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**FACTORS INFLUENCING  
CONSUMER ACCEPTANCE OF MOBILE ADVERTISING**

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**FACTORS INFLUENCING  
CONSUMER ACCEPTANCE OF MOBILE ADVERTISING**

**by**

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## **Dedication**

To my family, who supported my dream and helped me to see the positive side of everything.

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# **FACTORS INFLUENCING CONSUMER ACCEPTANCE OF MOBILE ADVERTISING**

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The primary objective of this study is to provide a comprehensive understanding of consumers' acceptance of mobile advertising. Specifically, this research explored how the persuasive communication process works via mobile advertising. In order to accomplish this research objective, the relationships among various factors identified from earlier studies were tested. Based on previous literature regarding consumer attitudes, media use, and innovation adoption, a conceptual framework was developed to understand consumer acceptance of mobile advertising. For this reason, the current study employed an online survey with 514 online participants. The results suggest that consumers' attitudes toward mobile advertising are closely related with all three factors used in this study (e.g., mobile device, message, consumer factors). Furthermore, consumers' attitudes toward mobile advertising are strongly influenced by message

factors (e.g. entertainment, credibility, irritation, message interactivity) and consumer factors (e.g. social influence, compatibility). Thus, careful considerations in message strategy and thoughtful consumer research are needed to increase the effectiveness of mobile advertising. Additionally, the sizable and significant impact of consumer attitude on behavioral intention further supports findings from previous research.

## Table of Contents

|   |    |
|---|----|
| List of Tables .....  | ix |
| List of Figures .....   | x  |
| Chapter I INTRODUCTION .....                                    | 1  |
| Mobile Media.....   | 1  |
| Different Types of Mobile Media.....                            | 5  |
| Push Mobile Advertising.....                                    | 6  |
| Pull Mobile Advertising.....                                    | 8  |
| Chapter II LITERATURE REVIEW .....                              | 14 |
| Theory of Reasoned Action (TRA).....                            | 16 |
| Internet Advertising Model.....                                 | 20 |
| Technology Acceptance Model (TAM).....                          | 21 |
| Uses and Gratifications (U&G).....                              | 23 |
| Diffusion of Innovations.....                                   | 27 |
| Demographic Factors.....  | 31 |
| Chapter III THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESIS ..... | 35 |
| Mobile Device Factors .....                                     | 36 |
| Message Factors.....  | 40 |
| Consumer Factors.....   | 48 |
| Attitudes toward Mobile Advertising.....                        | 54 |
| Chapter IV METHODOLOGY.....                                     | 57 |
| Overview.....   | 57 |
| Sample and Procedure.....                                       | 57 |
| Measurements.....   | 59 |
| Chapter V RESULTS AND DISCUSSION .....                          | 65 |
| Results.....  | 66 |
| Sample Profile.....   | 66 |



|   |     |
|---|-----|
| Data Reduction.....   | 67  |
| Hypothesis Testing.....   | 72  |
| Regression Analysis.....  | 77  |
| Discussion.....   | 81  |
| Chapter VI IMPLICATIONS AND LIMITATIONS .....                         | 91  |
| Theoretical Implications.....   | 91  |
| Practical Implications.....   | 96  |
| Limitations and Issues for Future Research.....                       | 100 |
| Appendix A Name of Appendix (if any, Heading 2,h2 style: TOC 2) ..... | 104 |
| References .....  | 112 |
| Vita.....   | 118 |

## **List of Tables**

|           |   |    |
|-----------|---|----|
| Table 1:  | Mobile Advertising Acceptance Factors and Theoretical Origins.....  | 15 |
| Table 2:  | Demographic Profile of the Sample.....  | 59 |
| Table 3:  | Measure of Perceived Ease of Use.....   | 60 |
| Table 4:  | Measure of Perceived Usefulness .....   | 61 |
| Table 5:  | Measure of Message Characteristics.....   | 62 |
| Table 6:  | Measure of Message Interactivity .....  | 63 |
| Table 7:  | Measure of Consumer Factors .....   | 64 |
| Table 8:  | Measure of Attitudes toward Mobile Advertising .....  | 64 |
| Table 9:  | Measure of Intention to Accept Mobile Advertising .....   | 65 |
| Table 10: | Mobile Media Usage Profile of Respondents .....   | 66 |
| Table 11: | Factor Loadings of Mobile Device Factor Measures.....   | 68 |
| Table 12: | Factor Loadings of Message Factor Measures.....   | 70 |
| Table 13: | Factor Loadings of Consumer Factor Measures .....   | 71 |
| Table 14: | Descriptive Statistics of Key Variables .....   | 72 |
| Table 15: | Correlation Coefficients Matrix .....   | 79 |
| Table 16: | Summary of Multiple Regression Analysis for Predicting Attitude<br>toward Mobile Advertising .....                    | 80 |
| Table 17: | Summary of Multiple Regression Analysis for Predicting Behavioral<br>Intention .....                                  | 81 |
| Table 18: | Testing the Mediating Effect of Attitudes toward Mobile Advertising on<br>Intention to Accept Mobile Advertising..... | 94 |

## List of Figures

|           |   |    |
|-----------|---|----|
| Figure 1: | U.S. Mobile Phone and Internet Service Penetration Rate .....             | 2  |
| Figure 2: | Quick Response Code Example.....  | 4  |
| Figure 3: | Example of Mobile Transaction.....  | 5  |
| Figure 4: | Different type of WAP advertising .....                                   | 12 |
| Figure 5: | Attitude Toward the Behavior Equation .....                               | 18 |
| Figure 6: | Subjective Norm Equation.....   | 19 |
| Figure 7: | Conceptual Framework of Mobile Advertising Communication Process<br>..... | 56 |

## **CHAPTER I**

### **INTRODUCTION**

Since the first successful wireless transmission of radio waves in 1895 by Italian physicist Guglielmo Marconi, wireless communication has become an important part of people's life. The advancement of wireless communication technologies such as mobile phones not only enables consumers to communicate with other consumers but also empowers marketers to deliver messages to their customers in innovative ways. As of 2008, more than four billion people have registered for mobile phone service worldwide with a reach of more than 61% of population worldwide (ITU 2008). Due to the high penetration rate of mobile phones among consumers and technological advancement, the practices of mobile advertising is growing, although it is not widely accepted yet among consumers in the U.S. The following section discusses the current status of mobile advertising technology by focusing on the unique characteristics of mobile devices as an advertising medium.

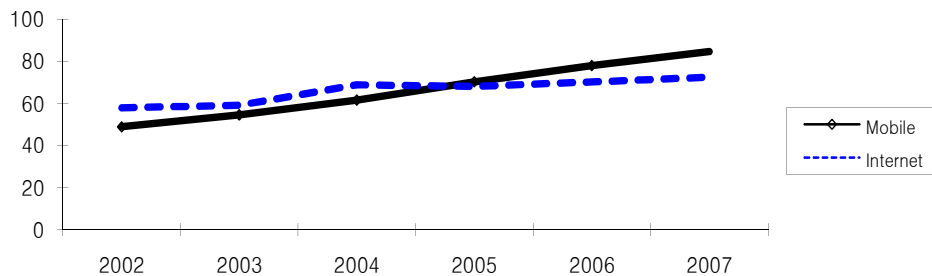
#### **Mobile Media**

According to Sharma, Herzog, and Melfi (2008), mobile devices have four unique elements that make them superior advertising media than traditional media. First, mobile devices are high volume and personal fashion statements. The significant number of subscribers and the penetration rate of mobile phone are higher than the Internet in the U.S. (Figure 1). According to Cellular Telecommunications Internet Association (CTIA), the total number of estimated mobile phone subscribers in the U.S. was 262.7 million in

mid-2008 with a penetration rate of more than 84% of the population (CTIA 2008).

Meanwhile, the Internet reached 220 millions users in mid-2008 with a penetration rate of more than 72.5% of the population (Internet World Stat 2008). These figures suggest mobile phones' potential as a mass advertising medium that can reach a broad audience base.

**Figure 1. U.S. Mobile Phone and Internet Service Penetration Rate**



Source: CTIA & Internet World Stat

In addition, mobile devices are often regarded as a personal fashion statement that represents the user's social status (Jun and Lee 2007). Given this, the need for advancement in mobile phone technology such as the 3G phone has increased. According to the Mintel U.S. Phone Report (2008), size, shape, and style of the mobile phone and cost are currently the most important purchase considerations among most cell phone owners. Specifically, young adults between 18 and 24 years have the highest affinity for their phones and appear to use advanced technology to create a desirable personal identity (Mintel 2008).

Second, mobile devices are always carried around and are almost always on which enables advertisers to communicate with their consumers with little time and spatial restrictions. This provides a unique difference between mobile advertising and traditional advertising. For example, advertisers may worry less about running their ads on prime-time TV programming or major newspapers to reach a mass audience. Instead, advertisers can send more relevant and timely information to consumers by identifying consumers' geographical location and time.

Third, mobile devices provide unique user input experience via cameras, touch-screen, and voice that can increase active audience participation in the process of persuasive communication. These unique user input features have enabled advertisers to develop various advertising techniques that will help increase active consumer participation with the traditional media. For example, mobile bar code advertising using the Quick Response (QR) code has grown in popularity in Japan and South Korea over the past years. The QR code is a two-dimensional bar code that shows up in a thumbnail size bar code on magazine and newspaper ads as a quick automatic link between print and online media that does not require the consumer to type in an Internet address or remember a special code (Figure 2) (Fowler 2005). Consumers can send a direct response to an advertiser's message by taking a picture of the QR code and sending it via the mobile device to request more information or to receive incentives. This enables traditional mass media, such as newspapers and magazines, to become interactive with the consumer.

**Figure 2. Quick Response (QR) Code Example**



Source: Suica

Lastly, mobile phones enable consumers to purchase goods and services by charging the transaction to their phone bills. The mobile commerce (m-commerce) has grown in popularity in some Asian countries such as Japan and South Korea over the past years. For example, Japan's NTT DoCoMo introduced a mobile commerce system called "*DoCommerce*" that enabled consumers to purchase goods and pay online or by charging the transaction to their phone bills (NTT DoCoMo 2003). Japan's other mobile payment system company "*Suica*" enables consumers to use their mobile phones to pay for purchases from vending machines to public transportation (Figure 3). Mobile phone service providers in South Korea introduced a mobile banking system and mobile transaction system in 2004 by embedding small Integrate Circuit (IC) chips in mobile phones to allow payments for public transportation, retail shopping, and movie tickets (Figure 3). This built-in payment capability significantly increases consumers' direct response to mobile advertising and m-commerce.

**Figure 3. Examples of Mobile Transaction**



Source: Suica

In summary, the unique characteristics of mobile devices enable marketers to communicate with their consumers effectively. In addition, mobile devices are superior advertising media than traditional media because they increase the marketer's opportunity to reach a broad and targeted audience. The following section discusses different types of mobile advertising and reviews how marketers around the world currently employ mobile advertising.

### **Different Types of Mobile Advertising**

Mobile advertising generally refers to the transmission of advertising messages to the targeted audience in formats of music, graphic, text, or voice in order to reach advertisers' goal as well as to gather consumers' feedback (Haghirian, Madleberger, and



Tanuskova 2005). Mobile advertising has typically been categorized into two types (push vs. pull type) in previous studies (Barwise and Strong 2002; Okazaki & Taylor 2008). The following sections describe technological characteristics of two different types of mobile advertising and related applications.

### **Push Mobile Advertising**

In push mobile advertising messages, the marketer takes the initiative to send messages to the consumer regardless of whether the consumer has agreed to receive the message or not. Push type mobile advertising is defined as “any content sent by or on behalf of advertisers and marketers to a mobile device at a time when the subscriber requests it” (Unni and Harmon 2007, p. 3.). Therefore, this type of mobile advertising gives more control over the flow of advertising and promotions to marketers. Almost all traditional advertising media (e.g. TV, radio, and newspaper) uses a push type of advertising approach to deliver their message to potential consumers (Sharma et al. 2008). In mobile advertising, short message service and multimedia service advertising are generally considered as push type mobile advertising (Barwise and Strong 2002).

*Short Message Service (SMS).* The SMS advertising is defined as ad units that appear appended to other published content or as a full advertising message on mobile devices (MMA 2007b). The SMS ad unit can be either static (i.e., no action to be taken by the end user) or dynamic (user can act on the message). Since it was sent in 1992 from a PC to a mobile phone in Europe, the SMS is currently one of the most widely used mobile technologies to send advertising messages. SMS supports text messages of about

160 characters in length and contains no images or graphics. Although SMS advertising only supports a limited number of characters and is usually delivered via a small mobile phone screen, SMS is the most widely accepted mobile advertising medium among marketers and it has twice as many as email users worldwide (MMA 2007a).

Michael and Salter (2006) suggested four advantages of using SMS as a marketing communication tool. The first is the convenience of reading or watching advertising messages regardless of time and place for the consumer. For example, when a consumer receives SMS advertising messages during a meeting or when the mobile phone is turned off, the advertiser can automatically resend the message to consumer mobile phones for them to check the mobile advertising message whenever it is convenient. The other advantages are the easiness of sending relevant messages to the consumers and the low cost associated in doing so. For example, advertisers can easily send out messages to their target audience with relatively lower cost than through other means such as direct mail. The last advantage is its discreet and confidential nature. The SMS advertising message is less interruptive than other types of marketing messages. For example, incoming mobile advertising messages do not interrupt the person being communicated with to the same extent as a phone call. It also guarantees an extra level of privacy by showing the message only to the recipient.

*Multimedia Messaging Service (MMS)*. MMS is similar to SMS, except that it primarily supports graphics, photos, audio, and video. Although SMS and MMS are both messaging technologies, there is a dramatic difference between the two in terms of content. The average size of an MMS message is much larger than that of the SMS

message. It carries more dynamic content such as video and audio clips than SMS (Michael and Salter 2006). As a result, MMS provides mobile advertisers with additional tools to increase consumer experience with the message such as the ability to offer wallpaper that promotes a brand or product. For example, a music fan can send an SMS message to short code in order to receive an MMS with a video clip of his/her favorite artist. MMS, with the growing base of camera phones, also increases consumer interaction with the advertiser by allowing consumer participation. As built-in cameras are common in most of the mobile hand devices, MMS can increase its effectiveness as an interactive advertising medium. Marketers may increase the awareness of their new product by running a viral ad campaign for the product via a mobile phone or creating a contest of user generated content for their product. For example, South Korea's family restaurant chain VIPS ran a cross media promotional campaign called TV coupon to increase consumer participation and brand awareness of the restaurant chain via TV commercials. By using the built in camera in their mobile phone consumers can take a picture of the promotional coupon in the TV commercial and claim any incentives (e.g., free appetizer or meal) at the restaurant. This cross media campaign resulted in an increasing word-of-mouth about the promotion among young consumers and increased its new customer acquisition rate in 2007 (Herald Media 2007).

### **Pull Mobile Advertising**

Pull mobile advertising messages can be defined as “any advertising messages sent to consumers upon request shortly thereafter on a one time basis” (Unni and Harmon

2007, p.3). As pull mobile advertising requires consumer request before sending every messages, it has been considered as a more efficient way to deliver advertising messages to consumers. For example, Godin (1999) suggested that permission marketing is opposite of traditional interruption marketing and is about building an ongoing relationship of increasing depth with customers by obtaining customer consent to receive information from a company. It is also suggested as less interruptive, more relevant, and customized than traditional interruptive marketing by sending messages only to consumers who requested it. The advent of the Internet facilitates this type of advertising. In general, pull advertising has been extremely effective at acquiring profitable traffic especially for search with its focus on the power of user intent and inquired keywords that show up right at the point of consumer purchase consideration (Sharma et al. 2008). Advertising on the mobile Internet and Bluetooth advertising are two examples of pull mobile advertising.

