Cultures and Perceived Values Influencing Mobile Phone Use and Satisfaction

อิทธิพลทางวัฒนธรรมและทัศนคติที่มีผลต่อพฤติกรรมและความพึงพอใจ ในการใช้บริการโทรศัพท์เคลื่อนที่

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บทคัดย่อ

การวิจัยนี้ศึกษาความแตกต่างและความสัมพันธ์ทางวัฒนธรรมและทัศนคติต่อพฤติกรรมและ ความพึงพอใจในการใช้โทรศัพท์เคลื่อนที่ กลุ่มตัวอย่างทั้งหมด 764 ตัวอย่างได้ตอบแบบสอบถามซึ่ง วัดตัวแปรต่างๆ ได้แก่ อิทธิพลทางวัฒนธรรม คุณประโยชน์ในการใช้โทรศัพท์เคลื่อนที่ ประเภท และจำนวนการใช้โทรศัพท์เคลื่อนที่ ความพึงพอใจในการติดต่อสื่อสาร ผลของการวิจัยโดยรวม สรุปว่า ผู้ที่มีวัฒนธรรมเชิงกลุ่มแบบนิยมระดับชั้น (Vertical Collectivists) มีแนวโน้มที่เห็น คุณประโยชน์ของการใช้โทรศัพท์เคลื่อนที่เพื่อตอบสนองการใช้งานมากกว่า ผู้ที่มีวัฒนธรรมเชิง กลุ่มแบบนิยมการพึ่งพาร่วมกัน (Horizontal Collectivists) นอกจากนั้น ผู้ที่คิดว่าการใช้โทรศัพท์ เคลื่อนที่สามารถตอบสนองความต้องการเกี่ยวกับการใช้งาน อารมณ์ สังคม และการเงิน จะมี ความรู้สึกพึงพอใจในการสนทนาผ่านทางโทรศัพท์เคลื่อนที่

คำสำคัญ: ความแตกต่างทางวัฒนธรรม คุณประโยชน์ในการใช้โทรศัพท์เคลื่อนที่ การใช้โทรศัพท์
เคลื่อนที่ ความพึงพอใจในการสื่อสาร

Abstract

This study* examined differences and relationships among cultures (i.e., horizontal, vertical individualism and collectivism), perceived values (i.e., functional, emotional, social, and monetary values) of mobile phone use, the amount of mobile phone use, and communication satisfaction. A total of 764 samples participated in this study. A self-administered questionnaire was used to determine differences and relationships among variables, including cultural influences, perceived values, mobile phone use, and communication satisfaction. Overall, the results indicated that vertical collectivists tended to value functional benefits of mobile phones more than did horizontal collectivists. Moreover, perceived values of mobile phone use predicted the amount of use and communication satisfaction. People who perceived that mobile phones could gratify their functional, emotional, social, and monetary needs tended to feel satisfied with their communication via mobile phones.

Keywords: Cultural Differences, Perceived Values of Mobile Phone Use, Mobile Phone
Use, and Communication Satisfaction

Introduction

Currently, the mobile phone is used extensively around the world. The number of mobile phone users has reached 2 billion worldwide **(Cellular Online, 2006).** For instance, in the United States, it is estimated that there are approximately 195 million mobile phone users **(Pew Internet and American Life Project, 2006: 4).** In Thailand, the growth of mobile users has rapidly increased over the past several years from 5.8 million in 2001 to 23.2 million in 2004, which represents 36.3% of the population (Thailand, National Electronics and Computer Technology Center, 2005: 20). In Bangkok and vicinity, 42.4% of the population are mobile phone users.

One interesting issue is that people in different countries adopt and use mobile phones differently. In North America, the adoption is slower, and usage patterns of mobile phones are different when compared to Asian countries (Lee, et al., 2002: 227). Over 70% of Americans reported that they used mobile phones to gain help during emergencies **(Pew Internet and American Life Project, 2006: 1).** In Asian countries, Koreans and Japanese used mobile phones to access the Internet for email services and news/sports news (Lee, et al., 2002: 227). Users in Hong Kong used mobile phones to coordinate work (Leung, 2007: 116).

