such customising of mobile phones constitutes a taste for ‘cute (*kawaii*) culture’ that corresponds with the use of icon-marks (*emoji*) in mobile phone texting (Hjorth, 2005; Daliot-Bul, 2007).

Several studies reported that there is an aesthetic relationship between the mobile phone and fashion (Fortunati, 2000; Ling and Yttri, 2000) and that the mobile phone creates fashionable images used for advertising and photographic illustrations (Katz and Sugiyama, 2005). In addition, a study suggested that fashion-attentive youths are keen to adopt mobile communication technology and that early users in Japan were more likely to think that the style of a mobile phone was important (Katz and Sugiyama, 2006). Thus, for Japanese youth, using a mobile phone means putting the aesthetic dimension into practice, which constitutes the *keitai-kawaii* (mobile-cute) culture.

Identity: Social Networking Site

Presently, the circumstances for using the Internet have changed considerably. The chief factor in this shift is the cost of communication. The cost of connecting the Internet to personal computers at home has fallen because of the diffusion of broadband technology, such as FTTH (Fiber To The Home). As for mobile Internet, the introduction of a fee cap relieved the youth of the high price of website access.

As a result, the number of people using both computer-based Internet and mobile Internet has increased, and they are able to use the same services such as blogging and accessing social networking sites from both

PCs and mobile handsets.

Social networking sites enable communication among ever-widening circles of contacts, facilitating the convergence of the hitherto separate activities of email, messaging, website creation, photo albums and music or video downloading. Specifically in Japan, the social networking site called 'Purofu', whose subscribers exchange their profiles to make friends, is popular among teenagers. One of the popular *Purofu* sites, *Mobage-town*, gathered 10 million subscribers in 2008 (<http://www.dena.jp/en/index.html>).

In examining the youth culture, we consider the profile pages of teenagers as a site of self-presentation in a frame of the *keita-kawaii* culture. Their profile page is studded with cute icon-marks (*emoji*) and appealing avatars. In a study by Livingstone, teenagers, having experienced opportunities to recreate a highly decorated, stylistically elaborate identity through Internet-mediated communication, tended to favour a plain aesthetic that presents their links to others, expressing a notion of identity lived through authentic relationships with other people (2008). In this sense, *keitai* communications afford opportunities for the development of identity.

Furthermore, we note another factor that helps us understand the youth's penchant for mobile communication. Japanese youth, particularly teenagers, are subjected to a high degree of regulation and control by adults. Online communications become an infrastructure by which young people can share private space and they can operate their prevalent mobile devices under the radar of adult institutions and supervision. Such daily manoeuvrings with a mobile device represent a form of local resistance against these regulations (Ito, 2005; Taylor, 2005).

Mobile TV phone in Japan

In Japan, digital terrestrial broadcasting started in three metropolitan areas in 2003, and ground-based broadcasting steadily shifted to cover regional stations across Japan by 2006. In March 2009, the widest area of digital broadcasting in Japan covered 97% of national households.

Meanwhile, the one-seg digital terrestrial broadcasting service for mobile phones and other mobile devices also commenced in April 2006. The name 'one-seg' comes from the terrestrial broadcasting system that assigns one segment of each of the 13 segments to one channel in order

that mobile handsets receive it exclusively.

A subscription to one-seg is free of charge and therefore few official data on users are available. According to the Communication Use Trend Survey by the Ministry of Public Management, Home Affairs, Posts and Telecommunications, the household adoption rates have steadily been increasing from 6.0% in 2006 and 26.5% in 2007 to 42.2% at the end of 2008. The domestic shipments of mobile TV devices have risen from 22.2 million in 2008 to 26.7 million in March 2009, and the total amounts to about 50% of the number of overall subscribers of mobile phones (see Table 2).