*Wireless Application Protocol (WAP).* The WAP is a technology platform used to create Websites (mobile website) that are easily accessible from a mobile device. As mobile devices are slower, smaller, and have less memory than personal computers, WAP is designed to maximize the experience of Internet applications within the restricted environment of the mobile devices (Michael and Salter 2006). The WAP was developed by the WAP forum, an industry group that was set up in 1997. It has since been consolidated into the Open Mobile Alliance in 2002 (OMA 2008). The WAP works in a way similar to the Internet. That is, the user of WAP can surf marketer's website designed to fit in a small mobile device screen with a range of content. For example, consumers

can play games and learn trivia by visiting mobile marketers' WAP sites and search for information about products or mobile marketers' business locations via their mobile devices.

For now, WAP is widely employed by many mobile marketers in various ways. For example, there are three different types of mobile WAP ads currently available. The first type is a text link ad within the WAP site. As shown in Figure 4, the text link is a clickable ad consisting only of text and this can be placed anywhere within the WAP content (MMA 2005). The second type is an image only ad within the WAP site. The image-only ad is similar to the banner ad on the Internet and provides a clickable image link to respond to advertisers' messages by directing consumer to advertisers' mobile websites or placing a call to the advertisers. The third type is a combination of clickable text and image link within the WAP site. In early types of WAP (WAP 1.0), a limited number of text and black and white colors were supported in three different types of WAP advertising. However, WAP has steadily improved with each new version and now the improved WAP 2.0 version enables more advanced features such as 16 different color support, streaming video, and mobile broadcasting. For example, South Korea started the world's first Digital Multimedia Broadcasting (DMB) in 2005 and provided broadcast services to consumers via mobile phones.

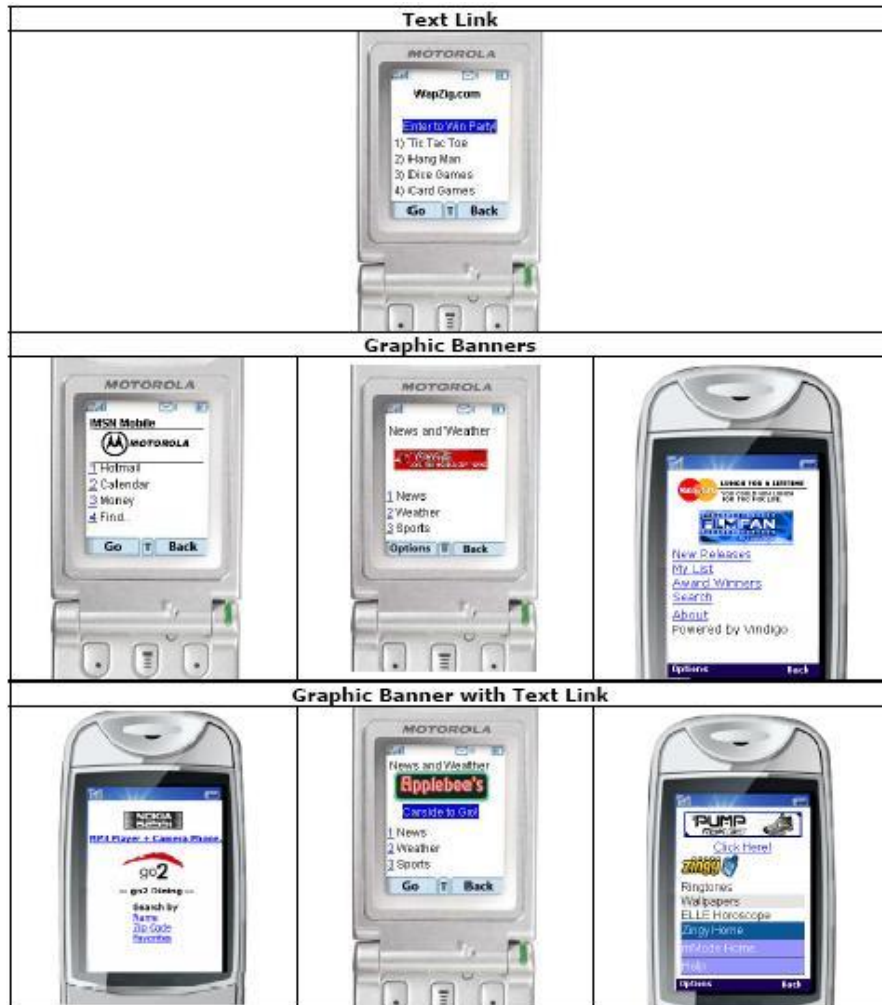
*Bluetooth.* The Bluetooth is a short-range (about 33 feet) wireless technology that allows users to download applications, content, and other data to their mobile devices (Sharma et al. 2008). Mobile advertisers can use Bluetooth not only to deliver advertising messages but also to deliver incentives such as mobile coupons, free ringtones, and free

wallpaper when a consumer walks past a billboard or kiosk. Bluetooth advertising has two major benefits when compared to other types of mobile advertising. The first benefit of Bluetooth advertising is its low hardware and campaign cost. Because network operators do not control Bluetooth communication, transmission is completely free for both the sender and the receiver. For advertisers, Bluetooth advertising provides opportunities for marketers with small advertising budgets, as there is no per customer cost for advertisers to send their messages. In addition, there is no cost for consumers to receive advertisers' messages since there is no airtime charge for the message or data transfer via Bluetooth. Therefore, it is a useful technology to target price sensitive demographics such as teens and young consumers. For example, Smithsonian's Freer Gallery of Art and Arthur M. Sackler Gallery in Washington DC recently launched a Bluetooth mobile advertising campaign to reach a young audience for their new exhibition (Smithsonian 2008). A message from the Smithsonian will appear on pedestrians' mobile screens via Bluetooth transmitter embedded in a bus shelter on the street to ask audience's for opt-in permission. Those who accept the message will receive a message urging them to visit the featured exhibition with incentives. As the entire message transmission system of requesting opt-in permission and sending a mobile ad is enabled via free of charge Bluetooth data transfer system, there is no cost to send or receive this mobile advertising message.

The second benefit of using Bluetooth advertising is its ability to protect consumer privacy. Since Bluetooth connections are anonymous and must be allowed by mobile phone users, there are no legal issues regarding the transmission of unsolicited

messages. This makes Bluetooth advertising more universal, cheaper, easier to implement, and seen by customers as less intrusive than other types of mobile advertising.

**Figure 4. Different types of WAP Advertising**



Source: Mobile Marketing Association 2005

## The Need to Study Consumer's Acceptance of Mobile Advertising

The rapid technological advancement and high penetration of mobile phones

have fueled the increasing use of mobile devices for advertising purposes. The mobile phone service industry, one of the largest sectors of the U.S. economy, has been growing at an increasing rate since 2002 with an estimated revenue of \$150 billion in 2007 (Mintel 2007). According to eMarketer (2008), worldwide advertisers are expected to spend \$2.4 billion on mobile advertising in 2009 that is more than the double-digit growth from \$1 billion in 2008. As mobile advertising becomes more common, there is a need to develop a more in-depth understanding of consumers' acceptance of mobile advertising. While marketers' interests of using mobile devices to break through the advertising clutter are increasing, the study of consumer acceptance of mobile advertising is in its infancy. Although research on mobile advertising has been initiated recently (e.g., Barwise and Strong 2002; Muk 2007; Okazaki, Katsukura, and Nishiyama 2007; Tsang, Ho, and Liang 2004), work in this area is fairly limited and little progress has been made in understanding how the consumer accepts mobile advertising.

The objective of this study is to provide in-depth understanding of consumers' acceptance of mobile advertising. Specifically, this research will explore how does a persuasive communication process work via mobile advertising? In order to accomplish this research objective, the following sections review past literature on consumer media use, innovation adoption, and consumer attitude to explore the factors influencing consumer attitude toward mobile advertising and acceptance of mobile advertising. This study then proposes a conceptual framework to help us understand how persuasive communication works via mobile advertising.



## **CHAPTER II**

### **LITERATURE REVIEW**

Since Barwise and Strong's first mobile advertising article titled "Permission-based mobile advertising" in 2002, early studies of mobile advertising mostly investigated the factors that drive consumer acceptance of mobile advertising. That is, the focus of early mobile advertising research was to determine relevant parameters for future in-depth investigation. Although a specific theory on mobile advertising acceptance has yet to be broadly accepted, early mobile advertising research employed theories from traditional advertising and Internet advertising literature (Bauer et al. 2005; Muk 2007; Okazaki 2007; Tsang, Ho, and Liang, 2004; Yang, 2007).

Recently, Hanley and Becker (2008) categorized factors influencing mobile advertising acceptance among consumers into three areas: industry, medium, and consumer. Table 1 provides a visual representation of Hanley and Becker's model. Industry factors include technological characteristics of mobile devices, complexity, ease of use, compatibility, and government regulation. Medium factors include marketer-to-consumer interaction, context interaction (e.g., relevance, time, and location), costs, presence of incentives, and presence of permissions. Lastly, consumer factors include consumers' general attitudes toward advertising, level of involvement, innovativeness, perception of trust and utility, perceived risk, self-efficacy, and demographic (e.g., age, gender, income, and education). These factors originated from various theories and models that explained consumers' acceptance of new technologies and how they process information. Therefore, the following sections will review these factors (e.g., industry,

medium, and consumer) by their theoretical origins to explain how these factors enhance our understanding of the process of persuasive communication process with regard to mobile advertising.

**Table 1. Mobile Advertising Acceptance Factors and Theoretical Origins**

| <b>Industry Factor</b>  | <b>Medium Factor</b>  | <b>Consumer Factor</b>   |
|---|---|--|
| <ul style="list-style-type: none"> <li>● Technology</li> <li>● Complexity</li> <li>● Ease of use</li> <li>● Compatibility</li> <li>● Government Regulation</li> </ul> | <ul style="list-style-type: none"> <li>● Marketer-to-consumer interaction</li> <li>● Context interaction (relevance, time and location)</li> <li>● Cost</li> <li>● Presence of incentives</li> <li>● Presence of permissions</li> </ul> | <ul style="list-style-type: none"> <li>● General attitude toward advertising</li> <li>● Level of involvement</li> <li>● Innovativeness</li> <li>● Trust and perceived usefulness</li> <li>● Perceived risk</li> <li>● Self Efficacy</li> <li>● Demographic factor</li> </ul> |
| <b>Theoretical Origins</b>  |   |  |
| Technology Acceptance Model 1 (Davis 1980)  | Uses and Gratifications (Katz et al. 1974)  | Theory of Reasoned Action (Fishbein & Ajzen 1975)  |
| Technology Acceptance Model 2 (Vankatesh and Davis 2000)  | Perceived Risk Model (Mitchell 1999)  | Diffusion of innovations (Rogers 2003)   |
| Diffusion of innovations (Rogers 2003)  | Perceived Interactivity (Cho and Leckenby 1999; Hwang and McMillan 2002; Wu 2005)   | Perceived Risk Model (Mitchell 1999)   |

The most common theories/models researchers employ to study consumer acceptance of mobile advertising include the Theory of Reasoned Action (Fishbein and Ajzen 1975), Diffusion of innovations (Rogers 2003), Technology Acceptance Model (Davis 1989), extended Technology Acceptance Model (Vankatesh and Davis 2000), and Uses and Gratifications Perspective (Katz, Blumler, and Gurevitch 1974). Table 1 provides a visual summary. From these theories/models, various factors influencing mobile advertising acceptance have been explored. For example, the Theory of Reasoned

Action (TRA) and Technology Acceptance Model (TAM) have been employed to predict consumers' attitudes toward mobile advertising. According to the TRA and TAM, consumer acceptance of mobile advertising is determined by two factors: attitude toward accepting mobile advertising and the subjective norm. Past studies have consistently shown that attitude toward the behavior and subjective norm are the major predictors of consumers' intention to receive mobile advertising (Bauer et al. 2005; Muk 2007; Tsang et al. 2004; Yang; 2007).

Attitude has long been regarded as an important predictor of consumer behavioral intention and/or behavior in advertising research (Fishbein and Ajzen 1975; Ajzen 1991). Therefore, many researchers have explored factors influencing consumers' attitudes. As such, the TRA has been most widely employed as a theoretical framework to explain attitude-behavior relationships and factors influencing attitude toward mobile advertising.

### **Theory of Reasoned Action (TRA)**

The TRA is generally recognized as a well-established theoretical framework that can be used broadly to predict and explain human behavior in various domains. It assumes that an individual rationally evaluates the cost and benefits of engaging in a particular behavior and thinks carefully about how important others will view the behavior under consideration. There are four components of the TRA. The first component is attitude toward the behavior. It is defined as an individual's positive or negative feelings about performing the specific behavior. The second is subjective norm

that is defined as an individual's perception that most people who are important to him/her think he/she should or should not perform the behavior. The third is behavioral intention that is defined as an individual's intent or plan to perform behavior of interest. The final component is the behavior itself that is defined as an action in a particular situation (Fishbein and Ajzen 1975). According to the TRA, these four components have a causal relationship in predicting an individual's behavior. That is, the immediate determinant of an individual's behavior is the individual's intention to perform or not to perform that behavior and this intention is a function of two independent determinants—attitude toward the behavior and subjective norm—which are related to normative and behavioral beliefs (Fishbein and Ajzen 1975).

*Attitude.* According to the TRA, attitudes are the results of the information that an individual has about the attitude object. This means that attitudes can be based on the thoughts we have about the object and information received from external sources (e.g., advertising, trusted friends, and sales persons) or information we can recall from memory. For example, if we want to know an individual's attitude toward accepting mobile advertising messages, we could ask the individual to list his/her beliefs about accepting such advertising. The TRA specifies how the different salient beliefs are combined to arrive at an overall evaluation of the behavior under consideration (Petty and Cacioppo 1981). The equation in Figure 5 describes an individual's beliefs integration process to form his/her attitude.

**Figure 5. Attitude Toward the Behavior Equation**

$$A_b = \sum_{i=1}^N b_i e_i$$

In the equation,  $A_b$  refers to the individual's attitude toward the behavior;  $b$  refers to the beliefs that the individual has about the consequences of the behavior of interest; and  $e$  refers to the evaluations of the consequences. The  $i$  in the equation refers to the specific belief number where beliefs are numbered from 1 to  $N$ . Thus, according to the TRA, an individual's attitude toward a behavior can be predicted by multiplying the evaluation of each consequence associated with a behavior by the subjective probability that the behavior really leads to that consequence and by summing the products. Although in the TRA, the equation on Figure 5 used to predict attitude toward specific behaviors, the equation also applies to predict attitudes toward people, objects, and issues (Petty and Cacioppo 1981).

*Subjective Norm.* According to the TRA, the second predictor of the behavioral intention is an individual's subjective norm (SN). As it is mentioned earlier, it is defined as an individual's perception that most people who are important to him/her think he/she should or should not perform the behavior. Fishbein and Ajzen (1975) suggested that an individual's general subjective norm is based on the individual's normative beliefs (NB) that important reference groups or individuals endorse performing the behavior and the individual's motivation to comply (MC) with each of the referent persons or groups. This information is integrated into a general subjective norm as specified in the equation in figure 6.