Possibly, cultures may influence different mobile phone usage patterns among people in various countries. With different cultural values, people may be differently motivated to use communication devices and interact with others. Hofstede (1980: 214) pointed out that Americans represent individualism that values independence and privacy, whereas Asians represent collectivism that is dependent on group goals and behavior. These cultural values may be reflected in usage patterns and mobile services that are used most frequently among people in different cultures. For example, the evidence shows that Americans preferred to use mobile phones for emergencies because they may perceive the functional value of the mobile device as more important than social and emotional values such as email or instant message services.

Despite the significance of cultures and the use of mobile communication, little research has focused on the relationship between cultures and mobile phone usage. Prior studies on mobile phone use emphasized the usability issues (Ishii, 2006: 346), mobile phone policies and controls (Qiu, 2007: 75), and motives and perceptions for using mobile phones and Short Message Service (Carroll, et al., 2007: 79; Leung, 2007: 115; Muk, 2007: 177; Vikanda Pornsakulvanich and Nuchada

Dumrongsiri, 2007: 901). Few studies examined mobile phone use from a cross-cultural perspective (Lee, et al., 2002: 227).

There is a need for further research to help clarify the interrelationships among cultural values, mobile phones usage patterns, and the effects of these relationships. Academically, this would expand the body of knowledge of new media technologies, cultural differences, and interpersonal communication. Practically, this research would help service providers and product manufacturers to better understand consumers' satisfaction in day-to-day communication via mobile phones and realize how businesses can adapt service features in response to cultural values and needs in different countries. Presently, consumers have more control over choices of media consumption, products, and services. The understanding of the influence of cultures on mobile phone use would help business people develop their relationships with, and reach their potential consumers more effectively.

Therefore, this study will serve as a preliminary step to understand how cultures influence mobile phone usage patterns and the effects of mobile phone use. More specifically, this research had two major purposes. First, we examined the differences between cultures (i.e., horizontal, vertical individualism and collectivism), perceived values (i.e., functional, emotional, social, and monetary values) of mobile phone use, and the amount of mobile phone use (e.g., talking, using SMS, and WAP). Second, we explored the influence of perceived values of mobile phone use on the amount of use and communication satisfaction.

Individualism and Collectivism

Defining Individualism and Collectivism

Scholars have not yet reached agreement on how to classify cultural patterns (Fiske, 2002: 79; Triandis and Gelfand, 1998: 118). However, a theoretical concept most widely used for cultural comparison is Hofstede's (1980) two types of cultures: individualism and collectivism. Hofstede (1980: 21) defined a culture as "the interactive aggregate of common characteristics that influence a human group's response to its environment." He differentiated the culture into two categories: individualism and collectivism. Individualism is defined as "a social pattern that consists of loosely linked people who view themselves as independent of collectives." On the other hand, collectivism is defined as "a social pattern consisting of closely linked people who see themselves as parts of one or more collectives (family, co-workers, tribe, or nation)" (Triandis, 1995: 2).

Although the individualism and collectivism constructs have been discussed extensively, several researchers argued that cultural patterns cannot be defined purely as a dichotomy (Fiske, 2002: 79; Gudykunst, et al., 1996: 511; Triandis and Gelfand, 1998: 118). Many kinds of individualism and collectivism exist within a certain culture and across cultures. Fiske (2002: 80) disagreed with Hofstede's (1980: 158) view of nations as cultures. For example, Hofstede found that countries such as the United States and Europe have high scores in the individualism dimension with a range of the Country Individualism Index (IDV) from 55 to 91, whereas countries such as Thailand and other countries in Asia have low scores in the individualism dimension with a range of IDV from 14 to 48. By contrast, Fiske reported that Puerto Rican students were more individualistic than Americans, whereas Americans were significantly more collectivistic than Japanese. In addition, Triandis and Gelfand (1998: 119) suggested that differences may exist within individualism or collectivism. For example, American individualists may be different from Canadian individualists, whereas Taiwanese collectivists may differ from Korean collectivists. Moreover, Chiou (2001: 676) found Americans as horizontal collectivistic as those from Taiwan and Argentina.