Table 2

Domestic shipments and subscribers of mobile phone in Japan

| Fiscal year | Shipments | one-seg | Subscriptions |
|-------------|-----------|---------|---------------|
| 2001 | 42,811 | - | 69,121 |
| 2002 | 43,073 | - | 75,657 |
| 2003 | 49,843 | - | 81,520 |
| 2004 | 44,088 | - | 86,998 |
| 2005 | 46,923 | - | 91,792 |
| 2006 | 47,120 | - | 96,718 |
| 2007 | 49,549 | 22,284 | 102,724 |
| 2008 | 34,643 | 26,696 | 107,487 |
| 2009 | 30,593 | 24,803 | 112,183 |
| 2010 | 30,850 | 23,422 | 119,535 |

(Thousand units)

Source: Japan Electronics and Information Technology Industries Association (JEITA) <http://www.jeita.or.jp>

According to the September 2008 survey by the NHK Broadcasting Culture Research Institute, which was administered by mail questionnaire to 3,600 persons aged 16 and over across Japan, 29% of all respondents (n = 2659) owned one-seg devices including mobile phones and 16% of all respondents have already used one-seg broadcasting services. Compared with DMB service in Korea, the mobile broadcasting service started in 2005, the use of one-seg service as well as that of DMB service

is male-dominated, and one-seg service has more users aged over 30 than DMB service (see Table 3).

Table 3

Demographic information on mobile TV users
(Japan: NHK Broadcasting Culture Research Institute, 2008,
Korea: Shim,J.P, Park,S. & Shim,2008)

| | Gender | | Age | |
|----------------------------|----------|------------|---------------------------|-------------------|
| | Male (%) | Female (%) | Under 30 ^c (%) | 30 and over 30(%) |
| Japan One-seg ^a | 59 | 41 | 31 | 69 |
| Korea DMB ^b | 63 | 37 | 44 | 57 |

Note: ^a as of September 2008 ^b as of March 2008 ^cJapan: 19-29, Korea: 16-29

As we consider the youth *keitai* culture in Japan, the younger generation under 30 is supposed to be the core user group that comprises the growing numbers of users of mobile TV service. However, as shown in Table 4, there is a gender difference as many one-seg users are men aged 40 and under and women aged 16 to 29. Notably, 29% of female respondents in their teens and twenties were one-seg users.

On the other hand, in the breakdown of the one-seg users, when asked about the frequency of use, respondents answered, ‘one or two days a week’ and ‘one or two days a month’. This result indicates an irregular use of one-seg service as 59% of users watch it less than one day a week. The frequency does not change for any age group.

Table 4

| Demographic characteristics of mobile TV phone users in Japan | | | | | | |
|--|-------|-------|-------|-------|-------|-----|
| Age | 16–29 | 30–39 | 40–49 | 50–59 | 60–69 | 70– |
| Male | | | | | | |
| users (%) | 37 | 40 | 27 | 13 | 8 | 1 |
| non-users(%) | 63 | 60 | 73 | 87 | 92 | 99 |
| n | 184 | 207 | 203 | 243 | 227 | 204 |
| Female | | | | | | |
| users(%) | 29 | 17 | 20 | 8 | 4 | 0 |
| non-users(%) | 71 | 83 | 80 | 92 | 96 | 100 |
| n | 238 | 225 | 231 | 224 | 242 | 231 |

Source: Aramaki, Miyamoto & Yoshifuji (2009)

In the following section, we conduct empirical analysis to investigate the current usage of one-seg service by the youth. Informed by the previous literature on the youth *keitai* culture, we focus on three aspects of user characteristics that are associated with the frequency of one-seg usage: (1) demographic characteristics, (2) viewing situations and (3) other activities using a mobile phone.

Data

Our empirical investigation was made possible through access to a set of data collected by the Broadcasting Ethics and Programme Improvement Organization (BPO) in November 2008. Data were collected using a combination of a random sampling method based on the basic resident register and a location sampling method. The full sample size of 750 consisted of men and women between the ages of 16 and 24 years. The questionnaire focused on issues pertaining to the variations in the participants' extent of TV viewing.