**Figure 6. Subjective Norm Equation**

$$SN = \sum_{i=1}^M (NB)_{TM} (MC)_i$$

Thus, an individual's general subjective norm can be predicted by multiplying one's assessment of another's endorsement of performing the behavior (NB) by one's motivation to comply (MC), and summing the product obtained for each referent where referents are numbered from 1 to M.

Specifically, of interest to advertising scholars here is the observation that consumers' attitudes toward advertising influence their behaviors and behavioral intentions. Consumer' attitudes are based on the information or beliefs that they have about the attitude object. Many studies have empirically supported TRA with evidence demonstrating that consumers' attitudes toward behavior and subjective norm are the strongest predictors of behavioral intention and behavior (Ajzen 1991; Bauer et al. 2005 Davis, Bagozzi, and Warshaw 1989; Gentry and Calantone 2002; Muk 2007; Tsang et al. 2004). For example, Bauer et al. (2005), in their study of German consumers' acceptance of mobile marketing, found that both attitude toward the behavior and subjective norm have direct influence on their behavioral intention. Additionally, they found that entertainment and information value are the key beliefs that forms consumer attitude toward mobile marketing, whereas perceived risk of mobile marketing evokes a negative attitude toward mobile marketing. Similarly, Tsang et al. (2004), in their study of Taiwanese consumers' acceptance of mobile advertising, found that attitude is the key

determinant of consumer acceptance of mobile advertising.

### **Internet Advertising Model**

In addition to the TRA, Ducoffe's attitude toward Internet advertising model (1996) has also been widely employed by many researchers to predict mobile consumer attitude (Barwise and Strong 2002; Bauer et al. 2005; Tsang et al. 2004). Ducoffe (1995) originally introduced the model of how consumers' perceived value of advertising influences their attitudes toward traditional advertising in general. Later, Ducoffe tested his initial 1995 model on Internet advertising (Ducoffe 1996). Similar to the TRA, Ducoffe (1995 & 1996) assumed that attitude is the key determinants to predict an individual's behavioral intention. However, two major differences exist between the TRA and the Ducoffe model (1996). First, the Ducoffe model (1996) does not test the attitude-behavior relationship. Instead, it explores the relationship between consumers' beliefs about Internet advertising and their attitudes toward Internet advertising. Second, the Ducoffe model (1996) focuses on how consumers' attitudes toward Internet advertising in general are formed based on their beliefs rather than attitude toward the specific type of Internet advertising (e.g., banner ad, keyword ad, and email ad) that is the focus of the TRA. Therefore, the Ducoffe model (1996) has been widely used to explore the antecedents of attitude toward advertising rather than the attitude-behavior relationship. However, both the TRA and the Ducoffe model agree that consumers' attitudes are formed from consumers' beliefs and the evaluations of target behavior. Ducoffe suggested that the sum of consumers' beliefs about advertising form advertising value and the value

influence to attitude toward the specific advertising.

Ducoffe (1996) suggested that the four key beliefs that consumers have about Internet advertising—entertainment, information, credibility, and irritation—are components of advertising value and this value directly influences consumers' attitudes toward Internet advertising in general. These four antecedents have been employed in many mobile advertising studies (Barwise and Strong 2002; Bauer et al. 2005; Haghirian and Madlberger 2005; Tsang et al. 2004). For example, Haghirian and Madlberger (2005), in their study of Austrian mobile phone users, found that these four key beliefs in the Ducoffe model (1996) determined consumers' perception of advertising value that directly influenced consumers' attitudes toward mobile advertising. Similarly, Tsang et al. (2004), in their study of Taiwanese consumers' acceptance of mobile advertising, found that consumers' acceptance of mobile advertising and attitudes toward mobile advertising formed by consumers' perceived entertainment, information, credibility, and irritation of mobile advertising.

### **Technology Acceptance Model (TAM)**

In addition to the Ducoffe model (1996) and the TRA, the TAM has been widely employed in mobile advertising acceptance studies (Bauer et al. 2005; Muk 2007; Wu and Wang 2005; Yang 2005). Although the TRA has been supported in different contexts and by a number of studies, limitations still exist. For example, Sheppard, Hartwick, and Warshaw (1988) indicated that one major limitation of the TRA is that it does not consider a person's perceived behavior control. That is, some actions may be determined



by factors outside of one's volitional control, which the TRA does not accommodate. Following the introduction of the Internet and other emerging communication technologies, the importance of perceived behavior control has been highlighted. Consequently, exploring the construct that explains consumers' perceptions of behavior control is needed.

Based on the TRA (Fishbein and Ajzen 1975), Davis (1989) introduced TAM to explain and predict user behavior by two key beliefs: perceived usefulness and perceived ease of use. TAM suggests that these two beliefs predict an individual's use of technology and intention to use it with attitude as a mediating variable. Davis (1989) defined perceived usefulness as the extent to which an individual believes that using certain technology will enhance his/her job performance. Perceived ease of use is defined as the extent to which an individual believes that using the technology will be free of effort. Although TAM consistently explains more than 40% of variances predicting consumers' behavioral intention and actual behavior, it lacks social influence factors that should help explain a considerable amount of consumer adoption of new technologies (Vankatesh and Davis 1999). For example, consumers may decide to adopt a technology or innovation because of its perceived importance in terms of group membership or social status. Mobile devices have generally been regarded not only as a platform of mass media that provide entertainment and information but also as a personal media device that enhances an individual's social interaction with others (Leung and Wei 2000). Additionally, the TRA suggests that an individual's behavior is predicted by both attitude and subjective norm. As a result, Vankatesh and Davis (2000) extended the original TAM by

incorporating social influence processes (e.g., image and social status) and cognitive instrumental process (e.g., job relevance, output quality, and perceived usefulness) in their extended TAM (hereafter TAM2).

It should be noted that TAM2 excludes attitude due to its weak predictive power of either behavioral intention or actual behavior (Wu and Wang 2005). Recent research on TAM suggests that attitude may not be an important factor in predicting consumers' mobile advertising acceptance (Vankatesh, Morris, Davis, and Davis 2003; Vatanparast and Asil 2008; Wu and Wang 2005). For example, Wu and Wang (2005), in their study of Taiwanese consumers' adoption of mobile commerce, suggested that consumers' perceived usefulness and easiness of mobile commerce indirectly predict mobile commerce adoption via intention to use mobile commerce. Although attitude is excluded from TAM2, many studies have provided evidence of attitude as a predictor of behavioral intention or actual behavior. Therefore, future research needs to include and validate the usefulness of attitude as a predictor of consumer mobile advertising acceptance behavior.

### **Uses and Gratifications (U&G)**

The U&G has been considered as a psychological communication perspective that focuses on the individuals' media uses and need gratifications (Severin and Tankard 2001). The main objective of the U&G perspective is to explain the psychological or social needs behind why people use certain media and what motivates them to engage in certain media-use behaviors for need gratifications (Severin and Tankard 2001). Katz, Blumler, and Gurevitch (1974) suggested that early studies of the U&G perspective are

concerned with the social and psychological origins of various audience needs that generate expectations of the mass media or other sources and these expectations, in turn, lead to differential patterns of the mass media exposure to gratify those needs. Based on their summary of early U&G studies, Katz et al. (1974) suggested that media users are goal-directed and gratify their needs actively. Furthermore, they suggested that media users are aware of their needs and select the appropriate media to gratify their needs.

In contrast to traditional passive audience approaches, which focus on how the media influences passive audiences, the U&G focuses on what people do with the media. As a first theoretical perspective that introduces the concept of active audience, the U&G investigates important theoretical background of media usage and has become a significant theoretical framework in mass communication and advertising research. Specifically, of interest to advertising scholars is the observation that the active audience concept challenges traditional top-down (advertiser-audience) and one-way model of the persuasive communication process. The interactivity of the new communication media, which enables an audience to actively search for information and control information flow, matches the concept of the active user in the U&G perspective. Furthermore, two-way interactive communication in the new interactive media environment enables audiences to communicate with each other and even with advertisers. For example, when a consumer is shopping for a personal computer, the consumer actively searches for product information not only by visiting company websites who sell the products but also from alternative information sources such as product review sites. Therefore, the U&G has become widely accepted as a useful perspective in advertising and new media studies

to explore consumers' motivation to use media.

Past studies on the U&G perspective suggested that consumer motivation influences how they will use media and media content. Past studies have identified primary motivations of consumers' various media uses such as newspaper, television, Internet, and mobile phone (Jun and Lee 2007; Kaye 1998; Ko, Cho, and Roberts 2005; Papacharissi and Rubin 2000; Korgaonkar and Wolin 1999; Leung and Wei 2000; Luo 2002). For instance, Korgaonkar and Wolin (1999) explored Internet users' motivations by categorizing 41 motivational items into seven factors: social escapism, transactional security and privacy, information, interactive control, socialization, non-transactional, privacy, and economic motivation. They suggested that people use the Internet not only for retrieving information, but also for seeking entertainment and escape (Korgaonkar and Wolin 1999). Specifically, of interest here is the observation that these seven motivational factors are the important predictors of advertising effectiveness such as consumer attitude or consumer purchase intention. For instance, Luo (2002) suggested that entertainment, informativeness, and irritation are the major predictors of consumers' attitudes toward the Internet, which in turn are the important predictors of advertising effectiveness. Those three major predictors from Luo (2002) are identical to predictors from previous attitude studies such as the TRA (Fishbein and Ajzen 1975) and Internet advertising model (Ducoffe 1996).

Although major predictors of consumer attitude and media use motivation share common factors, there is a major difference between the two streams of research. It is the perspective on how communication process works. Rubin (2002) suggested that the

primary difference between the media use motivation studies such as the U&G perspective and media effects research is that the media effects study most often look at the communication process from the communicator's end, whereas the U&G researcher begins with the audience member. However, one similarity between the U&G research and the media effects study is that both seek to explain the outcomes or consequences of the communication process in terms of attitude formation/change, behavioral change, and societal effects. The U&G perspective focuses more of its attention on audience initiative, choice, and activity than media effects study (Rubin 2002). Therefore, the U&G is the theoretical framework that explains the emergence of active consumers and their active uses of media or media content.

According to U&G perspective and consumer attitudes studies (i.e., TRA and Ducoffe model) consumers' attitudes toward Internet or Internet advertising are dependent on three common motivation factors: entertainment, informativeness, and irritation (Kaye 1998; Ko, Cho, and Roberts 2005; Papacharissi and Rubin 2000; Korgaonkar and Wolin 1999; Luo 2002). In addition to those three previously identified motives for media uses, Leung and Wei (2000), in their study of mobile phone users in Hong Kong, suggested that mobility, immediacy, and instrumentality are also applicable to mobile phone use. Leung and Wei (2000) defined mobility as the elimination of the need for change (coins) and lining up for public phones because of mobile phone use. Immediacy was defined as immediate access to mobile phones by users regardless of time and location. Instrumentality was defined as the use of the mobile phone as an instrument for business transaction or facilitator of business talks. Because mobile

advertising provides easy and immediate access to product information regardless of consumer location and time, mobility/convenience is also applicable to consumers' mobile advertising acceptance. For example, in their study of U.S. mobile phone users, Jun and Lee (2007) suggested that mobility/convenience is the key motivation to predict consumers' favorite attitude toward mobile advertising (Jun and Lee 2007).

### **Diffusion of Innovations**

Diffusion of innovations has been widely used to explore factors influencing the adoption of new communication technology. According to Rogers (2003) there are five key factors that influence the rate of innovation adoption. He suggested that an innovation that is perceived by receivers as having greater relative advantage, compatibility, trialability, observability, and less complexity will be adopted more rapidly than other innovations. Diffusion is defined as “the process by which an innovation is communicated through certain channels over time among the members of a social system” (Rogers 2003, p. 14). Innovation is defined as an idea that is perceived as new (Rogers 2003). Rogers (2003) suggested that adopters of any new innovations or idea could be categorized into four categories: innovator, early adopters, early majority, late majority, and laggards. Further, he suggested that innovations would spread through society in an S curve, as the early adopters select the technology first, followed by the majority and finally laggards, until a technology or innovation becomes common. As a relatively new advertising technique, consumers' adoption of mobile advertising is still in its infancy. Therefore, the application of diffusion of innovations may help to understand

consumers' acceptance of mobile advertising. To this end, a review of five key factors influencing diffusion of mobile advertising as an innovation is needed.

*Relative advantage.* In mobile advertising, various incentive-based mobile advertising campaigns and advanced technological features of mobile phones help explain the importance of the relative advantages. Relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes (Rogers 2003). Mobile advertising can provide more instant utilitarian values (e.g., mobile coupon and subsidized, premium service) to its consumers than traditional advertising. For example, mobile advertisers may subsidize premium services such as mobile Internet, directory assistance, ring-tones, and text messaging to their consumers who agree to receive advertisements on their mobile phones. Past research shows that perceived benefits and incentive of mobile advertising messages appear to have significant impact on consumers' favorable attitudes toward mobile advertising (In Stat 2005).

In addition to financial rewards, advanced technological features in mobile phones such as location awareness and multimedia service are considered as components of relative advantage of mobile advertising. These advanced technological features enable both consumers and advertisers to send/receive relevant and proper information by identifying consumers' geographical location and providing more detailed information through multimedia services such as video clips and visual maps of advertisers' business locations. The TAM also suggested that perceived usefulness of certain technology is one of the major predictors of consumer attitude (Davis 1980). Perceived usefulness of a mobile device as a technology that provides relevant information will help consumers to

have a favorable attitude toward mobile advertising. For example, Wu and Wang (2005) suggested that perceived usefulness of mobile commerce predicted consumers' adoption of mobile commerce.

*Compatibility.* Rogers (2003) suggested that any innovated idea that is not compatible with the individual's past experience or existing values will not be adopted by consumers. Compatibility is defined as "the degree to which an innovation is perceived as being consistent with the existing values, past experience, and needs of potential adopters" (Rogers 2005, p. 224). In the context of mobile advertising, consumers' general perception or existing values of advertising or other types of advertising will strongly influence consumers' acceptance of mobile advertising. Therefore, compatibility of mobile advertising is an important factor predicting consumers' acceptance of mobile advertising messages.

*Complexity.* Past studies on technology acceptance suggested that peoples' intention to use new technology is determined by perceived usefulness and ease of use (Davis 1980). Specifically, perceived ease of using technology or self-efficacy has been widely accepted as an important factor predicting technology acceptance. In diffusion literature, complexity is considered as a similar concept to perceived ease of use or self-efficacy (Muk 2007; Vankatesh et al. 2003). Complexity is defined as the degree to which an innovation is perceived as difficult to understand or use (Rogers 2003). As consumers' self-efficacy to use technology is an important factor predicting consumers' acceptance of service or technology, adding complexity to the framework of mobile advertising acceptance will help better understand how the persuasive communication process works



in mobile advertising. For example, Muk (2007) suggested that small keypad, screen size, and complexity or difficulty of sending and receiving text messages via mobile phone may hinder consumers' acceptance of mobile advertising.

*Trialability.* Rogers (2003) suggested that the personal trying out of an innovation is one of the important predictors of innovation adoption by understanding the meaning of an innovation and experiencing the innovation under one's own condition. Trialability is defined as the degree to which an innovation may be experimented with on a limited basis. Hoyer and MacInnis (2003) suggested that trialability is one aspect of consumer learning requirements that may be very important to certain groups such as innovators or early adopters. As consumer acceptance of mobile advertising is still in its infancy, the trialability of mobile advertising is an important factor that will increase the effectiveness of mobile advertising.