Based on previous studies, this study used Triandis and Gelfand's (1998: 119) horizontal and vertical individualism and collectivism as a theoretical framework. With the use of four cultural categories instead of two, we expected to better detect cultural influences on mobile phones communication.

Triandis and Gelfand (1998: 118) further distinguished individualism and collectivism into two pattern types: horizontal and vertical patterns. The horizontal pattern emphasizes the equality in which a person is like others. The vertical pattern focuses on hierarchy in which a person is different from others. When put into a matrix of four cultural patterns, horizontal individualists (HI) want to be different from the group, but do not value high status (see Figure 1). Vertical individualists (VI) prefer to be distinct from the group and acquire status. Horizontal collectivists (HC) view themselves as similar to others in the group and support interdependence, but they do not value hierarchy or authority. Finally, vertical collectivists (VC) prefer in-group goals to personal goals and accept status and authority within the group.

Cultural Dimensions	Individualism to Value Independence and Distinction from Group	Collectivism to Value Interdependence and Belonging to Group
Vertical to Value Hierarchy and Status in Group	Vertical Individualist (VI)	Vertical Collectivist (VC)
Horizontal to Value Equality and Similarity in Group	Horizontal Individualist (HI)	Horizontal Collectivist (HC)

Figure 1: A Four-Cultural-Pattern Matrix

Literature Review

This section provides a review of previous research related to mobile communication from various countries. The review includes several variables being studied including cultures, mobile phone use, perceived values, and communication satisfaction.

Cultures and Mobile Phone Use

Past research that examined cultural influences on mobile phone use has focused on different variables. Several studies compared the way in which people from different cultures used mobile phones (Lee, et al., 2002: 227; Massini, 2004: 251). Others emphasized a certain function of mobile phones such as a short message service, advertising and mobile Internet (Carroll, et al., 2007: 79; Habuchi, et al., 2005: 94; Ishii, 2006: 346; Muk, 2007: 177). Overall, mobile phone usage is both similar and different in several aspects among various countries.

First, a similarity across cultures is the use of mobile phones to maintain and expand their existing personal ties rather than to build new ones. In Hong Kong, Leung (2007: 124) found over 70% of SMS messages were related to personal/job concerns and relationships. Young females in Japan used mobile mail to communicate with existing friends (Habuchi, et al., 2005: 101; Ishii, 2006: 361). Similarly, Pain, et al. (2005: 825) indicated that young females in the UK used mobile phones to expand their existing ties because it offered new spaces with autonomy and freedom. They also used mobile phones to avoid risks (e.g., crime, bullying, and annoying calls).

Second, the usage patterns of mobile phones are different among the leading countries in new technologies such as Japan, Korea, and the U.S. Users in Japan and Korea use mobile phones for Internet functions (Habuchi, et al., 2005: 99; Lee, et al., 2002: 227; Muk, 2007: 177). Habuchi,

et al. (2005: 99) found that nearly 60% of participants used mobile phones for Internet access, especially mobile mail, to communicate with existing personal networks (e.g., family, friends).

On the other hand, those in the U.S., UK, Italy, and New Zealand used mobile phones for SMS (Carroll, et al., 2007: 79; Massini, 2004: 252; Pain, et al., 2005: 814). However, the amount of SMS use in these countries was different from those in Asia. According to Muk (2007: 17), about 61% of American mobile phone users did not send any SMS messages during a day as compared to only 3.8% of Korean consumers. Koreans were more likely to accept and participate in SMS advertising than were American users.

As has been observed, mobile Internet is extensively used in Asia countries, whereas SMS is a typical usage pattern in the U.S. and Europe. Asian countries have high scores on collectivism as opposed to the U.S. and countries in Europe that project high scores on individualism (Hofstede, 1980: 214). Whether the individualism-collectivism differences are related to different patterns of mobile phone use is unclear and leads to further investigation in this study.