In addition to collecting quantitative data, we conducted focus group interviews to gather qualitative data. Three focus groups were organized based on whether the participant owned a digital video recorder, had Internet access, or owned a one-seg mobile phone. Each group comprised of 10 participants between the ages of 16 and 24 years, including 5 high

school students. Thus, the participant groups consisted of 15 men and 14 women, including 15 high school students, 6 college students and 8 full-time workers. Nineteen participants owned mobile phones with one-seg function. The discussions were arranged in the form of a semi-structured interview on TV viewing.

Results

Sample characteristics

The ages of the respondents ranged from 16 to 24. The under-20 age group amounted to approximately 50%, as this proportion of respondents was born after April 1989. The biggest group of respondents consisted of high school students (37%), followed by college students (25.1%) and employees (18.6%). It was found that 99.9% of the respondents had their own mobile phones. The average duration of TV viewing was 1 hour and 59 minutes on a weekday and 2 hours and 15 minutes on a holiday.

The ownership of a one-seg mobile phone was 49.8% and indicated no significant gender or age group differences. The ownership of a mobile phone was not significantly associated either with household income or with the amount of pocket money of the respondent. On an average, the overall duration of TV viewing by one-seg mobile phone owners was 1 hour and 58 minutes on a weekday and 2 hours and 17 minutes on a holiday, neither of which were statistically associated with the ownership of a one-seg mobile phone.

Table 5

| | One-seg usage by age, gender and status | | | | | | | |
|-------------------------------------|---|--------|--------|------|------|-------------|---------|--------------|
| | Full sample | Gender | | Age | | Status | | |
| | | Male | Female | 10's | 20's | High school | College | Non-students |
| Frequency of viewing | | | | | | | | |
| Every day to a few times a week (%) | 23.2 | 26.5 | 19.4 | 13.8 | 33.3 | 10.5 | 26.9 | 33.3 |
| Once a week to once a month (%) | 25.8 | 26.5 | 25.0 | 28.8 | 22.7 | 36.8 | 23.1 | 15.6 |
| Hardly watch (%) | 51.0 | 47.0 | 55.6 | 57.5 | 44.0 | 52.6 | 50 | 51.1 |
| Sample size (n) | 155 | 83 | 72 | 80 | 75 | 57 | 52 | 45 |
| Viewing duration (at a time) | | | | | | | | |
| 20 minutes to 4 hours (%) | 35.8 | 40.0 | 31.0 | 33.8 | 38.0 | 36.8 | 38.8 | 29.6 |
| 5 to 20 minutes (%) | 34.4 | 28.8 | 40.9 | 32.5 | 36.6 | 35.1 | 30.6 | 38.6 |
| Less than 5 minutes (%) | 29.8 | 31.3 | 28.2 | 33.8 | 25.4 | 28.1 | 30.6 | 31.8 |
| Sample size (n) | 151 | 80 | 71 | 80 | 71 | 57 | 49 | 44 |

Table 5 describes the demographic characteristics of one-seg TV usage. The result indicates that almost half of all respondents ‘hardly watch’ one-seg TV despite owning a one-seg mobile phone. We find no significant gender difference in the frequency of watching TV. In contrast, we discover a considerable gap in age and status, indicating that teens and high school students are not active in watching TV as compared to respondents in their twenties (chi-square = 8.331, df = 2, p < 0.05) and non-students (chi-square = 11.041, df = 4, p < 0.05).

On the other hand, we find no difference in the duration of one-seg TV viewing among any demographic variables. In addition, the overall duration of TV viewing is not associated with the frequency and duration of one-seg TV viewing.

As shown in these results, it is difficult to assume that the active usage of one-seg TV is strongly associated with demographic characteristics. Rather, the groups of teens and high school students, who played a leading role in the active use of mobile phones, are significantly less likely to use one-seg TV.

Location of one-seg TV use and viewing situations

In order to examine the weak effect of demographic characteristics on one-seg TV usage, we conducted further analyses to test the association between frequent usage and other variables regarding viewing situations.

