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A Socio-Technical Analysis Of M-Commerce In Japan: Research In Progress

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ABSTRACT

This paper describes ongoing research investigating mobile commerce (m-commerce) in Japan. Using a social informatics perspective to inform a sociotechnical analysis of the uses of mobile phones by a sample of Japanese consumers, this research provides insights into ways in which Japanese culture is changing as mobile phone technologies and m-commerce become routinized in Japanese life.

Keywords

m-commerce, mobile communications, cultural change.

INTRODUCTION

Watson et al. (2002) define “u-commerce” as “the use of ubiquitous networks to support personalized and uninterrupted communications and transactions between a firm and its stakeholders to provide a level of value over, above, and beyond traditional commerce.” Mobile commerce (m-commerce), is a subset of u-commerce characterized by portability, reachability, accessibility, localization, and identification (Junglas and Watson, 2003; 415). It includes “all activities related to a (potential) commercial transaction conducted through communications networks that interface with wireless (or mobile) devices” (Tarasewich, Nickerson and Warkentin, 2002, Baldi and Huang; 2001). This definition is useful because it includes a range of activities from business applications (financial services) to entertainment services, (games or short message services).

We are studying m-commerce because “mobile business will be the main driving force for the next phase of electronic commerce growth because the rapid adoption of second-generation mobile telecommunication systems has created a market opportunity of several hundred million consumers worldwide” (Roussos, Peterson, and Patel 2003; 81). Furthermore, “by 2004, more than 25% of consumer-oriented eCommerce will originate from smart mobile phones” (Agrawal, Chari and Sankar, 2003; 67)

This study uses a sociotechnical approach informed by social informatics (SI) (Kling, Rosenbaum, and Sawyer, forthcoming) to focus on the impacts of m-commerce on Japanese culture and society. SI is “the interdisciplinary study of the design, uses and consequences of information technologies that takes into account their interaction with institutional and cultural contexts” (Kling, 1999). We assume that m-commerce is a sociotechnical activity and focus on the complex interrelationships among information and communication technologies (ICT), in this case, those supporting m-commerce, the people who design and use them, and the social and organizational contexts in which they are used. ICTs do not have the same meanings for those who design and use them; people interpret and interact with these technologies in complex and varied ways that must be uncovered through careful study (Orlikowski, 1993; Newell, et al., 1998, Clement and Halonen, 1998). Adopting a basic principle of SI, we assume that the relationship among ICTs, people, and their contexts is one of mutual shaping (Sawyer, et al., 2003). In practical terms, as people adopt ICT, they appropriate, modify and change them as they are simultaneously being changed by the ICT they are using. This is similar to Mylonopoulos, and Doukidis (2003; 7), who assert that in m-commerce, “end-users and industry co-create the services and business models that are deemed acceptable within a given social and economic context.”

The effects on culture of the rapid and pervasive adoption of m-commerce technologies are not readily apparent. Using a sample of Japanese consumers for a case study, our research seeks to better understand the ways in which Japanese society is

being shaped by the increasing pervasiveness of m-commerce and the ICT that support it. We are investigating a question asked by Mylonopoulos, and Doukidis (2003; 5), "How will mobile business affect individual and collective social behavior?" We are analyzing data from research, the general and trade press, and interviews to better understand the spread of m-commerce in Japan. During the summer, we will develop a questionnaire to investigate the effects of this technology on mobile phone consumers in Japan. We will then conduct email interviews with a sample of mobile phone consumers in Japan. The resulting data will be analyzed for evidence of the effects of m-commerce on Japanese society.

BACKGROUND: M-COMMERCE IN JAPAN

While m-commerce has not yet caught on in America, it is "already embraced as part of daily life in Japan" (Aoyama, 2003; 1209). Over the past five years, mobile phones have become an integral part of Japanese society with penetration rates reaching over 79% at the end of 2002. According to the Japan Information Network (2003)

There are nearly 80 million mobile phones in use in Japan, more, in fact, than the number of wired phones. Japan's population is roughly 127 million, meaning that three out of five people own a mobile phone. Of these phones, close to 75% have access to the Internet. In Japan, personal computers cannot be called the standard medium for surfing the Net; the cell phone is steadily becoming the most familiar information equipment.

Mobile phones are becoming a ubiquitous information appliance, one of whose functions is the conduct of commerce. Phones are not only used for voice communications but also for e-mail, gaming, and web browsing. Aoyama (2003: 1202) finds that "web-surfing is still predominantly a PC-based activity in the United States, whereas Japanese consumers have increasingly shifted to cellular telephones for this purpose." Jarvenpaa et al. (2003; 42) found that in their sample of Japanese mobile phone users 95% has used voice mail, 68% had used text messaging, 55% had sent or received email, 45% had visited web sites; 35% had used a calendar function, 30% had checked their horoscopes, 28% had played games, and 8% had used financial services. Mobile ICT are becoming integrated into the social lives of young Japanese and (Aoyama 2003; 1209-10):

Have become indispensable to remain connected with their social circles without parental control, and the loss of cellular telephones to them means disconnection from society at large. College students most frequently use text messaging to exchange innocuous information without specific purposes, such as their current mindset, location, and activity...For Japan's teenagers, a cellular telephone has become a social requirement...