Third, mobile phone use also differs among countries in Asia. Although users in Japan and Korea use mobile Internet widely, the users in both countries are motivated by different values. Lee, et al. (2002: 227) reported that cultures influenced users' perceived value of mobile Internet. The Japanese were satisfied with the functional value of mobile phones to access the Internet for email and information services. Koreans used mobile phones to fulfill emotional value, especially for downloading and game services. Monetary value was less important for mobile phone users among Japanese and Koreans. Moreover, mobile phones are used differently, even within the same country. Ishii (2006: 354) showed that older and male participants used mobile phones as a voice phone, whereas young females used it for mobile mail to maintain existing ties.

Unlike other countries in Asia that prefer mobile Internet, Hong Kong and China have different patterns of mobile phone use. Heavy mobile phone users in Hong Kong were motivated to use SMS by convenience, low cost, and coordination (Leung, 2007: 115). According to Qiu (2007: 75), about 18.1 billion SMSs are sent monthly in China. However, Qiu pointed out that mobile messaging was used in China as a means of control in various contexts such as workplace and broadcasting stations. For example, workers were not allowed to bring mobile phones into the

factory site. Phone-in channels were replaced with SMS to filter inappropriate/illegal information and minimize political risk. The evidence from past research served as a rationale for this study to explore whether cultural differences influenced different patterns of mobile phone use. Although Asian countries tend to represent collectivism, mobile phone use is different within the country and across countries. Furthermore, usage patterns differ between countries that represent individualism and collectivism. The literature guides this study to examine cultures beyond the individualism-collectivism dichotomy. Therefore, we asked:

RQ1: Whether there are differences between horizontal and vertical individualism and collectivism and their perceived values in using mobile phones?

RQ2: Whether there are differences between horizontal and vertical individualism and collectivism and the amount of mobile phone use for various activities?

Perceived Values of Mobile Phone Communication

Another variable that helps to understand how cultures affect mobile phone use and communication satisfaction is the perceived value. Hofstede (1980: 214) suggested that people's perceived values of communication influence their communication behavior. The perceived value refers to "the consumer's overall assessment of the utility of a product based on perception of what is received and what is given" (Zeithaml, 1988: 14). Perceived value is generally viewed as a multidimensional construct (e.g., functional value, emotional value, and social value) that affects people's communication and purchasing behavior (Lee, et al., 2002: 227; Patterson and Spreng, 1997: 414; Sweeney and Soutar, 2001: 203; Zeithaml, 1988: 2). Lee, et al. (2002: 228) identified four types of perceived values—functional, emotional, social, and monetary values—obtaining from using mobile Internet.

Based on previous research, this study examined perceived values in multidimensional constructs consisting of four types of perceived values that people would obtain from using mobile phones including functional, emotional, social, and monetary values. *Functional value* refers to practical or technical benefits that users derive from using mobile phones. Emotional value refers to psychological needs or the feelings such as relaxation or enjoyment from using mobile phones. Social value refers to benefits that users receive when using mobile phones to connect to others such as a sense of belonging. *Monetary value* means financial benefits from using mobile phones or the extent to which users think using

mobile phones offers value for their money (Lee, et al., 2002: 228; Sweeney and Soutar, 2001: 203).

The evidence showed that people from different cultures (e.g., Korean and Japanese) differed in their perceived values of mobile Internet services. The Japanese were more likely to use mobile Internet for functional services, whereas Koreans tended to use mobile Internet for entertainment services (Lee, et al., 2002: 227). Also, Americans used mobile phones for functional purposes rather than for social and emotional purposes **(Pew Internet and American Life Project, 2006: 1).** Hence, we expected:

H1: Perceived values (i.e., functional, emotional, social, and monetary values) to positively predict the amount of mobile phone use.

Communication Satisfaction

Satisfaction is defined as "the affect associated with the fulfillment or non-fulfillment of normative expectations" (Hecht, 1978b: 48). Hecht (1978a: 254) defined communication satisfaction as the positive reinforcement that is related to the fulfillment of positive communicative expectations. In this study, communication satisfaction refers to the fulfillment of positive communicative expectations through the use of mobile phones.