Table 6

| Location of viewing and frequency of one-seg TV use (Conditional on one-seg mobile phone ownership) | | | | |
|--|--|-----------------------------|-----------------------------|-----|
| | <i>Full sample</i> % of users (n = 155) | <i>Frequency of viewing</i> | | |
| | | <i>Frequent viewers</i> | <i>Non-frequent viewers</i> | |
| | | % of users (n = 76) | % of users (n = 79) | |
| One's own room | 47.7 | 59.2 | 36.7 | ** |
| Living room | 21.9 | 21.1 | 22.8 | n.s |
| Office/school (break) | 25.8 | 18.4 | 32.9 | * |
| On the way back home | 18.1 | 21.1 | 15.2 | n.s |
| On the way to office/school | 14.8 | 18.4 | 11.4 | n.s |

Note: More than one answer was possible. Statistically significant differences indicated by * p < .05, ** p < .01

From Table 6, we find a relatively high rate of users who watch one-seg TV at home despite the fact that locations outside home were

originally assumed to be the places where users would use a mobile TV phone. Several studies have already pointed out the same trend (Shim et al., 2008). For example, the survey by the NHK Broadcasting Culture Research Institute in September 2008 reported that 41% of respondents under the age of 30 watched one-seg TV in their own rooms (Aramaki, Miyamoto & Yoshifuji, 2009).

In addition, frequent viewers, who watch one-seg TV more than once a month, are statistically likely to watch it at home (chi-square = 7.861, df = 2, $p < 0.01$). In contrast, non-frequent viewers are likely to watch it in their office or school when they have a break (chi-square = 4.247, df = 2, $p < 0.05$).

The association between frequent viewing and use at home is also indicated with a significant correlation between the frequency of viewing and the amount of spare time at home ($r = 0.176$, $n = 154$, $p < .05$). As indicated in Table 7, frequent viewers are likely to gain stability in receiving digital broadcasting transmission and frequent viewing is reinforced by the stability of receiving the transmission at home (chi-square = 12.427, df = 3, $p < 0.01$).

Table 7

| | Stability of receiving digital terrestrial broadcasting at home | | |
|---------------------|---|---|---|
| | Full sample % of users (n = 155) | Frequency of viewing | |
| | | Frequent viewers % of users (n = 76) | Non-frequent viewers % of users (n = 79) |
| Extremely stable | 40.0 | 46.1 | 34.2 |
| Fairly stable | 40.0 | 43.4 | 36.7 |
| Unstable | 13.6 | 10.5 | 16.5 |
| Never tried at home | 6.5 | 0.0 | 12.7 |

These results indicate that the location of usage has a significant effect on the usage of a mobile TV phone and that the home has a strong influence on a user's acceptance of one-seg TV as a new technology. This situational effect of the home is called 'domestication of technology', a term indicating that technologies that have been used in the public domain are redefined to fit into each home and its conditions and conventions (Silverstone and Haddon, 1996; Dobashi, 2000).

The theory of the social construction of technology reveals that all new technologies, including mobile phones do not exert the same influence on

all users in the same conditions. Users are affected by technology in different ways depending on their social positions and the specific contexts of use for each technology. In this case, the conditions created through one-seg TV use have not actually been brought about by the technology alone in a technologically determinist sense. As shown in the results related to the irregular use of one-seg TV by teens and high school students, the teenage users who have hitherto developed *keitai* culture are not affected by the new function of *keitai* and take a minor part in establishing the one-seg TV viewing custom. In addition, we find that one-seg TV, which is assumed to be essentially ‘mobile’ based on technological premises, is used most frequently at home contrary to such assumptions. It can be presumed that there are some particular contexts that establish the custom of one-seg TV viewing, which would be relatively different from those of other mobile phone usage.

Therefore, in order to investigate one-seg TV use on mobile phones, we assume that we have to shift our perspective to the contexts of use. For example, we have to look at the other activities performed using a mobile phone or the associations established between such activities and one-seg TV use.