Consumers are faced with an excessive amount of ads everyday that create clutter. Therefore, trials of certain product or service are becoming more important for advertising and marketing strategies that eventually will break through the clutter by providing consumers a more direct experience of innovations. Mobile advertisers may elicit consumer trials by providing coupons and video clips via mobile phones that can expose the consumer to the service or product of the advertiser.

*Observability.* Some ideas or innovations are easily observed and communicated to other people, whereas others are less so. Rogers (2003) defined observability as one's subjective perception about how adoption of a certain innovation will be perceived by others in a social system. For example, the use of the 3<sup>rd</sup> Generation (3G) mobile phone,

which provides higher bandwidth digital content (e.g., live video and video call) in public spaces (e.g., restaurants or in public transportations), may help heighten its social status or increase observability for potential buyers. Observability is the degree to which the results of an innovation are visible to others (Rogers 2003). In other words, observability is the extent to which a potential consumer can observe the innovation and its positive effect. When more people are seen benefiting from accepting innovated mobile advertising services—multimedia mobile advertising or mobile advergame—in public spaces, the more likely people are to form favorable attitudes toward mobile advertising. Specifically, the influence of watching others' behavior is more likely to be strong among the young consumers who are more concerned about peer evaluation. Jun and Lee (2007) identified that social influence and multimedia service are the two factors that predict consumers' use of mobile phones and their acceptance of mobile advertising. Leung and Wei (2000) also suggested that mobile phones have been generally perceived not only as a platform of mass media that provides entertainment and information but also as a personal media device that enhances an individual's social status and social interaction with others.

### **Demographic Factors**

In addition to the five diffusion factors identified from the previous diffusion of innovation literature, many diffusion studies have identified demographics as one of the primary factors influencing consumers' innovation adoption (Dupagne 1999; Lin, 1998 & 2003; Neundorf et al. 1998). Specifically, demographic factors such as age, income,

gender, and education have been offered as predictors of consumer innovation adoption. For example, Dupagne (1999, 2003), in his studies of HDTV adoption, suggested that income, gender, and education are the major factors that have a positive relationship with HDTV adoption. Further, previous media effect studies have supported the importance of demographic factors as predictors of consumer media uses and gratification (Korgaonkar and Wolin 1999; Teo 2001; Wolin, Korgaonkar, and Lund 2002). For example, past studies on Internet advertising found that demographic factors—income, age, and educations—are important predictors of consumers' Internet usage behavior such as instant messaging, web-browsing, and purchase (Teo 2001; Wolin et al. 2002). Wolin et al. (2002), in their study of consumer beliefs, attitudes, and behaviors towards Internet advertising, suggested that consumer income and education are important predictors of consumer Internet advertising behaviors (e.g., click through, pay attention). They suggested that the higher the consumers' income and education level, the less likely they are to click through or pay attention to Internet advertising. Teo (2001) also suggested that males use the Internet for downloading and purchasing activities to a greater extent than females. Meanwhile, females use the Internet for messaging activities to a significantly greater extent than males.

Past studies on mobile advertising acceptance have suggested that demographic factors are important predictors of mobile advertising acceptance (Haghirian and Madleberger; Okazaki 2004; Lee et al. 2006; Leppaniemi, Karajaluoto, Salo, and Sinisalo 2005; Traffey III and Woodside 2007; Tsang, Ho, and Liang 2004). Although demographic factors have been validated in some studies as important factors to predict

Internet advertising effectiveness, most empirical evidence suggests that the factors seem to have only a direct effect on behaviors (mobile advertising acceptance) without the mediating effect of attitude. For example, in their study of Austrian mobile phone users, Haghirian and Madleberger (2005) did not find a significant effect of demographic factors in predicting consumers' attitude toward mobile advertising or mobile advertising value. Tsang et al. (2004) also did not find significant relationships between demographic factors and attitudes toward mobile advertising.

However, most mobile advertising studies have provided evidence of the effectiveness of demographic factors on consumers' acceptance of mobile advertising. For example, in his study of Japanese consumers' acceptance of pull type mobile advertising services, Okazaki (2004) suggested that demographic factors such as age, gender, and income are predictors of consumers' acceptance of such types of mobile advertising. Okazaki (2004) suggested that older consumers are less likely to receive mobile advertising messages than younger ones. Lee et al. (2006) also suggested that the age group below twenties is more willing to respond to mobile advertising message than the rest of the age groups. Leppaniemi et al. (2005), in their study of Finnish consumers' acceptance of mobile advertising, found similar results. They suggested that males were more likely to accept SMS based mobile advertising messages than females. They also found that young consumers under 18 years were more likely to receive mobile advertising messages than older ones, whereas consumers 65 years or more were least likely to receive mobile advertising messages. Traffey III and Woodside (2007), in their study of mobile-direct response advertising effects study in the U.K., also suggested that

demographic factors predicted the effectiveness of mobile-direct response advertising. They observed that consumers in the age range from 18 to 44 years were the most likely to respond to mobile advertising messages. Collectively, past research suggests that further investigation is needed to understand the effect of demographic factors on consumer acceptance of mobile advertising.

## CHAPTER III

### THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESES

Based on previous literature, a conceptual framework is developed to explore how the process of persuasive communication works in mobile advertising. To do so, various factors such as consumer media use, innovation adoption, and consumer attitude are reviewed to help understand consumer acceptance of mobile advertising. Specifically, four factors are suggested as antecedents to consumer acceptance mobile advertising. The four factors include: mobile device factors, message factors, consumer factors, and attitude factors. Although previous studies identified many factors on consumer acceptance of mobile advertising, there is a need for having an integrated framework to increase our understanding of mobile advertising. Therefore, the proposed framework seeks to address the following two research questions:

*RQ1: What factors influence consumer acceptance of mobile advertising?*

*RQ2: What is the relative importance of these factors that influence consumer acceptance of mobile advertising?*

The following sections explain the key factors identified from past literature for the proposed framework of consumer acceptance of mobile advertising. In addition, specific hypotheses of the four factors follow at the end of each section.

## **Mobile Device Factors**

The technological characteristics of mobile devices may influence consumer acceptance of mobile advertising. Specifically, mobile devices that are perceived to be less difficult to use and provide more control to the consumers are more likely to increase their favorable attitudes toward both the devices and contents on the devices. Thus, an in-depth understanding of the perception of various technological characteristics of mobile devices is needed in order to better predict consumer acceptance of mobile advertising. Mobile device factors are defined as the perceived ease-of-use and perceived usefulness of the technological characteristics of the mobile device that may influence consumer acceptance of mobile advertising.

*Perceived Ease of Use.* According to the TAM, consumer acceptance of new technology can be predicted by two technological characteristics of the media. One is the perceived ease-of-use. It is defined as the extent to which an individual believes that using the technology will be free of effort (Davis 1980). Perceived ease-of-use can also be theoretically understood from Bandura's construct of self-efficacy and Roger's idea of perceived complexity. The self-efficacy concept suggests that people's behavior is strongly influenced by the confidence that the individual feels that he/she has to perform the target behavior. As mobile advertising messages are delivered via mobile devices (e.g., mobile phone, iPod, PDA), consumers' ability to utilize the devices to receive or opt-out of advertising messages should be an important factor in predicting consumer acceptance of mobile advertising. Similarly, Rogers (2003) also suggested that complexity—the degree to which an innovation is perceived as difficult to understand or use—is a major

predictor of consumer acceptance of innovations. Although both perceived ease-of-use and complexity are named differently, both constructs explain consumers' perceived easiness or difficulty in terms of using technology. Further, Davis (1989) noted that ease-of-use correspond to the complexity construct in the Diffusion of Innovations literature; thus, they are incorporated here as a perceived ease-of-use.

When consumers feel that they have control over the content on their devices such as deciding whether to receive certain content or not, their attitudes toward advertising on the devices are likely to become more favorable. Consumers are facing an excessive amount of ads everyday and this weakens the effectiveness of advertising in traditional media. Therefore, consumers actively resist traditional one-way push advertising and use the functions of the new media to exert control over the content they receive. For example, the emergence of new media technology such as personal video recorders allowed TV viewers to skip ad-breaks and gave consumers more freedom to watch their favorite contents. In the new media landscape, only those messages that deliver targeted, relevant content that provides value to consumers will earn the consumer's attention. This indicates that the advertising medium, in which consumers perceive it as hard to use, is more likely to increase the consumers' unfavorable attitudes towards mobile advertising. If consumers have or perceive to have difficulty using their mobile devices, they may have unfavorable attitudes towards mobile advertising because it is one more thing that they cannot control. For example, Muk (2007) suggested that small keypad and the complexity of sending and receiving text messages via mobile devices may hinder consumers' willingness to receive mobile advertising. Consumers'



perceptions of control of their mobile devices are assumed to be an important predictor of consumer acceptance of mobile advertising. Therefore, the following hypothesis is proposed:

*H1: Perceived ease of using mobile device will be positively related to consumers' attitudes toward mobile advertising.*

*Perceived Usefulness.* Another technological characteristic that predicts consumer acceptance of mobile advertising is the perceived usefulness of mobile devices. Perceived usefulness can be theoretically understood from TAM (Davis 1980), Diffusion of Innovations, and the U&G perspective. Davis (1980), in his TAM model, defined perceived usefulness as the extent to which an individual believes that using certain technology or innovations enhance job performance (Davis 1980). Similarly, Rogers (2003) suggested that relative advantages—the degree to which an innovation is perceived as better than the idea it supersedes—predict consumer acceptance of the innovation. Both TAM and Diffusion of Innovations theorize that a technology that is found to be more useful or advantageous than its precursors will have a positive influence on the intended users' attitude and intention toward using the technology. In other words, how useful consumers perceive their mobile devices to be will influence their acceptance of mobile advertising messages. Further, Davis (1989) noted that perceived usefulness corresponded to the relative advantage construct in the diffusion characteristics literature; thus, relative advantage was operationalized as perceived usefulness.

The most common advantages offered by mobile devices over any other advertising media are its mobility and convenience. Mobile devices are carried around everywhere and are always on which enables consumers to use or receive ads regardless of time and spatial restrictions. For example, consumers may store mobile coupons on their mobile devices and conveniently redeem them at anytime. Mobility and convenience can be theoretically understood from the U&G perspective. According to the U&G perspective, consumers consciously select and use certain media and contents to gratify specific needs (Katz et al. 1974). Past U&G studies identified convenience as the main motivation in using mass media (Jun and Lee 2007; Katz et al. 1974; Leung and Wei 2000). For example, Leung and Wei (2000) suggested that perceived convenience of using mobile devices such as mobility or portability of mobile devices is one of the important predictors of favorable consumer attitude toward mobile advertising. Mobility is defined as the elimination of the need for change (coins) and queuing up for a public phone because of mobile phone use (i.e., portability). In the mobile advertising context, easy access to a marketers' website and easy to carry coupons are considered as the mobile devices' convenience.

Other technological characteristics of mobile devices are multimedia service features. Similar to convenience, Multimedia service features can be theoretically understood from the U&G perspective (Katz et al. 1974) and Diffusion of Innovations (Rogers 2003). The U&G perspective and Diffusion of Innovations suggested that the relative advantage of using innovations is one major predictor of consumer acceptance of innovation. For example, advanced technological features in mobile devices such as

multimedia service have led to the use of the mobile device as a multi-use tool instead of a basic communication device (Jun and Lee 2007). Specifically, young adults enjoy downloading ringtones, music, pictures, games, and videos on their mobile devices. This implies that mobile devices are not only a social medium that helps consumers to communicate with others but also indicates mobile devices' usefulness for entertainment and information purposes. Additionally, the development of 3G technology accelerates the use of multimedia contents on mobile devices by enabling fast upload/download speed. For example, 3G mobile device users can locate a certain retail store on their mobile devices by downloading visual maps of advertisers' business locations. Jun and Lee (2007), in their study of consumers' mobile media use and attitude toward mobile advertising, found that multimedia service features were positively related to consumers' attitudes towards mobile advertising.

Therefore, consumers' perceived usefulness of mobile devices (e.g., relative advantage, mobility/convenience, multimedia service features) should help us understand consumer acceptance of mobile advertising. Thus, the following hypothesis is suggested:

*H2: Perceived usefulness of mobile devices will be positively related to consumers' attitudes toward mobile advertising.*

### **Message Factors**

Consumers' beliefs about mobile advertising messages such as perceived value, interactivity, incentive, and permission predict consumers' favorable attitudes toward or

acceptance of mobile advertising. Therefore, message factors consist of message characteristics of mobile advertising that enable marketers to increase consumer trials and interactions such as characteristics of mobile advertising messages (i.e., entertainment, irritation, information, and credibility), permission and incentive, and perceived message interactivity.

*Message Characteristics.* Consumer response toward mobile advertising differs by how they perceive advertising messages on their mobile device. For example, consumers will consider the mobile advertising message that provides value positively. The relationship between characteristics of mobile advertising messages and consumer acceptance of mobile advertising can be understood from TRA, Internet advertising model, and the U&G perspective. The TRA suggests that attitudes are the results of the information that an individual holds about the attitude object. In other words, attitude toward the object or specific behavior is based on the overall evaluation of the behavior/object under consideration. Ducoffe (1996), in his study of consumer attitude toward Internet advertising, suggested that the individual's belief about object/behavior influences his/her perceived value of the attitude object and this, in turn, influences consumer attitudes toward Internet advertising in general. Specifically, Ducoffe (1996) suggested four consumer beliefs about Internet advertising—entertainment, information, credibility, and irritation—as components of advertising value, which directly influences consumers' attitudes toward Internet advertising in general. In the mobile advertising context, consumers' favorable evaluations of the characteristics of mobile advertising messages may result in an overall favorable evaluation of mobile advertising in general

and this, in turn, may result in consumer acceptance of mobile advertising. Another theoretical perspective that supports the importance of message characteristics of mobile advertising is the U&G perspective. The U&G perspective implies that mobile advertising will only be accepted if consumers perceive mobile advertising as an opportunity to gratify the needs for information, knowledge, and social acceptance (Bauer et al. 2005). Additionally, the U&G perspective explains that consumers' attitudes towards advertising are dependent on three common motivation factors: entertainment, informativeness, and irritation.

In mobile advertising, consumers may use ads on their mobile devices as a mechanism to receive product/service information but also for the purpose of personal entertainment such as to play games or watch movie trailers. Both goals influence the expectations the consumer has for mobile advertising and these expectations may lead the consumer more willing to accept mobile advertising. Previous mobile advertising studies have observed the importance of message characteristics in mobile advertising acceptance. For example, Tsang et al. (2004) suggested that the four beliefs of mobile advertising messages (i.e., entertainment, informativeness, irritation, and credibility) significantly related to the overall attitude toward mobile advertising. Similarly, in his study of Japanese consumers' attitude toward mobile advertising, Okazaki (2004) found that credibility, infotainment, and irritation influenced the formation of attitudes toward mobile advertising.