The concept of communication satisfaction has been examined in many contexts such as interpersonal communication, new media technologies, organizational communication, and organizational behavior (Martin and Anderson, 1995: 119; Myers, 1998: 309; Rubin, Perse, and Barbato, 1988: 602; Vikanda Pornsakulvanich, Haridakis, and Rubin, 2008: 2292). Several interpersonal communication studies used this concept to explain interpersonal communication satisfaction (Martin and Anderson, 1995: 119; Myers, 1998: 309).

Recent studies have examined the influence of Internet use on communication satisfaction (Papacharissi and Rubin, 2000: 175; Vikanda Pornsakulvanich, Haridakis, and Rubin, 2008: 2292). For instance, Martin and Anderson (1995: 119) found that communication satisfaction was explained by interpersonal communication for inclusion, affection, and pleasure. Papacharissi and Rubin (2000: 189) found that Internet use for information searching predicted communication satisfaction. Vikanda Pornsakulvanich, Haridakis, and Rubin (2008: 2301) found that using Internet dating sites predicted online communication satisfaction. Moreover, research also suggested that perceived values were related to consumer satisfaction (Patterson and Spreng, 1997: 414). To this point, research that links communication satisfaction, mobile phone use and

perceived values of mobile phones has not been identified. Therefore, we expected:

H2: The amount of mobile phone use to positively predicts communication satisfaction.

H3: Perceived values (i.e., functional, emotional, social, and monetary values) to positively predict communication satisfaction.

Research Methodology

Sample

This study employed a cross-sectional design in which data were collected at one point in time from two groups of participants: Thais and foreigners. To minimize random sampling error, the sample size was estimated based on sampling tables (Zikmund, 2003: 429). At a 95 % confidence level with 5% error, this research project required a minimum of 322 participants for each of the two groups.

To compare how Thais and foreigners valued, used, and were satisfied with mobile phones, the sample had to possess two characteristics: (1) they were mobile phone users and (2) they were Thais or foreigners. A questionnaire was developed in both English and Thai to assess cultural influences, perceived values of mobile phones, mobile phone use, and communication satisfaction. First, to exclude those who were non-users,

we asked participants whether they had used a mobile phone during the past three months. A positive response led to an interview to complete the questionnaire.

A total sample of 764 included 399 Thais residing in Bangkok and adjacent areas and 365 foreigners who had been in Thailand for less than one year (M = 31.80 days, *SD* = 87.56). Foreign participants were originally from 39 countries, mostly countries in Europe, including England (19.1%), Germany (13.7%), France (8.3%), and Sweden (6.0%). Only 5.1% each were from the United States and China. Less than 5% each were from other countries such as Australia, Canada, Switzerland, India, Israel, Japan, and Malaysia.

Overall, participants included 356 males (49.2%) and 368 females (50.8%), and were classified in six age groups: less than 18 years old (5.4%), between 19 and 25 years old (32.0%), between 26 and 32 years old (22.0%), between 33 and 39 years old (16.5%), between 40 and 46 years old (10.7%), and 47 years old and above (13.4%). Occupationally they were students (25.7%), business owners (19.1%), and privatesector employees (19%). Participant's highest education included high school (38.3%), vocational college (10.8%), and a Bachelor's degree (27.7%).

Measurement

This study aimed to investigate differences and relationships among variables including cultural influences, perceived values, mobile phone use, and communication satisfaction. We describe operational definitions and measures for each variable in the following section.

1) Cultural Influences

Cultural influences were operationalized as the degree to which people perceived themselves as an individualist or collectivist. Triandis and Gelfand's (1998: 119) Horizontal and Vertical Individualism and Collectivism consisted of 16 items with the response options on a 7-point Likert scale from Strongly Disagree (1) to Strongly Agree (7).