One-seg usage and other activities using *keitai*

We next examine one-seg TV use in relation to other activities that require the use of mobile phones. We conducted a factor analysis of eight kinds of mobile phone use, including one-seg TV viewing, in order to find common factors that constitute the context of current mobile phone use. Results are reported in Table 8.

We find four patterns of factor loadings. Each factor reveals the interrelationship of use, for example, voice calls, accessing news sites and accessing Social Networking Sites (SNS) constitute the Factor 1 pattern. In the same way, Factor 2 consists of email and accessing websites and Factor 3 consists of accessing video sharing sites and gaming. The use of a news clipping service, which sends the latest news directly to a mobile phone, independently constitutes Factor 4. The reason for this may be that the service is charged under contract.

However, as revealed by the factor loadings in Table 8, watching one-seg service does not constitute any factor pattern. This result suggests that watching one-seg TV is independent of all other activities related to mobile phone use. Thus, we assume that frequent use of one-seg TV is

not derived from the frequent use of other mobile functions and that the heavy use of a mobile phone does not cause a derivative heavy use of one-seg TV service.

Table 8

**Factors of loadings of mobile phone use
(Conditional on one-seg mobile phone ownership)**

| <i>Activities</i> | <i>Rotated factor pattern</i> | | | |
|------------------------|-------------------------------|-----------------|-----------------|-----------------|
| | <i>Factor 1</i> | <i>Factor 2</i> | <i>Factor 3</i> | <i>Factor 4</i> |
| Voice calls | .428 | -.058 | .158 | .379 |
| News clipping service | -.146 | .062 | -.126 | .857 |
| E-mail | .303 | .456 | -.045 | .051 |
| Accessing video sites | .086 | .528 | .687 | -.123 |
| Accessing news sites | .679 | .203 | .129 | -.069 |
| Accessing SNS | .429 | .061 | .185 | -.102 |
| Accessing other sites | -.001 | .690 | .137 | .011 |
| Watching one-seg TV | .249 | .001 | .359 | .058 |
| Gaming | .092 | .022 | .454 | -.045 |
| Variance accounted (%) | 25.8 | 14.5 | 13.8 | 11.8 |

Factor Method: Principal Factors

Rotation Method: Varimax

We note another point revealed by the data. The high number of factors implies that the current patterns of mobile phone usage are complicated and that users are diverse in their usage according to their specific circumstances and contexts. This trend is accelerated by the appearance of the mobile Internet. It is also important to note that further studies should be conducted into the current diverse uses of mobile phones, including one-seg TV service.

Predicting one-seg TV ownership from mobile phone use

In order to predict the ownership of the one-seg TV mobile in the future, we conducted a regression analysis on the current ownership of the one-seg mobile phone. After conducting a factor analysis of seven mobile phone uses, excluding one-seg TV viewing, we ran regression models to evaluate the effects of mobile phone use on one-seg mobile phone

ownership. From factor analysis, we find four factors of mobile phone use. Factor 1 consists of activities related to obtaining news: using a news clipping service and accessing a news website (33.8% of variance accounted). Factor 2 consists of website access: accessing SNS and other sites, excluding news and video sharing sites (16.3% of variance accounted). Factor 3 consists of conventional uses: email and voice calls (11.8% of variance accounted). Gaming independently constitutes Factor 4 (11.3% of variance accounted).

Results of regression analysis are reported in Table 9.

As indicated in model 1, the coefficients for Factor 2 and Factor 4 are significantly positive. However, Factor 3 is significantly negative to the ownership of the one-seg mobile phone. The results thus suggest that new types of uses such as accessing SNS are positively associated with ownership and that the conventional and dominant uses of a mobile phone such as voice calls and email are negatively associated. This may not only be because conventional users are conservative about the ownership of one-seg TV but also because the use of one-seg TV may be essentially out of harmony with the conventional use of mobile phones, as discussed below.

In addition, the results in model 2 indicated that demographic characteristics have nothing to do with the ownership of one-seg mobile phones, as noted above.