Baldi and Huang (2002; 6) speculate that the rapid diffusion of mobile ICTs in Japan can be explained in part from the supply side arguing that DoCoMo's strategy of positioning its I-mode service as a gateway to entertainment services has proved more effective than European service providers' strategy of offering business applications and in 2001 "visits to entertainment sites offering games, screen savers and ring tones, [made] up more than 50% of all i-Mode user activity." They also point to cultural factors that may shape demand including the Japanese propensity to adopt ICTs that help them save time, the use of public transit on which wireless voice calls are discouraged, making the use of mobile data services more likely, and the extent to which mobile phones have become lifestyle accessories that are "carried along everywhere and become almost a part of the owner's identity" (2002: 9).

Currently, the market for mobile telecommunications in Japan is divided between three mobile operators: NTT DoCoMo, which has ~55% market share, KDDI, with ~30% market share, and J-Phone, with ~15% market share. In 1999 market leader NTT DoCoMo launched its well-known mobile information service "i-mode"; since then, its two main competitors have implemented similar services on their respective networks. (Caminada; 2001)

Launched quietly over four years ago, DoCoMo's i-mode service, a "branded data micro-browser" has been a successful application with widespread appeal in Japan; it is a (Baldi and Huang; 8)

...packet-switched service [that] incorporates c-HTML (Compact Hypertext Markup Language), a subset of HTML, designed for devices with slower connection speeds. Access speeds reached 9.6 Kb/s in 2000. The service boasts numerous official as well as "unofficial" Web pages created by individuals and companies.

I-mode is gaining new customers at the rate of ~25,000 a day and passed the 40+ million mark in November 2003. (Eurotechnology Japan K. K., 2003) Small i-mode handsets in "honey platinum" and "lime gold" have become fashion accessories for Japanese teenagers, often worn around the neck like a piece of jewelry. The most popular (and expensive) have a clamshell design, opening to reveal a screen larger than the display of a normal mobile phone. The latest have full-color displays, recognize spoken commands, and have plug-in keyboards for writing longer e-mail messages.

Currently, the mobile applications market seems dominated by entertainment, which according to DoCoMo amounted to 64% of the accesses (when a user enters a site) in 2000. The category “shopping and living” on the i-mode menu, which contains on-line shopping as well as study and job information, generated 5% of the accesses. Four percent of the accesses were related to banking and other financial services, including credit cards, securities, and insurance. The rest of the traffic involved information such as the news or weather reports. (Caminada; 2001)

DESCRIPTION OF THE RESEARCH

The overall goal of this study is to better understand the impact of m-commerce on Japanese culture and society based on the self-report of a sample of Japanese mobile phone users in Japan. Initially, the research will examine general evidence about the growth, spread, and adoption of mobile phone technology and m-commerce in Japan. This will include mobile phone penetration rates, uses of mobile phones, and other statistics. Based on this initial research, we will develop a questionnaire to investigate the effects of this technology on mobile phone consumers in Japan. We will pre-test the instrument in face-to-face interview, to allow debriefing. We will pretest the email instrument, again with a small number of Japanese students at our university, to ensure that the delivery channel does not make a difference. Finally, we will conduct email interviews with a sample of mobile phone consumers in Japan. We will begin with a convenience sample based on personal contacts of one author. Using snowball sampling, we will ask these people to each suggest five other people to whom we can email the survey. The resulting data will be content analyzed to draw conclusions about the effects of mobile phone use and m-commerce on Japanese society.

It is methodologically difficult to observe the effects of ICTs on society and especially so for observation of the mutual shaping that occurs between people and the ICTs they use. In part, this is because people do not normally reflect on these effects and relationships during their routine social lives; such reflections may be within the domain of their tacit knowledge. For this reason, the questions focus on the role of the mobile phone in subjects’ lives; subjects are asked to assess its overall importance in their daily lives and to detail specific ways in which they make routine uses of the device. To determine the extent to which mobile phones have become routinized into their lives, subjects are asked to separate their uses into work, social, personal business, and entertainment activities. They are asked to speculate about the types of activities that they would like to be able to do with their mobile phones. To get a sense of their cell phone activity level, they are asked to estimate their daily average use of their phones. Finally, there are questions designed to collect demographic data.

We will have data from our initial sample collected and analyzed by August and will present preliminary results at the AMCIS conference. We will replicate this data collection strategy with a larger and more comprehensive sample that we will develop this summer.

SAMPLE QUESTIONS

1. How important is your cell phone in your life?

Not important ----- Somewhat important ----- Important ----- Very important ----- Essential

2. How often to do you use your cell phone in an average day (estimate in minutes) ____

3. What are your main activities when using the cell phone? How much time would you guess that you spend on these in a week (estimate in minutes)?

Talk

Send and receive text messages

Check the web and internet

Send and receive email

Take, send, and receive images

Play games

Buy goods and services

Check bank balances

Pay bills

Other

4. Could you please rank this list in terms of importance to you?

5. Outside of calling people, do you use your cell phone for other activities in your work?

What is your occupation?

If you do, what are these activities?

How often do you do them?

If no, why not?

6. Is your cell phone more important than your PC?

If yes, why?

If no, why not?

7. Is it easier to stay in touch with your friends now?

Do you see them face-to—face more or less since you started using your phone a lot?

8. Is it easier to stay in touch with your family now?

Do you see them face-to—face more or less since you started using your phone a lot?

9. Are there activities that you used do in other ways that you know do with your phone?

If yes, what are these activities?

10. Are there activities that you would like to do with your phone that you cannot currently do?

If yes, what are these activities?

11. Demographic information

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