The scale measured four cultural distinctions: (1) horizontal individualism (HI) (α =.75), (2) vertical individualism (VI) (α = .58), (3) horizontal collectivism (HC) (α =.71), and (4) vertical collectivism (VC) (α = .76). The mean score was computed for each cultural pattern. Participants were classified as HI, VI, HC, or VC by the highest mean among the four patterns (Triandis and Gelfand, 1998: 119). A total of 169 participants (22.1%) had equal scores on two or more cultural patterns and they were excluded. Overall, participants were 186 horizontal individualists (31.3%), 33 vertical individualists (5.5%), 162 horizontal collectivists (27.2%), and 214 vertical collectivists (36.0%). Table 1 shows the four cultural patterns classified by country.

Table 1: Percentage of Horizontal and Vertical Individualism and Collectivism by Country

	Horizontal Individualism	Vertical Individualism	Horizontal Collectivism	Vertical Collectivism
France	16.0	12.0	56.0	16.0
Germany	15.8	2.6	34.2	47.4
Sweden	33.3	5.6	50.0	11.1
Thailand	35.4	4.5	17.5	42.7
U.S.A.	37.5	6.3	37.5	18.8
United Kingdom	36.7	8.3	25.0	30.0

Note: Percentage was calculated within the country. Countries representing over 5% of the total participants (N = 595) were reported alphabetically.

2) Perceived Values of Mobile Phone Communication

Perceived values referred to user's overall assessment of using mobile phones (Lee, et al., 2002: 228). The perceived values were operationalized into four types: functional, emotional, social, and monetary values, adapted from Lee, et al.'s (2002: 237) The survey questionnaire of value structure consisted of 20 items rated on a 7-point Likert scale from *Strongly Disagree* (1) to *Strongly Agree* (7). The scale showed evidence of acceptable reliability for the four values: functional values (α = .79), emotional values (α = .86), social values (α = .86), and monetary values (α = .84).

3) Mobile Phone Use

Mobile phone use was operationalized as the average number of minutes per day that participants used mobile phones for various activities, including (1) talking (*M* = 33.44 minutes, *SD* = 50.64); (2) using Short Message Services (SMS) (*M* = 8.99 minutes, *SD* = 14.91); (3) taking still pictures (M = 8.75 minutes, *SD* = 13.56); (4) recording video clips (*M* = 10.08 minutes, *SD* = 14.99); (5) playing music or MP3 files (*M* = 48.75 minutes, SD = 64.27); (6) playing games (*M* = 24.02 minutes, *SD* = 29.63); and (7) using the Wireless Application Protocol (WAP) (*M* = 22.92 minutes, SD = 43.95).

Two questions were developed to measure participants' average use of mobile phones. Participants' responses to these items relied on a method of recalling. To enable participants to report information more accurately, the first item provided them with a point of reference to recall the total number of minutes that they used mobile phones yesterday (วิกานดา พรสกุลวานิช, 2550: 33). The next item asked them to report minutes of mobile phone use on an average day. Then, the numbers of minutes were computed as an average score for each activity.

4) Communication Satisfaction

Communication satisfaction was operationalized as the fulfillment of positive communicative expectations from using mobile phones. Based on Hecht's (1978a: 259) Interpersonal Communication Satisfaction Inventory, the scale was adapted to a mobile phone setting and consisted of 9 items to measure communication satisfaction, which were rated on a 7-point Likert scale from Strongly Disagree (1) to Strongly Agree (7). Three negative items were recorded; however, these items were removed from this study due to low reliability. The 6-item scale showed evidence of good reliability with Cronbach's alpha of .84. Overall, participants were somewhat satisfied with communication through mobile phones (*M* = 4.31, *SD* = 1.11).

Results

Research Question 1 asked whether there were differences between horizontal and vertical individualism and collectivism in perceived value of mobile phone use (i.e., social, functional, emotional, and monetary). A Multivariate Analysis of Variance (MANOVA) yielded significant differences among the four groups, Wilks' Λ = .95, F (4, 586) = 2.54, p < .05, η^2 = .01. The results showed that vertical collectivism had higher scores than horizontal collectivism on the functional use of mobile phones (see Table 2). This suggests that vertical collectivists are more likely to use mobile phones for its functions when compared to horizontal collectivists.