Table 9

The effects of mobile phone use and demographic characteristics on ownership of one-seg mobile: Regression results

| | <i>Ownership of one-seg mobile phone Model 1</i> | <i>Ownership of one-seg mobile phone Model 2</i> |
|-------------------------|--|--|
| | <i>beta</i> | <i>beta</i> |
| Factor 1: News | .029 | .028 |
| Factor 2: Website | .189** | .195*** |
| Factor 3: Conventional | -.168** | -.165** |
| Factor 4: Gaming | .173** | .161** |
| Gender | | .027 |
| Age | | -.021 |
| Adjusted R ² | .100 | .095 |

Statistical significance indicated by * $p < .05$, ** $p < .01$, *** $p < .001$.

According to the theory of diffusion of innovation (Rogers, 1995), people who are categorised as innovators have a positive attitude toward trying and using new kinds of ideas and devices. These ‘technological innovators’ are more likely to use any type of mobile phone functions and be more willing to try new functions than other ‘late majorities’, who are late in adopting innovations. Some researchers have argued that such ‘technological readiness’ plays an important role in the diffusion of the Internet, and they have attributed digital inequality to people’s abilities to manage technologies (Akiyoshi & Ono, 2008). However, it is also argued that Internet access via the mobile phone has overcome such inequality because mobile internet access has been adopted by a wide range of users, regardless of their level of technological readiness. Therefore, our findings that website access and gaming through the use of mobile phones are associated with the ownership of the one-seg mobile phone cannot be explained in terms of the ability to manage technologies. Thus, we once again point out the necessity of considering the context of the use of one-seg mobile.

What makes the use of the one-seg mobile phone independent from the other types of mobile phone usage? Are there any contextual differences between the use of the one-seg mobile and the use of other mobile functions, especially the conventional functions such as voice calls and email?

We next address these questions by means of focus group interviews.

Focus group interviews

The focus group interviews were conducted in March 2009. Among the 29 individuals who participated in the interviews, 15 were high school students, 6 were college students and 8 were employees. Three focus groups were constituted based on the amount of media use as follows: Group 1 (G1), Recording TV programmes on an HDD recorder more than once a week, Group 2 (G2), Watching video sites daily and Group 3 (G3), Watching one-seg TV more than twice a week. In addition to 9 members of G3, another 10 members of G1 and G2 have their own one-seg mobile phones. Among the 19 one-seg owners, 5 are female and 15 are male. The duration of one-seg TV viewing by the members of G3 ranges from 180 to 600 minutes per week.

One-seg TV usage

The locations where the majority of G3 watched one-seg TV were their own rooms, as indicated by the survey data. The reason why they watched it in their rooms was mainly because other family members occupy the TV in the living room. A 17-year-old girl in her third year of high school said, 'When my sister and I watch the same drama at 9 or 10 in the evening, we share the TV set in the living room, but if we watch different shows, I go to my room to watch my own show on one-seg TV'.

Another reason that some participants stressed on was that they wanted to multitask while watching TV. In their rooms, they can do their favourite activities in a relaxed mood. An 18-year-old boy in his third year of high school said, 'I watch it (one-seg TV) when I am relaxing in my room at 11:00 or 12:00. I often stay in my room to do something, so I want to watch TV there'.

In connection with this, we found that some participants watch one-seg TV while performing some other activities. A 20-year-old boy in his third year of college was accustomed to watching one-seg TV 'while doing exercises to kill time'. Furthermore, these participants literally 'use' one-seg TV simultaneously with other media. A 16-year-old boy in his first year of high school said, 'On weekdays, I shut myself up in my room to watch dramas on one-seg TV, because my parents and I watch different programmes. My sister watches one-seg TV in her room as well'. When asked the way in which he manages watching it he said, 'I wear earphones to listen to one-seg TV while gaming, it's Nintendo DS (a portable video game), lying on the carpet'. For another example, an 18-year-old girl in her third year of high school said, 'I usually watch sports programmes, so the sound doesn't matter. I often watch one-seg TV while listening to my iPod. I use a PC while watching TV as well; I am accustomed to doing such things'.