Additionally, mobile advertising messages that provide tangible benefits to the consumer tend to predict consumer acceptance of mobile advertising better. For example,

mobile advertisers may increase consumer acceptance of mobile advertising by providing various incentives to consumers such as subsidizing cost for multimedia services, mobile Internet, and ring-tones who agree to receive advertisements on their mobile devices. Additionally, past research also shows that perceived benefits and incentives of advertising messages tend to have a significant impact on consumers' attitudes toward mobile advertising (Harris Interactive 2008; InStat 2005; Patel 2001; Tsang et al. 2004; Wu and Wang 2005). Specifically, results from Harris Interactive survey of teen mobile-users suggested that young consumers—under 18 years—would be more interested in receiving mobile advertising messages if there were an incentive such as points toward buying new phones or download music (Harris Interactive 2008). Therefore, the following hypothesis can be put forth regarding consumer acceptance of mobile advertising:

*H3a: Perceived entertainment characteristic of mobile advertising messages will be positively related to consumers' attitudes toward mobile advertising.*

*H3b: Information will be positively related to consumers' attitudes toward mobile advertising.*

*H3c: Irritation will be negatively related to consumers' attitudes toward mobile advertising.*

*H3d: Credibility will be positively related to consumers' attitudes toward mobile advertising.*

*H3e: Incentive will be positively related to consumers' attitudes toward mobile*

*advertising.*

*Perceived Message Interactivity.* Consumers are faced with an excessive amount of ads every day. For example, an average urban consumer encounters up to 5,000 advertising messages per day (Vollmer and Precourt 2008). The excessive amount of ads increases advertising clutter and weakens the effectiveness of advertising messages. Advertising clutter is often defined as “the level of advertising in a medium” (Elliot and Speck 1998, p. 29). Elliot and Speck (1998) suggested that television and magazines exhibited the highest level of advertising clutter that is directly related to less favorable attitudes towards ads and ad avoidance. As a result of advertising clutter in traditional mass media, advertisers are now less concerned about running their ads on prime-time TV programming or in major newspapers to reach the mass audience. Instead, marketers crave the emergence of new media that enable them to communicate with their consumers more effectively than traditional media. For example, Rohm and Sultan (2005) suggested that mobile devices allow advertisers to deliver personalized, context-and location specific messages to individual members of a target market. This carefully tailored and targeted message via mobile device may increase marketers’ ability to increase consumer interaction with them.

Mobile devices help marketers increase consumer trials of products or services. The trial of a certain product or service is becoming an important advertising and marketing strategy that aims to break through the clutter by providing a more direct experience of the product or service to consumers. Trialability is the degree to which an

innovation may be experimented with on a limited basis. Rogers (2003) suggested that the “personal trying out of an innovation is one way for an individual to give meaning to an innovation and to find out how it works under one’s own conditions” (p. 258). For example, users of the iPhone can download many free applications for their iPhones from games to software utilities. Most of these free applications are intended to increase consumer trials and sales of the applications. Therefore, trials of certain products or services via advertising messages on mobile devices are an important advertising strategy that may help break through the clutter. Mobile advertisers may elicit consumer trials by providing coupons and video clips via mobile phones that enable consumers to try an advertiser’s service or product. Mobile advertisers can increase consumer trials of products or services by sending relevant and timely information to consumers by utilizing interactive features of mobile devices such as identifying consumers’ geographical location. Ferris (2007), in his study of Japanese mobile interactive advertising campaigns, suggested that the mobile phone is an interactive Customer Relationship Management (CRM) device that enables two-way and synchronous communication between the marketer and the consumer.

Additionally, utilizing mobile devices’ interactive features such as QR code, built-in camera, and mobile Internet, marketers may increase both consumer trials and participation. For example, QR code—that is incorporated into billboard or print advertising—can provide more information about the product and generate a relationship with the product for the consumer. Traffey III and Woodside (2005) suggested that SMS based mobile advertising does include a viral element. SMS recipients can forward



messages to family, friends, and colleagues. Although SMS based mobile advertising message has limitation— only support 160 characters of text per message— new technological features such as QR code, and built in camera, improve the limitation by providing interaction between consumer and advertising message. Further, through the introduction of new technology mobile phones, SMS will incorporate pictures and/or video clips that enable marketers to send MMS messages to consumers. For example, marketers may increase the awareness of their new product by running a viral ad campaign for the product via mobile phones or creating a contest of user generated contents for their product. Therefore, the following hypothesis is suggested:

*H4: Perceived message interactivity will be positively related to consumers' attitudes toward mobile advertising.*

*Permission.* Mobile devices are highly personal and intimate devices. The personal and intimate nature of the device is transferred to the message that is sent and received through the device. In other words, consumers regard intrusive advertising messages, which are sent and received through their mobile devices, as an intrusion of privacy. Consumers' perceived intrusiveness or irritation of advertising messages has been suggested as a main reason why consumers have unfavorable attitudes towards mobile advertising. Perceived advertising intrusiveness is defined as “the degree to which an unwanted marketing communication interferes with an individual's cognitive process and takes as well as the interference with media contents including offensive materials”

(Morimoto and Chang 2006, p. 10). Past studies have suggested that the perceived intrusiveness or irritation of advertising is mainly caused by unsolicited advertising messages that are sent to consumers without permission (Barwise and Strong 2002; Morimoto and Chang 2006; Salo and Tahtinent 2005). Since mobile devices are often regarded as a personal and intimate medium, sending mobile advertising messages without consumer's consent is a violation of privacy. Therefore, permission matters to most consumers because unsolicited advertisements may lead to increasing irritation of mobile advertising messages. Godin (1998) suggested that permission is an important part of building an ongoing relationship of increasing depth with customers by obtaining customer consent to receive information from a company. Sending messages only to consumers who grant permission is less interruptive, more relevant, and customized than traditional interruptive marketing.

The importance of consumer permission in mobile advertising can be understood from self-efficacy and the TAM. According to the TAM, people with high self-efficacy on their perceived behavioral control would think that they have the ability to control unwanted advertising messages via their mobile devices. However, when consumers lose their control to refuse intrusive messages, they will more likely be irritated by the intrusive messages, which result in an unfavorable attitude toward mobile advertising.

Past studies have suggested consumer permission as an important variable in predicting consumer acceptance of mobile advertising. However, in the U.S., all mobile advertising messages are sent to consumers who previously provided their permission to the advertiser. Therefore, consumers might take it for granted that marketers do not send

them mobile advertising messages without their permission as they are well protected by the law.

### **Consumer Factors**

Consumer factors refer to the personal and social characteristics of consumers that may influence their acceptance of mobile advertising such as demographics (e.g., age, gender, education, and income), self-efficacy, personal innovativeness, and social influence.

*Demographics.* Consumer acceptance of mobile advertising may differ by their demographic characteristics. Past studies on Internet and mobile advertising have suggested that demographic factors are important predictors of consumer acceptance of advertising (Haghirian and Madleberger; Okazaki 2004; Leppaniemi, Karajaluoto, Salo, and Sinisalo 2005; Traffey III and Woodside 2007; Tsang, Ho, and Liang 2004). Specifically, age has been suggested as one of the best predictors of consumer acceptance of mobile advertising. Research suggested that young consumers between 18 and 24 years have the highest affinity for their mobile devices and are more open to advertising on the mobile devices than others (Grant and O'Donohoe 2007; Mintel 2008; Muk 2007; Okazaki 2004). Further, Okazaki (2004) and Leppanieme et al. (2005) suggested that older consumers are less likely to receive mobile advertising messages than younger ones. Traffey III and Woodside (2007) observed that consumers in the age range from 18 to 44 years were the most likely to respond to mobile advertising messages.

Other demographic factors, such as gender, income, and education, have been

suggested as good predictors of consumer acceptance of advertising. For example, Leppaniemi et al. (2005) suggested that males were more likely to accept SMS based mobile advertising message than females. Teo (2001) also suggested that males use the Internet for downloading and purchasing activities to a greater extent than females. Meanwhile, females were suggested to use the Internet for messaging activities to a significantly greater extent than males. Wolin et al. (2002) suggested that income and education are important predictors of consumer Internet advertising behaviors (e.g., click through, pay attention). Specifically, they suggested that the higher the consumers' education and income level, the less likely they are to click through or pay attention to Internet advertising. Collectively, research suggested that further investigation is needed to understand the effect of demographic factors on consumer acceptance of mobile advertising. Therefore, the following hypotheses can be put forth to understand the influence of demographic factors on consumer acceptance of mobile advertising:

*H5a: Age will be negatively related to consumers' attitudes toward mobile advertising.*

*H5b: Males will show more positive attitudes toward mobile advertising than females.*

*H5c: Education will be negatively related to consumers' attitudes toward mobile advertising.*

*H5d: Income will be negatively related to consumers' attitudes toward mobile advertising.*

*Innate Innovativeness.* Aside from demographic characteristics, adopters of innovations are said to possess certain personality attributes that set them apart from the general population (Lin 2006). These attributes may define if an individual is relatively more innovative and is also willing to take risks in adopting a new product or service earlier than others. Specifically, individual's inherent personality is often used as a predictor of consumer acceptance of innovations (Bauer et al. 2005; Rogers 2003; Lassar et al. 2005; Lin 2006; Mort and Drennan 2007). For example, Rogers (2003) suggested that an individual's inherent personality can be used to predict consumer adoption of innovation. Further, Bauer et al. (2005), in his study of exploring predictors of consumer acceptance of mobile marketing, suggested that consumers' innate innovativeness is highly relevant for investigating the acceptance of mobile marketing. Innate innovativeness is defined as an "individual's inherent innovative personality, predisposition, and cognitive style toward innovations that can be applied to consumption domains across product classes" (Bauer et al. 2005, p.183). Consumers characterized by a high degree of innovativeness are usually very open to new experiences and tend to make constructive use of information received. Therefore, the following hypothesis can be suggested:

*H6: Consumers' innate innovativeness will be positively related to their attitudes toward mobile advertising.*

*Self-Efficacy.* Another personality trait that helps predict consumer acceptance of mobile advertising is the consumer's perception of his or her ability to accomplish a given task. This can be understood from the concept of self-efficacy (Bandura 1986). Self-efficacy is defined as "individual's judgments of their capabilities to organize and execute courses of action required to attain designated types of performance" (Bandura 1986, p.391). Specifically, a person with high self-efficacy should be the one that would be more likely to adopt an innovation compared to a person with low self-efficacy. Past studies have found evidence of a relationship between self-efficacy and the adoption of technology and innovations. In the mobile advertising context, self-efficacy represents an individual's perception of his or her ability to use a mobile device in the accomplishment of a task (e.g. opt-in mobile advertising, text-back to advertiser; access to advertisers website via mobile devices) rather than reflecting simple component skills such as opening text-based mobile advertising messages. In mobile advertising, consumer self-efficacy is assumed to be an important factor influencing consumers' mobile advertising acceptance. In particular, when the consumer has control over whether or not to receive advertising, it is assumed that he/she will be more favorably inclined toward the ad. Therefore, the following hypothesis is suggested regarding consumer acceptance of mobile advertising:

*H7: Self-efficacy will be positively related to consumers' attitudes toward mobile advertising.*

*Social Influence.* Individuals often respond to social normative influences in an effort to establish or maintain a favorable image within a reference group. Specifically, mobile devices are often regarded as a personal fashion statement that represents the user's social status. Thus, consumers, who care about others' opinion of their behavior, are more likely to accept mobile advertising than those who do not. This can be theoretically understood from the TRA, TAM, and diffusion of innovations. Social influence is called by different terms in many theories. In TRA and TAM, social influence is called a "subjective norm" that is defined as an individual's perception whether most people important to him/her think he/she should perform the behavior. Similarly, Rogers (2003), in the diffusion of innovations, refers to social influence as "observability," that is how adoption of certain innovation will be perceived by others in a social system. For example, when people are seen benefiting from mobile advertising messages, it is more likely that other people will accept mobile advertising. Further, Rogers (2003) suggested that consumers will not adopt any innovative idea that is not compatible with the social values and norms of the society. Similarly, Moore and Benbasat (1999, p.195), drawing from research on diffusion of innovations, labeled social influence as the degree to which the use of an innovation is perceived to enhance one's status in one's social system.

Mobile devices have been generally perceived not only as a platform of mass media that provides entertainment and information but also as a personal media device that enhances an individual's social status and social interaction with others. Therefore, concerns about others' opinion about their use of mobile devices is one important factor in predicting consumers' intention to accept mobile advertising. For example, in their

study of consumers' mobile media uses and attitudes toward mobile advertising, Jun and Lee (2007) identified social influence as one of the important factors that predicted consumers' use of mobile phones and acceptance of mobile advertising. Specifically, this is more evident among young consumers under the age of 18 who are more concerned about peer evaluation. Muk (2007) suggested that social influence strongly influences young consumers' likelihood to accept mobile advertising. Further, Grant and O'Donohoe (2007) suggested that social influence is the key motivation among young consumers to use mobile phones. Their findings suggested that marketers, who can offer mobile advertising as tokens of social exchange to young consumers, are more likely to succeed in mobile marketing. Thus, the following hypothesis is suggested:

*H8: Social influence will be positively related to consumers' attitudes toward mobile advertising.*

*Compatibility.* Individual's existing values or past experience with similar types of advertising may predict individual's acceptance of mobile advertising. This can be theoretically understood from diffusion of innovations. Rogers (2003) suggested that consumers will not adopt any innovated idea that is not compatible with the individual's past experience or existing values. Compatibility is defined as "the degree to which an innovation is perceived as being consistent with the existing values, past experience, and needs of potential adopters" (Rogers 2005, p. 224). In the context of mobile advertising, consumers' past pre-existing perception of advertising in general or other types of



advertising may influence their acceptance of mobile advertising. Therefore, compatibility is an important factor predicting consumer acceptance of mobile advertising messages.

*H9: Compatibility will be positively related to consumers' attitudes toward mobile advertising.*

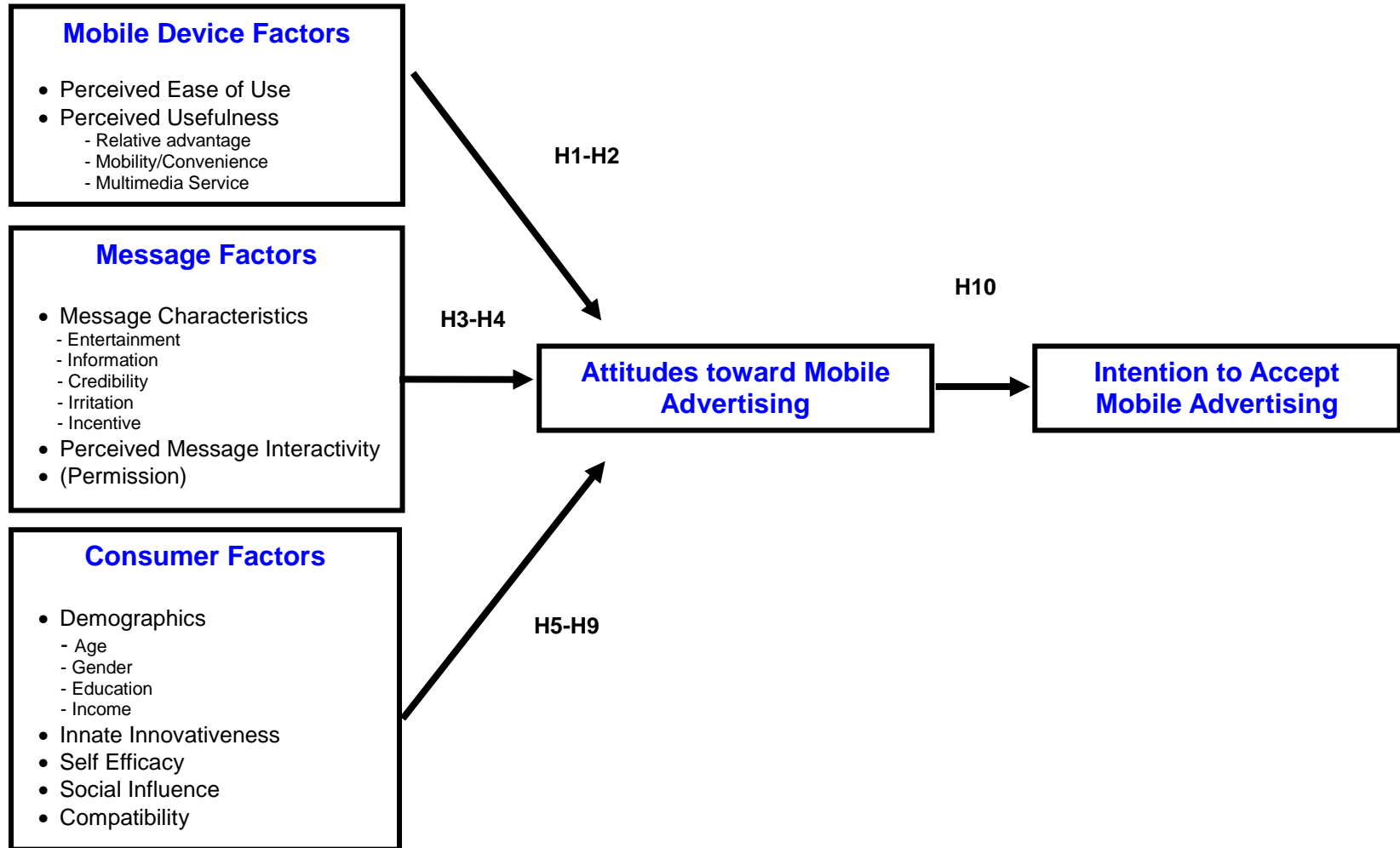
### **Attitudes toward Mobile Advertising**