Research Question 2 asked whether there were differences among horizontal and vertical individualism and collectivism in the amount of mobile phone use for various activities (e.g., talking, using SMS, taking pictures, recording video clips, playing music or MP3 files, playing games, and using WAP). An Analysis of Variance (ANOVA) yielded no significant differences in mobile phone use among the four groups, talking, F (3, 531) = .29, p = .83, using SMS, F (3, 262) = .49, p = .69, taking pictures, F (3, 104) = .67, p = .57, recording video clips, F (3, 36) = 1.95, p = .14, playing music or MP3 files, F (3, 119) = .45, p = .71, playing games, F (3, 90) = .73, p = .54, and using WAP, F (3, 44) = .44, p = .72.

Table 2: Means of Perceived Values of Mobile Phone Use on Horizontal and Vertical Individualism and Collectivism

Dependent Variables	Horizontal Individualism	Vertical Individualism	Horizontal Collectivism	Vertical Collectivism
Function	4.99	4.65	4.77*	5.04*
Emotion	4.13	4.36	3.94	4.02
Social	3.56	4.22	3.57	3.65
Monetary	4.13	4.38	3.94	4.02

Note: *p < .05.

Hypothesis 1 posed that perceived values would predict the amount of use. Hypothesis 1 was partially supported. Multiple regression analyses indicated that perceived values of mobile phone use accounted for 3.4% of the variance in mobile phone use for talking, R = .18, R^2 = .03, F (4, 673) = 5.91, p < .001, and for 9.5% of the variance in mobile phone use for playing games, R = .30, R^2 = .10, F (4, 116) = 3.04, p < .05 (see Table 3).

Additional regression analyses were performed to assess strong predictors of talking and playing games among the four perceived values of using mobile phones. Emotional values (β = .28, p < .001) positively predicted the amount of using mobile phones for talking, whereas monetary values (β = -.09, p < .05) negatively predicted the a mount of talking.

Also, the results showed that perceived emotional values (β = .29, p < .01) positively predicted the amount of playing games on mobile phones. The results suggested that people tended to talk and play games on mobile phones to fulfill their psychological needs such as affection, relaxation, or enjoyment. However, they also considered how economical mobile phone services were to gratify their needs.

Table 3: Multiple Regression Analysis of Perceived Values of Mobile Phone Use Predicting the Amount of Talking and Playing Games

Dependent Variable	Predictors	B	SE B	β
				R^2 = .03***
The Amount of Mobile Use for Talking	Function	-1.07	2.54	-.02
	Emotion	11.45	2.80	.28***
	Social	-4.06	2.35	-.10
	Monetary	-2.82	1.81	-.09*
				R^2 = .10*
The Amount of Mobile Use for Playing Games	Function	3.61	4.40	.11
	Emotion	4.56	4.21	.29**
	Social	3.05	3.32	.13
	Monetary	-2.54	2.76	-.10

Note: * p < .05 (N = 121). *** p < .001. (N = 678).

Hypothesis 2 posed that the amount of mobile phone use would positively predict communication satisfaction. Hypothesis 2 was partially supported. Linear regression analyses showed a significant relationship among mobile phone use and communication satisfaction, R = .12, R^2 = .01, F (1, 680) = 9.96, p < .01. Using mobile phones for talking (β = .12, p < .01) and for playing games (β = .25, p < .01) positively predicted mobile phone use satisfaction. The results indicated that people who spent more time on mobile phones for talking and playing games tended to feel satisfied with their

mobile phone use.

Hypothesis 3 posed that perceived values would positively predict communication satisfaction. Hypothesis 3 was supported. Multiple regression analyses indicated that the four perceived values accounted for 53% of the variance in mobile phone use satisfaction, R = .72, R^2 = .53, F (4, 751) = 207.23, p < .001. Functional (β = .17, p < .001), emotional (β = .45, p < .001), social (β = .12, p < .01), and monetary (β = .10, p < .01) values were significant positive predictors of mobile phone use satisfaction (see Table 4). The results indicated that all perceived values of mobile use explained communication satisfaction. Mobile phone users who perceived that mobile phones could serve as functional, emotional, social, and monetary purposes, tended to feel satisfied with their communication via mobile phones. More specifically, the more users perceived the value of mobile phones regarding its functional, emotional, social, and monetary aspects, the more likely they would feet satisfied with their communication.