As the members of G3 are frequent users of one-seg TV, we expected them to often use some functions specific to a one-seg mobile phone, such as recordings and data broadcasting. However, the use of such functions seems to be particular to watching sports programmes, as a 17-year-old boy in his second year of high school said, 'When I use one-seg, I sometimes record a programme (of a soccer game at midnight) to watch during my commute to school'. A 16-year-old boy in his first year of high school used data broadcasting not for dramas but for baseball

games in order to understand ‘how the scores or batting averages stand according to the data superimposed at the bottom of the mobile phone (display)’.

Reasons for non-use

When we turn to the owners of one-seg mobile phones in other groups to investigate the reasons for their inactivity or avoidance of use, many of them refer to some of the technological inferiorities of one-seg TV service as compared to conventional TV sets. A 22-year-old boy in his third year of college said, ‘One-seg is badly tuned and wears out batteries too fast to watch for a long time. When I want to watch (a programme), I prefer to watch it comfortably on the TV set with beautiful images at home’. A 23-year-old man who is a systems engineer also prefers to watch ‘on a big screen.... When I watch on one-seg, I cannot tune in at home and I feel uncomfortable when I am interrupted when I get a call’. In addition, a 24-year-old female office worker said, ‘I cannot tune it in in my room. If it wears out the battery, it’s inconvenient to miss a call when I’m out. I’d rather listen to music’.

Although it was originally assumed that people watched the ‘mobile’ TV phone mainly in outdoor areas (Shim et al., 2008), their distrust seems to arise when they find one-seg TV badly tuned at home due to the unstable transmission of digital broadcasting. In other words, whether they will take up watching one-seg TV depends on the potential for its use at home. In addition, the possibility of using one-seg TV is likely to be compared with the advantage of conventional TV sets, such as screen size (expressed as a ‘big screen’) or definition (expressed as ‘beautiful images’).

Discussion

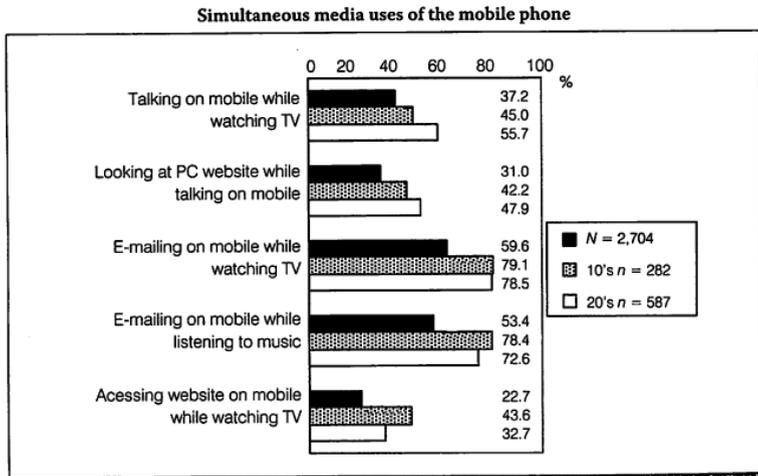
From these results, we assume that ‘domestication’ of one-seg TV is deeply concerned with its acceptance. As our findings thus far revealed, one-seg TV is most frequently used at the home, especially in a user’s own room. Although some researchers have already revealed that other types of mobile phone uses, such as voice calls and email, are conducted most frequently at home (Dobashi, 2002), the meaning of using one-seg TV at home seems to be different from, for example, that of email use at home. The critical difference is its meaning as a ‘mobile’ device in the domestic context; i.e. when the mobile phone is used for one-seg TV at

home, the user regards it not as a mobile device but as a TV. This is consistent with our findings that our respondents in G3 used one-seg TV in case they were not able to share the TV with other family members and that our respondents in other groups did not want to use one-seg TV due to the inferiority of the device in comparison with the conventional TV at home.