Consumer attitude has been considered as one of the most important factors to predict consumer acceptance of mobile advertising. The relationship between consumer attitudes toward mobile advertising and their acceptance of mobile advertising can be theoretically understood from the TRA and TAM. According to the TRA, consumers' behavioral intention and actual behavior are determined by their attitudes toward the specific behavior. Specifically, the TRA is generally recognized as the best theoretical framework for studying the attitude-behavior relationship. According to TRA, a person's performance of a specific behavior is determined by his or her behavioral intention. This intention is jointly determined by two independent determinants: attitudes toward the behavior and subjective norms, which are related to normative and behavioral beliefs (Fishbein and Ajzen 1975). Numerous studies on various topics have empirically supported that consumers' attitudes toward the behavior or object are the strongest predictors of behavioral intention and behavior (e.g., Bauer et al. 2005; Davis, Bagozzi, and Warshaw 1989; Fishbein and Ajzen 1975; Jun and Lee 2007; Teo and Pok 2003;

Tsang et al. 2004). Specifically, Tsang et al. (2004) identified a direct relationship between consumer attitudes and behavior. Teo and Pok (2003) in their study of adoption of the WAP enabled mobile phone, identified that consumer attitude is the strongest predictor of consumer adoption of the WAP-enabled phone. Jun and Lee (2007) also identified that there is a strong relationship between consumer attitude toward mobile advertising and their behavioral intention to accept it. Therefore, the following hypothesis is suggested:

*H10: Consumers' attitudes toward mobile advertising will be positively related to their intention to accept mobile advertising.*

**Figure 7. Conceptual Framework of Mobile Advertising Communication Process**



## **CHAPTER IV**

### **METHODOLOGY**

#### **Overview**

The primary objective of this study is to provide a comprehensive understanding of consumers' acceptance of mobile advertising. Specifically, this research explored how the persuasive communication process works via mobile advertising. In order to accomplish this research objective, the relationships among various factors identified from past literature were tested. The current study employed an online survey administered via an online consumer panel as well as a participant pool. The online survey was conducted during a four-week period from March 23 to April 24, 2009.

#### **Sample and Procedure**

Participants for this study were recruited from two sampling populations. The first sampling population was a student participant pool, organized by the Department of Advertising, The University of Texas at Austin. A total of 367 college students who have past experience with mobile advertising were participated in the survey. Study participants received an announcement email from the researcher by way of their instructors. The email announcement provided the URL necessary to access the study together with an invitation to fill out a survey online. The URL also accessed detailed explanations about the research. Since the study was conducted online, signed informed consent was not obtained. Instead, participants' voluntary act of clicking on the "submit" button and filling out the questionnaire was considered to constitute informed consent.

All respondents were given extra course credits as an incentive for participating in the study.

The second sampling population for this study was a Virtual Consumer Research Panel (VCRG). The online panel is an opt-in, informed-consent, privacy-protected “subject pool” for Web-based research surveys, organized by the Department of Advertising, The University of Texas at Austin. Panelists are recruited from across the country through collaborative agreements with high-traffic Websites. A total of 147 participants participated in the survey upon receiving an email soliciting their participation in the online consumer panel. As an incentive for participation, all respondents who completed the survey were entered into a drawing for the random selection of three respondents who would win a \$100 online gift card.

The online survey was conducted during March and April 2009 and a total of 514 online populations participated in the survey. After eliminating 64 respondents who submitted incomplete surveys and were never exposed to mobile advertising, a sample of 450 respondents was obtained. Of the sample, 60.4% were female and 39.4% were male. Anglo Americans comprised 58.4% of the sample followed by Asian Americans (13.1%), Hispanic Americans (13.1%), and African Americans (5.1%). Eighty percent of the respondents were ages 18-24, followed by ages 25-34 (4.7%), ages 35-44 (5.8%), 45-54 (5.1%), and over 55 (4.7%).

**Table 2. Demographic Profile of the Sample (n=450)**

|                 |                                | Frequency | Percent |
|-----------------|--------------------------------|-----------|---------|
| Gender          | Female                         | 272       | 60.4    |
|                 | Male                           | 178       | 39.6    |
| Age Group       | 18-24                          | 359       | 79.8    |
|                 | 25-34                          | 21        | 4.7     |
|                 | 35-44                          | 26        | 5.8     |
|                 | 45-54                          | 23        | 5.1     |
|                 | Over 55                        | 21        | 4.7     |
| Education Level | High School                    | 75        | 16.7    |
|                 | Some College                   | 262       | 58.2    |
|                 | Bachelor's Degree              | 29        | 6.4     |
|                 | Master's / Professional Degree | 53        | 11.8    |
|                 | Doctor's Degree                | 28        | 6.2     |
|                 | Other                          | 3         | 0.7     |
| Income Level    | Less than \$25,000             | 49        | 11.1    |
|                 | \$25,001-\$35,000              | 27        | 6.1     |
|                 | \$35,001-\$50,000              | 53        | 12.0    |
|                 | \$50,001-\$65,000              | 42        | 9.5     |
|                 | \$65,001-\$80,000              | 35        | 8.0     |
|                 | 80,001- 100,000                | 71        | 16.1    |
|                 | Over 100,000                   | 163       | 37.0    |
| Ethnicity       | African American               | 23        | 5.1     |
|                 | Anglo American                 | 263       | 58.4    |
|                 | Asian American                 | 60        | 13.3    |
|                 | Hispanic                       | 59        | 13.1    |
|                 | Others                         | 45        | 10.0    |

## Measurements

*Mobile Device Factors.* The final survey instrument contained a total of 25 items measuring two mobile device factors. The mobile device factors are technological characteristics of mobile devices such as perceived usefulness of the mobile devices and perceived ease of using the mobile devices. The perceived ease-of-use is defined as “the degree to which a person believes that using a particular system would be free of effort”

(Vankatesh and Davis 2000). Eight items (Table 3) measure the consumers' perceived ease-of-use regarding their mobile devices.

**Table 3. Measure of Perceived Ease of Use**

|    |   |
|----|---|
| 1. | I believe that it is easy to get mobile devices to do what I want it to do  |
| 2. | Overall, I believe that using mobile devices are easy   |
| 3. | Learning to operate mobile devices are easy for me  |
| 4. | My interaction with mobile devices are clear and understandable   |
| 5. | Using features (e.g., checking email, texting, surfing Internet) in mobile devices does not require a lot of my mental effort |
| 6. | I would be able to use any types of mobile devices  |
| 7. | Using mobile devices are entirely within my control   |
| 8. | I have the knowledge and the ability to make use of any types of mobile devices   |

Perceived usefulness is defined as “the degree to which a person believes that using a particular system would enhance his or her daily activities” (Vankatesh et al. 2000). A total of 17 measurement items (Table 4) cover four different usefulness dimensions of mobile devices: a) general mobile device usefulness (4 items), b) relative advantage (4 items), c) mobility/convenience (4 items), and d) multimedia service (5 items). They are adapted from previous literature (Jun and Lee 2007; Teo and Pok 2003; Wu and Wang 2005). The relative advantage is defined as the degree to which using an innovation is perceived as being better than its precursor (Teo and Pok 2003). The mobility of mobile devices is defined as the perceived convenience of using mobile devices regardless of the geographic location and time to communicate with others. The multimedia service is defined as the degree to which a person can use multimedia services (e.g., game, video, and music) on his/her mobile devices (Jun and Lee 2007). These items were measured along a seven-point Likert-type scale, ranging from

“Strongly Disagree” (1) to “Strongly Agree” (7).

**Table 4. Measure of Perceived Usefulness**

|                                      |  |
|--------------------------------------|--|
| General Usefulness of Mobile Devices |  |
| 1.                                   | Using mobile devices would improve my performance in my daily activities             |
| 2.                                   | Using mobile devices would increase my productivity in my daily activities           |
| 3.                                   | Using mobile devices would enhance my effectiveness in my daily activities           |
| 4.                                   | Using mobile devices would make it easier for me to do my daily activities           |
| Relative Advantage                   |  |
| 5.                                   | Mobile devices can be configured to meet my needs                                    |
| 6.                                   | Mobile devices offer me personalized services  |
| 7.                                   | Using mobile devices enable me to have access to timely information and services     |
| 8.                                   | Mobile devices portability makes it an ideal product/service information search tool |
| Mobility/Convenience                 |  |
| 9.                                   | I use mobile devices because I can use it anywhere                                   |
| 10.                                  | I use mobile devices because I can use it whenever I want                            |
| 11.                                  | I use mobile devices because I can use it while I am doing anything else             |
| 12.                                  | I use mobile devices because I can move place to place while I am using it           |
| Multimedia Service                   |  |
| 13.                                  | I use mobile devices because I enjoy games with it                                   |
| 14.                                  | I use mobile devices because I can watch video clip with it                          |
| 15.                                  | I use mobile devices because I can listen to music with it                           |
| 16.                                  | I use mobile devices because I can take picture with it                              |
| 17.                                  | I use mobile devices because I can listen to podcast with it                         |

*Message Factors.* The survey contains a total of 25 items measuring two message factors: message characteristics (22 items), and perceived message interactivity (3 items). They are adapted from previous literature on Internet and mobile advertising (Cho and Cheon 2005; Ducoffe 1996; Tsang et al. 2004; Wu 2000). A total of 25 measurement items (Table 5) cover four different message characteristics dimensions: a) entertainment (5 items), b) information (6 items), c) credibility (4 items), d) irritation (4 items), and e) incentive (3 items).



**Table 5. Measure of Message Characteristics**

|               |  |
|---------------|--|
| Entertainment |  |
| 1.            | Mobile advertising is entertaining   |
| 2.            | Mobile advertising is enjoyable  |
| 3.            | Mobile advertising is pleasing   |
| 4.            | Mobile advertising is fun to use   |
| 5.            | Mobile advertising is exciting   |
| Information   |  |
| 6.            | Mobile advertising is a good source of product/service information   |
| 7.            | Mobile advertising provides timely information   |
| 8.            | Mobile advertising is a good source of up-to-date product/service information                                      |
| 9.            | Mobile advertising makes product information immediately accessible  |
| 10.           | Mobile advertising is a convenient source of product/service information.  |
| 11.           | Mobile advertising supplies complete product/service information   |
| Credibility   |  |
| 12.           | I trust mobile advertising   |
| 13.           | Mobile advertising is believable   |
| 14.           | Mobile advertising is convincing   |
| 15.           | Mobile advertising is credible   |
| Irritation    |  |
| 16.           | Mobile advertising is annoying   |
| 17.           | Mobile advertising is irritating   |
| 18.           | Mobile advertising is deceptive  |
| 19.           | Mobile advertising is confusing  |
| Incentive     |  |
| 20.           | I receive incentives (e.g., free ringtone, free minutes, coupon) for receiving mobile advertising                  |
| 21.           | Receiving mobile advertising provides me benefits (e.g., free ringtone, free minutes, coupon)                      |
| 22.           | I am given incentives (e.g., free ringtone, free minutes, coupon) for my loyalty/ after viewing mobile advertising |

A total of three items (Table 6) measure perceived message interactivity.

Message interactivity is defined as consumers' perceived behavioral control of receiving advertising message on their mobile devices (Wu 1999). These items were measured along a seven-point Likert-type scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (7).

**Table 6. Measure of Message Interactivity**

| Perceived Message Interactivity |  |
|---------------------------------|--|
| 1.                              | I am in control of advertising message on my mobile devices                  |
| 2.                              | I can choose the type of advertising message to receive on my mobile devices |
| 3.                              | I am in control over the quantity of mobile advertising message to receive   |

*Consumer Factors.* The five consumer factors (a total of 21 items) are adapted from past literature on mobile advertising and Diffusion of Innovations to explore consumers' acceptance of mobile advertising (Table 7). Consumer factors are defined as personal and social characteristics of consumers that influence their acceptance of mobile advertising such as demographics (e.g., age, gender, education, ethnicity, and income), self-efficacy, innate innovativeness, social influence, and compatibility. Self-efficacy (4 items) is defined as judgment of one's ability to use a technology to accomplish a particular job or task (Teo and Pok 2003). Innate innovativeness (6 items) is defined as an individual's inherent innovativeness personality, predisposition, and cognitive style toward innovations that can be applied to consumption domains across product classes (Yang 2007). Social influence (5 items) is the degree to which an innovation's uses are perceived to enhance one's image or status in one's social system (Teo and Pok 2003). Compatibility (3 items) refers to the degree which accepting ads via mobile devices is perceived as consistent with the potential user's existing values, beliefs, previous experiences, and current needs (Wu and Wang 2005). These items were measured along a seven-point Likert-type scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (7).

**Table 7. Measure of Consumer Factors**

|                              |   |
|------------------------------|---|
| <b>Self Efficacy</b>         |   |
| 1.                           | I am confident of using various features on mobile device (e.g., download music and video, surf Internet, taking picture) even if there is no one to show me how to do it |
| 2.                           | I am confident of using various features on mobile device (e.g., download music and video, surf Internet, taking picture) even if I have never used such a device before  |
| 3.                           | I am confident of using mobile devices if I have just seen someone using it before trying it myself   |
| 4.                           | I am confident of using mobile devices if I have only the manufacture's manual for reference  |
| <b>Innate Innovativeness</b> |   |
| 1.                           | I often seek out information about new products   |
| 2.                           | I am comfortable in ambiguous situations  |
| 3.                           | I am curious about how things work  |
| 4.                           | I like to experiment with new ways of doing things  |
| 5.                           | I like to take a chance   |
| 6.                           | I like to be around unconventional people who dare to try new things.   |
| <b>Social Influence</b>      |   |
| 1.                           | Using mobile advertising improves my image within the organization  |
| 2.                           | People who use mobile advertising are technology savvy  |
| 3.                           | People who use mobile advertising are trendy  |
| 4.                           | Only young people use mobile advertising  |
| 5.                           | People who use mobile advertising have more prestige  |
| <b>Compatibility</b>         |   |
| 1.                           | Using mobile advertising fits well with my life style   |
| 2.                           | Using mobile advertising is completely compatible with my current situation   |
| 3.                           | Using mobile advertising is compatible with all aspect of my lifestyle  |

*Attitudes toward Mobile Advertising.* This study adopts Jun and Lee's (2007) four-item measure of attitudes toward mobile advertising in general (Table 8) along a seven-point semantic differential scale (i.e., unfavorable vs. favorable; bad vs. good; likable vs. unlikable; positive vs. negative).