Table 4: Multiple Regression Analysis of Perceived Values Predicting Communication Satisfaction

Dependent Variable	Predictors	B	SE B	β
				R = .53***
Communication Satisfaction	Function	.18	.04	.17***
	Emotion	.41	.04	.45***
	Social	.10	.03	.12**
	Monetary	.08	.03	.10**

Note: N = 755. ** p < .01. *** p < .001.

Discussion

Cultural Patterns

The results support that cultures differ multi-dimensionally rather than as a dichotomy. Researchers have disagreed on how culture should be classified into types (Gudykunst, et al., 1996: 511; Hofstede, 1980: 158; Triandis and Gelfand, 1998: 118). The findings imply that differences exist within individualism and collectivism. Hofstede (1980: 158) referred to 39 countries that were varied by individualism index scores. However, several countries having high scores on individualism such as Sweden, Germany, and France showed higher scores on collectivism than on individualism in this study. The U.S. was listed as the highest score on individualism by Hofstede, but

obtained comparable scores on both individualism and collectivism in our study. The implication is that individualism and collectivism may not simply be classified by country. Nations may represent overall cultural patterns to a certain degree. However, many kinds of individualism and collectivism exist within the country and beyond the nation. The results from Research Question 1 support this claim. Vertical collectivists tended to value functional and practical benefits of mobile phones (e.g., being fast and convenient) more than did horizontal collectivists.

Perceived Values, Mobile Phone Use, and Communication Satisfaction

Both mobile phone use and communication satisfaction varied by how people value the benefits of mobile phones. We found that emotional and monetary values predicted the amount of use and communication satisfaction in talking and playing games on mobile phones. The results imply that people tend to be motivated by emotional and financial needs to talk and play games on a mobile phone.

Thus, to better predict the usage patterns is to ask why people in different cultures prefer one function of the mobile phone over the others. As prior studies suggested, mobile communication is viewed and used differently among people in various countries (Ishii, 2006: 346; Lee, et al., 2002: 227; Muk, 2007:177). For example, some use mobile phones as a means of control (Carroll, et al., 2007: 79; Qiu, 2007: 74), whereas others perceive it as a device to fulfill interpersonal needs (Habuchi, et al., 2005: 94; Pain, et al., 2005: 814; Vikanda Pornsakulvanich and Nuchada Dumrongsiri, 2007: 901). As the evidence in this study suggested, people who perceived that mobile phones could gratify their functional, emotional, social, and monetary needs seemed to be satisfied with their communication via mobile phones.

Limitations and Future Directions

In this study, among participants from 39 countries vertical individualists were under represented. On the other hand, the numbers of horizontal individualists, horizontal collectivists, and vertical collectivists were comparable. These results are consistent with Chiou (2001: 676). The items measuring vertical individualism indicate pressure for social desirability such as "It is important that I do my job better than others." "When another person does better than I do, I get tense and upset." These items may prompt participants to respond on the positive end. Future research should modify or develop these items to avoid such bias in order to better distinguish vertical individualists between cultures.

Moreover, as mentioned previously, the results of this study suggest that culture is different in multi-dimensions ways rather than representing a dichotomy. According to Hofstede (1980: 214), Thailand received a very low score on individualism. In this study, although a majority of Thai participants (42.7%) were in vertical collectivism, it is surprising that about 35.4% of Thais fell into the horizontal individualism category. Individualism and collectivism are found in all cultures (Chiou, 2001: 676; Gudykunst, et al., 1996: 513). As a suggestion for future research, the four cultural patterns of horizontal and vertical individualism and collectivism are likely to better detect cultural differences.

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