On the other hand, when the mobile phone is used for email at home, the user tends to regard it as a 'mobile' device, as the youth in the literature made use of the mobile device to circumvent the regulations and supervision of adults (Ito, 2005). In addition, a mobile phone is useful for housewives, as they can use it while simultaneously performing household tasks (Dobashi, 2002). Thus, the meaning of 'being mobile' at home seems to play a critical role in *keitai* culture. Therefore, due to its lack of any meaning as a mobile device, watching one-seg TV at home is out of harmony with other activities involving the use of mobile phones, especially voice calls and email that form the dominant *keitai* culture. This seems to be the reason why the frequent use of mobile phones does not equate with the frequent use of one-seg TV. In addition, we assume that the culture of one-seg TV and *keitai* culture have a few aspects in common, such as the cultures of communication and fashion. For example, there are some respondents in our focus group who said that they use one-seg TV to watch programmes together with other people; however, our survey indicated that this practice was followed by only 14.2 % of one-seg TV owners.

On the other hand, we note the common factors between the use of one-seg TV and that of mobile phones, i.e. the simultaneous use of multiple media. The transient use of the mobile phone enables 'simultaneous use' at home. As shown in Figure 2, several people in Japan employ various media at home while simultaneously using mobile phones. Such a tendency is salient especially in young people. Above all, email is widely used with other media. A prime example of this is the use of the mobile phone while watching TV or surfing the Internet.

Figure 2



Source: Korenaga (2006)

With respect to mobile TV phones, such simultaneous usage has been reported not only in our focus groups but also for DMB use in Korea (Park, 2008). We suppose that the transient viewing made possible by mobile TV phones would develop the possibilities of TV viewing. For example, when we notice something on TV while using a mobile phone for purposes such as reading an email or information on a website, we can catch up with it immediately by means of one-seg TV. A 24-year-old female receptionist said, ‘I sometimes receive and also make a call while watching one-seg TV, saying “An amazing programme is on. Why don’t you check it out”?’

Conclusion

The present study found that the youth is by no means active in watching one-seg TV despite the fact that it is neither difficult to use nor expensive. The ownership of a one-seg mobile phone is not associated with any demographic characteristics including household income and the user’s pocket money. In addition, ownership was not predicted from the frequent use of other functions of mobile phones. We argue that a new technology such as one-seg TV does not exert pressure on all users to adopt it from the viewpoint of social construction. Therefore, we assume

that we need to take the conditions, conventions and contexts of the use of one-seg TV into consideration in order to examine the possibility of a broadcasting service for mobile phones in Japan. Specifically, Japanese youth have a unique history in which they formed the *keitai* culture since the mobile Internet became readily available to them in the 2000s. However, as shown by the irregular use of one-seg TV by teens and high school students, the elements that constituted the *keitai* culture do not seem to contribute to the development of one-seg TV use.

At the same time, our study of the domestic contexts of mobile phone use suggested particular attention to the use of mobile phones at home. We assume that a study of the ‘domestication of technology’ should not only reveal class and gender differences but also the symbolic differences in media use. Although checking email and watching one-seg TV seem to be superficially same at a behavioural level, they are symbolically different in terms of the domestic contexts indicated by the present study. In addition, the meanings of these technologies vary according to the developments in other technologies related to these mobile functions. Further research into the relationship among these technologies should be conducted. For example, there has been much research comparing mobile Internet with the PC Internet from the viewpoint of replacing one with the other; however, there seems to be a lack of studies in Japan from the viewpoint of combining them, despite the fact that the rate of use of both technologies in combination rose from 36.7% in 2004 to 68.2% in 2008. With respect to broadcasting, the number of one-seg TV users will be increasing because the digital transition in Japan will be completed and analog terrestrial services will cease broadcasting in 2011.

Finally, it is worth noting the change in the meaning of TV viewing for the youth in Japan. Recent surveys suggest that the amount of TV viewing of people under age 30 is decreasing and that some of them have begun to shift to watching TV on video sharing sites. If such a tendency indicates the ‘fragmentation’ of TV viewing brought about by the Internet, the existing model of viewing applied to one-seg TV will face limitations.

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