**Table 8. Measure of Attitudes toward Mobile Advertising**

|  |  |
|--|--|
| <b>Attitudes toward Mobile Advertising</b> |  |
| 1.   | To me, mobile advertising is favorable/unfavorable |
| 2.   | To me, mobile advertising is good/bad              |
| 3.   | To me, mobile advertising is likable/unlikable     |
| 4.   | To me, mobile advertising is positive/negative     |

*Intention to Accept Mobile Advertising.* Jun and Lee's (2007) five-item measure of intention to accept mobile advertising (Table 9) were used to measure consumers' intention to accept mobile advertising via a seven-point semantic differential scale, ranging from "Very Unlikely" to "Very Likely."

**Table 9. Measure of Intention to Accept Mobile Advertising**

| Intention to Accept Mobile Advertising |   |
|--|---|
| 1.                                     | If I see advertising asking me send text message or click on link to get incentives (e.g., free coupon, free minutes, free ringtone) on my mobile devices, I will send the text message to the number |
| 2.                                     | If I receive a useful mobile advertising message, I will call back to the number to get more information  |
| 3.                                     | If I receive a useful mobile advertising message, I will send back text message to the number to ask more information   |
| 4.                                     | If I receive a coupon message on my mobile devices, I will visit the specific shop to use the coupon  |
| 5.                                     | If I can get free coupon regularly, I will allow ad messages on my mobile devices   |

## CHAPTER V

### RESULTS AND DISCUSSION

#### Sample Profile

After eliminating 64 respondents who submitted incomplete surveys and have never received mobile advertising, the final sample size was 450. Of the 450 respondents, more than half (59.1%,  $n = 266$ ) of respondents have been exposed to both push and pull-type mobile advertising and almost half (43.1%,  $n = 194$ ) of the respondents currently own a Smartphone such as iPhone, Blackberry, or Google phone. On average, survey respondents receive or send 57.29 text messages a day and they receive more than one mobile advertising message a day. Also, they are willing to receive 2.8 mobile advertising messages a day if any incentives are provided. In addition, respondents spend average of 4.2 hours online, 2.35 hours of TV watching, and 1.92 hours with mobile devices a day. Additional mobile usage profiles of the respondents are shown in Table 10.

**Table 10. Mobile Media Usage Profile of Respondents**

|  | <b>Mean</b>      | <b>SD</b>      |
|--|------------------|----------------|
| Time spend on mobile device per day (hours)    | 1.92             | 9.56           |
| Time spend on watching TV per day (hours)      | 2.35             | 2.36           |
| Time spend on using Internet per day (hours)   | 4.20             | 2.56           |
| Number of text message receive or send per day | 57.29            | 109.55         |
| Number of mobile ads receive per day           | 7.53             | 2.20           |
| Number of mobile ad willing to receive per day | 2.80             | 5.14           |
|  | <b>Frequency</b> | <b>Percent</b> |
| Smartphone Users                               | 194              | 43.1           |
| Push-type mobile ads experience                | 392              | 87.1           |
| Pull-type mobile ads experience                | 321              | 71.3           |
| Both push and pull-types mobile ads experience | 266              | 59.1           |

## Data Reduction

A principal component analysis (PCA) was conducted to validate the survey items and determine what, if any, underlying structures exist for each of the three factors that are hypothesized to predict consumers' attitudes toward mobile advertising. Items were analyzed using PCA and Varimax rotation. The PCA analysis produced component solutions for each of three factors, which were evaluated using the following criteria: (1) eigenvalue (greater than 1), (2) variance, (3) scree plot (e.g., retaining all components within the sharp descent, before eigenvalue level off), (4) loading score for each factor was at least  $|0.50|$ , and (5) meaningfulness of the components.

*Mobile Device Factors.* According to the PCA, it is evident that there are five components among the mobile device factors measures. The five components explained 65.1% of the variance. The first component, "perceived ease of use," accounts for 35.2% of the variance and its eight items formed a reliable scale as assessed by Cronbach's alpha ( $\alpha = .92$ ). It is notable that this factor includes items related to consumers' perceived ease of using their mobile device. The second factor, "perceived usefulness," formed from four items, accounted for 12.1% of the variance ( $\alpha = .94$ ). The third factor, "multimedia service," accounted for 7.2% of the variance ( $\alpha = .83$ ) and was formed using 4 items. The fourth component, "mobility," accounted for 6.15% of the variance ( $\alpha = .86$ ) and was formed with 4 items. Finally, the last component, "relative advantage," accounted for 4.4% of the variance ( $\alpha = .84$ ) and was formed from five items. Details regarding factor loadings for all mobile device factors are shown in Table 11. Mobile device measurement items across five components were averaged and used for

subsequent data analysis.

*Message Factors.* As shown in Table 12, there are six components among the message factors explaining 84.0% of the variance. The first component, “entertainment,” accounts for 50% of the variance and its five items formed a reliable scale assessed by Cronbach’s alpha ( $\alpha = .98$ ). The second component, “information,” accounts for 10.9% of the variance ( $\alpha = .95$ ) and was formed using six items. The third component, “credibility,” accounts for 8.2% of the variance ( $\alpha = .94$ ) and was formed from four items. The fourth component, “irritation,” accounts for 5.8% of the variance ( $\alpha = .83$ ) and was formed using four items. The fifth component, “incentive,” accounts for 5.4% of the variance ( $\alpha = .88$ ) and was formed from three items. The last component, “perceived message interactivity,” accounts for 3.8% of the variance ( $\alpha = .89$ ).

*Consumer Factors.* Lastly, the PCA result in Table 13 shows that there are four components among consumer factor measures that explain 69.3% of the variance. The first component, “innate innovativeness,” accounts for 31.0% of the variance ( $\alpha = .88$ ) and was formed using six items. The second component, “compatibility,” accounts for 25.1% of the variance ( $\alpha = .95$ ) and was formed with three items. The third component, “self efficacy,” accounts for 7.8% of the variance ( $\alpha = .85$ ) and was formed from four items. The last component, “social influence,” accounts for 5.4% of the variance ( $\alpha = .82$ ) and was formed using five items. A detailed result of each construct is reported in table 14.

**Table 11. Factors Loadings of Mobile Device Factor Measures (Varimax Rotation)**

| <b>Mobile Device Factor Measures</b> |  | <b>Components</b> |             |             |             |             |
|--------------------------------------|--|-------------------|-------------|-------------|-------------|-------------|
|                                      |  | <b>1</b>          | <b>2</b>    | <b>3</b>    | <b>4</b>    | <b>5</b>    |
| Perceived Ease of Use                | Learning to operate mobile devices are easy for me   | <b>.83</b>        | .08         | .10         | .18         | .11         |
|                                      | Overall, I believe that using mobile devices are easy  | <b>.77</b>        | -.01        | .03         | .29         | .19         |
|                                      | My interaction with mobile devices are clear and understandable  | <b>.77</b>        | .03         | .06         | .25         | .16         |
|                                      | I would be able to use any types of mobile devices   | <b>.79</b>        | .20         | .13         | .04         | .02         |
|                                      | Using mobile devices are entirely within my control  | <b>.77</b>        | .16         | .04         | .09         | .08         |
|                                      | I have the knowledge and the ability to make use of any types of mobile devices                              | <b>.77</b>        | .20         | .14         | .09         | .05         |
|                                      | Using features (e.g. texting, surfing Internet) in mobile devices does not require a lot of my mental effort | <b>.70</b>        | .13         | .13         | .16         | .19         |
|                                      | I believe that it is easy to get mobile devices to do what I want it to do                                   | <b>.65</b>        | .03         | .05         | .23         | .23         |
| Perceived Usefulness                 | Using mobile devices would enhance my effectiveness in my daily activities                                   | .09               | <b>.89</b>  | .19         | .11         | .18         |
|                                      | Using mobile devices would improve my performance in my daily activities                                     | .16               | <b>.85</b>  | .21         | .06         | .17         |
|                                      | Using mobile devices would increase my productivity in my daily activities                                   | .10               | <b>.88</b>  | .22         | .07         | .15         |
|                                      | Using mobile devices would make it easier for me to do my daily activities                                   | .14               | <b>.84</b>  | .12         | .16         | .23         |
| Multimedia Service                   | I use mobile devices because I can watch video clip with it  | .07               | .15         | <b>.84</b>  | .01         | .15         |
|                                      | I use mobile devices because I can listen to music with it   | .13               | .06         | <b>.80</b>  | .09         | .11         |
|                                      | I use mobile devices because I can take picture with it  | .06               | .24         | <b>.75</b>  | -.04        | .06         |
|                                      | I use mobile devices because I enjoy games with it   | .07               | .11         | <b>.72</b>  | .08         | .10         |
|                                      | I use mobile devices because I can listen to podcast with it   | .18               | .13         | <b>.49</b>  | .23         | .14         |
| Mobility                             | I use mobile devices because I can use it whenever I want  | .23               | .12         | .02         | <b>.83</b>  | .17         |
|                                      | I use mobile devices because I can use it anywhere   | .25               | .09         | .01         | <b>.80</b>  | .13         |
|                                      | I use mobile devices because I can use it while I am doing anything else                                     | .23               | .16         | .17         | <b>.76</b>  | .10         |
|                                      | I use mobile devices because I can move place to place while I am using it                                   | .21               | .13         | .13         | <b>.76</b>  | .10         |
| Relative Advantage                   | Mobile devices offer me personalized services  | .34               | .17         | .05         | .19         | <b>.66</b>  |
|                                      | Mobile devices portability makes it an ideal product/service information search tool                         | .23               | .28         | .14         | .21         | <b>.64</b>  |
|                                      | Using mobile devices enable me to have access to timely information and services                             | .28               | .39         | .06         | .24         | <b>.61</b>  |
|                                      | Mobile devices can be configured to meet my needs  | .34               | .23         | .05         | .30         | <b>.59</b>  |
| <b>Eigen value</b>                   |  | <b>10.21</b>      | <b>3.51</b> | <b>2.10</b> | <b>1.78</b> | <b>1.27</b> |
| <b>% of Variance</b>                 |  | <b>35.2</b>       | <b>12.3</b> | <b>7.2</b>  | <b>6.1</b>  | <b>4.4</b>  |
| <b>Cumulative %</b>                  |  | <b>35.2</b>       | <b>47.3</b> | <b>54.6</b> | <b>60.7</b> | <b>65.1</b> |



**Table 12. Factors Loadings of Message Factor Measures (Varimax Rotation)**

| <b>Mobile Advertising Message Factor Measures</b> |  | <b>Components</b> |             |             |             |             |             |
|---|--|-------------------|-------------|-------------|-------------|-------------|-------------|
|   |  | <b>1</b>          | <b>2</b>    | <b>3</b>    | <b>4</b>    | <b>5</b>    | <b>6</b>    |
| Entertainment                                     | Mobile advertising is enjoyable  | <b>.85</b>        | .33         | .24         | -.10        | .15         | .13         |
|   | Mobile advertising is pleasing   | <b>.85</b>        | .32         | .25         | -.10        | .18         | .13         |
|   | Mobile advertising is entertaining   | <b>.84</b>        | .34         | .24         | -.09        | .16         | .14         |
|   | Mobile advertising is fun to use   | <b>.83</b>        | .35         | .24         | -.11        | .18         | .12         |
|   | Mobile advertising is exciting   | <b>.80</b>        | .35         | .22         | -.08        | .19         | .14         |
| Information                                       | Mobile advertising makes product information immediately accessible          | .25               | <b>.84</b>  | .21         | -.08        | .06         | .07         |
|   | Mobile advertising is a good source of up-to-date product information        | .35               | <b>.81</b>  | .24         | -.12        | .15         | .09         |
|   | Mobile advertising is a convenient source of product information.            | .30               | <b>.79</b>  | .29         | -.13        | .15         | .09         |
|   | Mobile advertising provides timely information                               | .40               | <b>.77</b>  | .24         | -.10        | .15         | .15         |
|   | Mobile advertising is a good source of product information                   | .51               | <b>.66</b>  | .26         | -.13        | .14         | .13         |
|   | Mobile advertising supplies complete product information                     | .47               | <b>.53</b>  | .36         | -.04        | .25         | .11         |
| Credibility                                       | I trust mobile advertising   | .30               | .32         | <b>.76</b>  | -.16        | .17         | .13         |
|   | Mobile advertising is believable   | .27               | .30         | <b>.82</b>  | -.15        | .15         | .17         |
|   | Mobile advertising is convincing   | .35               | .30         | <b>.72</b>  | -.13        | .26         | .14         |
|   | Mobile advertising is credible   | .23               | .27         | <b>.79</b>  | -.15        | .21         | .12         |
| Irritation  | Mobile advertising is irritating   | -.32              | -.04        | -.07        | <b>.87</b>  | -.16        | -.02        |
|   | Mobile advertising is annoying   | -.31              | -.04        | -.04        | <b>.86</b>  | -.18        | .04         |
|   | Mobile advertising is deceptive  | .05               | -.13        | -.22        | <b>.82</b>  | .11         | -.06        |
|   | Mobile advertising is confusing  | .22               | -.21        | -.11        | <b>.63</b>  | .35         | -.01        |
| Incentive   | I receive incentive for receiving mobile advertising                         | .14               | .13         | .14         | .09         | <b>.85</b>  | .16         |
|   | Receiving mobile advertising provides me benefits                            | .20               | .22         | .26         | -.09        | <b>.77</b>  | .25         |
|   | I am given incentives for my loyalty/ after viewing mobile advertising       | .26               | .17         | .26         | -.04        | <b>.76</b>  | .24         |
| Perceived Interactivity                           | I can choose the type of advertising message to receive on my mobile devices | .11               | .14         | .09         | -.02        | .18         | <b>.86</b>  |
|   | I am in control over the quantity of mobile advertising message to receive   | .09               | .08         | .16         | -.04        | .16         | <b>.86</b>  |
|   | I am in control of advertising message on my mobile devices                  | .15               | .07         | .09         | .02         | .12         | <b>.83</b>  |
| <b>Eigen value</b>                                |  | <b>12.50</b>      | <b>2.72</b> | <b>2.04</b> | <b>1.46</b> | <b>1.34</b> | <b>1.00</b> |
| <b>% of Variance</b>                              |  | <b>50.0</b>       | <b>10.9</b> | <b>8.2</b>  | <b>5.8</b>  | <b>5.4</b>  | <b>3.8</b>  |
| <b>Cumulative %</b>                               |  | <b>50.0</b>       | <b>60.9</b> | <b>69.1</b> | <b>74.9</b> | <b>80.3</b> | <b>84.0</b> |

**Table 13. Factors Loadings of Consumer Factor Measures (Varimax Rotation)**

| <b>Consumer Factor Measures</b> |   | <b>Components</b> |             |             |             |
|---------------------------------|---|-------------------|-------------|-------------|-------------|
|                                 |   | <b>1</b>          | <b>2</b>    | <b>3</b>    | <b>4</b>    |
| Innate                          | I like to experiment with new ways of doing things  | <b>.85</b>        | -.01        | .23         | -.01        |
| Innovativeness                  | I am curious about how things work  | <b>.79</b>        | -.01        | .17         | -.02        |
|                                 | I like to take a chance   | <b>.78</b>        | .04         | .17         | .07         |
|                                 | I often seek out information about new products   | <b>.67</b>        | .21         | .16         | .04         |
|                                 | I am comfortable in ambiguous situations  | <b>.54</b>        | .16         | .37         | -.03        |
| Compatibility                   | Using mobile advertising is completely compatible with my current situation                               | .03               | <b>.90</b>  | .01         | .31         |
|                                 | Using advertising is compatible with all aspect of my lifestyle   | .06               | <b>.89</b>  | .04         | .33         |
|                                 | Using mobile advertising phone fits well with my life style   | .07               | <b>.84</b>  | .01         | .37         |
| Self Efficacy                   | I am confident of using various features on mobile device even if I have never used such a device before  | .34               | .09         | <b>.84</b>  | -.07        |
|                                 | I am confident of using mobile devices if I have just seen someone using it before trying it myself       | .31               | .02         | <b>.83</b>  | -.03        |
|                                 | I am confident of using various features on mobile device even if there is no one to show me how to do it | .29               | .10         | <b>.82</b>  | -.17        |
|                                 | I am confident of using mobile devices if I have only the manufacture's manual for reference              | .15               | -.16        | <b>.74</b>  | .14         |
|                                 |   |                   |             |             |             |
| Social Influence                | People who use mobile advertising are IT savvy  | .03               | .32         | .08         | <b>.77</b>  |
|                                 | People who use mobile advertising are trendy  | .09               | .38         | -.07        | <b>.75</b>  |
|                                 | People who use mobile advertising have more prestige  | .02               | .46         | -.17        | <b>.70</b>  |
|                                 | Only young people use mobile advertising  | -.01              | .04         | -.06        | <b>.62</b>  |
|                                 | Using mobile advertising improves my image within organization  | .22               | .42         | .05         | <b>.57</b>  |
| <b>Eigen value</b>              |   | <b>5.58</b>       | <b>4.51</b> | <b>1.41</b> | <b>1.00</b> |
| <b>% of Variance</b>            |   | <b>31.0</b>       | <b>25.1</b> | <b>7.8</b>  | <b>5.4</b>  |
| <b>Cumulative %</b>             |   | <b>31.0</b>       | <b>56.0</b> | <b>63.9</b> | <b>69.3</b> |

**Table 14. Descriptive Statistics of Key Variables**

| Variables                         | Mean | SD   | Min  | Max  | Cronbach's<br>alpha | Measurement<br>scale          | # of<br>items |
|-----------------------------------|------|------|------|------|---------------------|-------------------------------|---------------|
| Mobile Device Factor              |      |      |      |      |                     |                               |               |
| Perceived Ease of Use             | 5.69 | .93  | 1.63 | 7.00 | .92                 | 7-pt Likert type              | 8             |
| Perceived Usefulness              | 4.63 | 1.50 | 1.00 | 7.00 | .94                 | 7-pt Likert type              | 4             |
| Relative Advantage                | 5.31 | 1.07 | 1.00 | 7.00 | .84                 | 7-pt Likert type              | 4             |
| Mobility                          | 5.93 | 1.03 | 2.25 | 7.00 | .86                 | 7-pt Likert type              | 4             |
| Multimedia Service                | 3.85 | 1.42 | 1.00 | 7.00 | .83                 | 7-pt Likert type              | 5             |
| Message Factor                    |      |      |      |      |                     |                               |               |
| Message Characteristics           |      |      |      |      |                     |                               |               |
| Entertainment                     | 2.65 | 1.64 | 1.00 | 7.00 | .98                 | 7-pt Likert type              | 5             |
| Information                       | 3.58 | 1.65 | 1.00 | 7.00 | .95                 | 7-pt Likert type              | 6             |
| Credibility                       | 2.81 | 1.43 | 1.00 | 7.00 | .94                 | 7-pt Likert type              | 4             |
| Irritation                        | 4.59 | 1.35 | 1.00 | 7.00 | .83                 | 7-pt Likert type              | 4             |
| Incentive                         | 2.59 | 1.46 | 1.00 | 7.00 | .88                 | 7-pt Likert type              | 3             |
| Perceived Interactivity           | 3.22 | 1.60 | 1.00 | 7.00 | .89                 | 7-pt Likert type              | 3             |
| Consumer Factor                   |      |      |      |      |                     |                               |               |
| Innovativeness                    | 5.12 | 1.03 | 1.00 | 7.00 | .88                 | 7-pt Likert type              | 4             |
| Self efficacy                     | 5.49 | 1.19 | 1.00 | 7.00 | .85                 | 7-pt Likert type              | 6             |
| Social Influence                  | 3.36 | 1.29 | 1.00 | 7.00 | .82                 | 7-pt Likert type              | 5             |
| Compatibility                     | 3.19 | 1.68 | 1.00 | 7.00 | .95                 | 7-pt Likert type              | 3             |
| Attitude toward Mobile Ads        | 2.61 | 1.40 | 1.00 | 7.00 | .96                 | 7-pt Semantic<br>Differential | 4             |
| Attitude toward Ads in<br>General | 4.52 | 1.27 | 1.00 | 7.00 | .95                 | 7-pt Semantic<br>Differential | 4             |
| Behavioral Intention              | 2.56 | 1.37 | 1.00 | 6.60 | .88                 | 7-pt Semantic<br>Differential | 5             |

## Hypotheses Testing

The relationships between consumers' attitudes toward mobile advertising and each component of the three factors (i.e., mobile device, message, and consumer factors) were examined using correlation analyses first.

*Mobile device factors.* As shown in Table 15, the results indicate that there are positive correlations between attitudes toward advertising and perceived usefulness ( $r = .19, p < .01$ ). That is, the more consumers perceive their mobile devices as useful for their daily activities, the more favorable their attitudes toward mobile advertising (H2).

Specifically, two components (“relative advantage” and “multimedia feature”) were found to be related to attitudes toward mobile advertising. The significant and positive correlations between consumers’ attitudes toward mobile advertising, relative advantage ( $r = .18, p < .01$ ), and multimedia service ( $r = .24, p < .01$ ) suggest the advanced technologies features of mobile devices increase consumers’ attitudes toward mobile advertising (Davis 1980; Jun and Lee 2007; Rogers 2003; Wu and Wang 2005). For example, mobile devices are not only used as communication tools but also used as an entertainment tools to watch videos, play games, and listen to music. Specifically, young consumers use their mobile devices as multi-use tool to download multimedia contents (e.g., ringtones, movie clips, games, music) and search information. Perceived usefulness of a mobile device as a technology that provides relevant and useful information will help consumers to have a favorable attitude toward mobile advertising (Jun and Lee 2007). Although perceived usefulness was found to have a significant positive relationship with consumers’ favorable attitudes, perceived ease of using mobile devices did not show any significant positive relationship (H1). The relationship between consumers' attitudes toward mobile advertising, and convenience or mobility of mobile devices also did not show significant result. This implies that consumers perceived convenience or mobility of mobile devices has no relationship with their attitudes toward mobile advertising. Therefore, these results support H2 but fail to support H1 ( $r = .07, p = .11$ ).

*Mobile Message Factors.* The results in Table 15 show positive correlations between attitudes toward mobile advertising and entertainment ( $r = .52, p < .01$ ), information ( $r = .54, p < .01$ ), credibility ( $r = .54, p < .01$ ), incentive ( $r = .39, p < .01$ ),

and message interactivity ( $r = .33, p < .01$ ), supporting H3a, b, c, d, and H4. That is, the more consumers perceive mobile advertising as entertaining, informative, credible, beneficial, and interactive, the more favorable their attitudes toward mobile advertising (Bauer et al. 2005; Ducoffe 1996; Tsang et al. 2004; Wu and Wang 2005). Further, as predicted in H3e, irritation was negatively correlated with attitudes toward mobile advertising ( $r = -.42, p < .01$ ). In other words, the more consumers perceive mobile advertising as cumbersome or intrusive, the less favorable their attitudes toward mobile advertising (Okazaki 2004; Tsang et al. 2004).

*Consumer Factors.* As for consumer factors, positive correlations between attitudes toward mobile advertising and innate innovativeness ( $r = .11, p < .05$ ), social influence ( $r = .34, p < .01$ ), and compatibility ( $r = .48, p < .01$ ) are observed. That is, consumers who are more willing to take risks or try new things have more favorable attitudes toward mobile advertising in general than others who are not (Lin 2006; Bauer et al. 2005 (H6). Additionally, social factors (e.g., social influence and compatibility) exhibit a positive relationship with consumers' favorable attitudes toward mobile advertising. The results also suggest that consumers who are more concerned with how they are evaluated by others have more favorable attitudes towards mobile advertising than those who are less concerned about the opinions of others (H8).

Further, there was a negative correlation between attitudes toward mobile advertising and age ( $r = -.13, p < .01$ ). That is, younger consumers have more favorable attitudes towards mobile advertising than older consumers (Lee et al 2006; Leppaniemi et al. 2005; Okazaki 2004 Traffey III and Woodside 2007). Although consumers' attitudes

toward mobile advertising exhibit a significant relationship with age, no significant relationships were found for other demographic factors such as gender, income, or education (Haghirian and Madleberger 2005; Tsang et al. 2004). These results support H5a, H6, H8, and H9.

*Attitude-Behavior relationship.* The relationship between attitudes toward mobile advertising and intention to receive mobile advertising (H10) was also tested with a correlation analysis. The result show that attitudes toward mobile advertising ( $r = .52, p < .01$ ) had a significant and sizable positive correlation with intention to receive mobile advertising. Therefore, this study confirms the results from previous studies in supporting a strong relationship between consumers' attitudes and their behavioral intention (Bauer et al. 2005; Davis, Bagozzi, and Warshaw 1989; Fishbein and Ajzen 1975; Jun and Lee 2007; Teo and Pok 2003; Tsang et al. 2004).

**Table 15. Correlation Coefficients Matrix (N=450)**

|                  | 1           | 2           | 3           | 4           | 5           | 6           | 7           | 8           | 9           | 10          | 11          | 12          | 13          | 14          | 15          | 16          | 17          | 18          | 19          | 20          | 21          |
|------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Ease of Use      | 1           | <b>.31</b>  | <b>.53</b>  | <b>.45</b>  | <b>.27</b>  | <i>.04</i>  | <b>.10</b>  | <i>.01</i>  | <i>-.10</i> | <i>-.09</i> | <i>.01</i>  | <b>.63</b>  | <b>.42</b>  | <i>-.01</i> | <i>.12</i>  | <b>-.25</b> | <i>-.01</i> | <i>.07</i>  | <b>-.15</b> | <i>.07</i>  | <i>-.01</i> |
| Usefulness       | <b>.31</b>  | 1           | <b>.50</b>  | <b>.29</b>  | <b>.34</b>  | <b>.25</b>  | <b>.27</b>  | <b>.26</b>  | <i>-.06</i> | <b>.21</b>  | <b>.12</b>  | <b>.21</b>  | <b>.31</b>  | <b>.31</b>  | <b>.33</b>  | <b>-.19</b> | <i>.07</i>  | <b>.18</b>  | <i>-.04</i> | <b>.19</b>  | <b>.23</b>  |
| Advantage        | <b>.53</b>  | <b>.50</b>  | 1           | <b>.48</b>  | <b>.33</b>  | <b>.19</b>  | <b>.26</b>  | <b>.11</b>  | <i>-.03</i> | <b>-.01</b> | <i>.07</i>  | <b>.34</b>  | <b>.37</b>  | <b>.20</b>  | <b>.23</b>  | <b>-.21</b> | <i>-.07</i> | <i>.08</i>  | <i>-.11</i> | <b>.18</b>  | <b>.09</b>  |
| Mobility         | <b>.45</b>  | <b>.29</b>  | <b>.48</b>  | 1           | <b>.24</b>  | <i>.03</i>  | <b>.28</b>  | <i>.01</i>  | <i>-.04</i> | <b>-.13</b> | <i>-.07</i> | <b>.32</b>  | <b>.32</b>  | <i>.03</i>  | <i>.06</i>  | <b>-.18</b> | <b>-.14</b> | <u>.09</u>  | <i>-.14</i> | <i>.06</i>  | <i>.06</i>  |
| Multimedia       | <b>.28</b>  | <b>.34</b>  | <b>.33</b>  | <b>.24</b>  | 1           | <b>.35</b>  | <b>.33</b>  | <b>.26</b>  | <b>-.14</b> | <b>.25</b>  | <b>.15</b>  | <b>.21</b>  | <b>.24</b>  | <b>.36</b>  | <b>.36</b>  | <b>-.32</b> | <i>.03</i>  | <i>.03</i>  | <b>-.18</b> | <b>.24</b>  | <b>.27</b>  |
| Entertainment    | <i>.04</i>  | <b>.25</b>  | <b>.19</b>  | <i>.03</i>  | <b>.35</b>  | 1           | <b>.76</b>  | <b>.63</b>  | <b>-.29</b> | <b>.49</b>  | <b>.34</b>  | <i>-.01</i> | <i>.07</i>  | <b>.46</b>  | <b>.48</b>  | <b>-.19</b> | <i>.02</i>  | <i>.05</i>  | <i>-.12</i> | <b>.52</b>  | <b>.46</b>  |
| Information      | <i>.10</i>  | <b>.27</b>  | <b>.26</b>  | <b>.18</b>  | <b>.33</b>  | <b>.76</b>  | 1           | <b>.69</b>  | <b>-.31</b> | <b>.48</b>  | <b>.34</b>  | <i>.02</i>  | <i>.11</i>  | <b>.46</b>  | <b>.53</b>  | <b>-.22</b> | <i>-.04</i> | <u>.08</u>  | <i>-.12</i> | <b>.54</b>  | <b>.51</b>  |
| Credibility      | <i>.01</i>  | <b>.26</b>  | <i>.11</i>  | <i>.01</i>  | <i>.26</i>  | <b>.63</b>  | <b>.69</b>  | 1           | <b>-.36</b> | <b>.54</b>  | <b>.38</b>  | <i>-.03</i> | <i>.08</i>  | <b>.47</b>  | <b>.53</b>  | <i>-.10</i> | <u>.08</u>  | <i>.03</i>  | <i>-.05</i> | <b>.54</b>  | <b>.51</b>  |
| Irritation       | <i>-.10</i> | <i>-.06</i> | <i>-.03</i> | <i>-.04</i> | <b>-.14</b> | <b>-.29</b> | <b>-.31</b> | <b>-.36</b> | 1           | <b>-.09</b> | <b>-.09</b> | <i>-.07</i> | <u>-.09</u> | <b>-.21</b> | <b>-.32</b> | <i>-.02</i> | <i>.03</i>  | <i>.04</i>  | <i>.01</i>  | <b>-.42</b> | <b>-.31</b> |
| Incentive        | <u>-.09</u> | <b>-.21</b> | <i>-.01</i> | <b>-.13</b> | <b>.25</b>  | <b>.49</b>  | <b>.48</b>  | <b>.54</b>  | <i>-.09</i> | 1           | <b>.48</b>  | <b>-.13</b> | <i>-.02</i> | <b>.42</b>  | <b>.49</b>  | <b>-.27</b> | <i>.07</i>  | <i>.01</i>  | <b>-.14</b> | <b>.39</b>  | <b>.43</b>  |
| Interactivity    | <i>.01</i>  | <b>.12</b>  | <i>.07</i>  | <i>-.07</i> | <b>.15</b>  | <b>.34</b>  | <b>.34</b>  | <b>.38</b>  | <i>-.09</i> | <b>.48</b>  | 1           | <i>-.01</i> | <i>.07</i>  | <b>.27</b>  | <b>.29</b>  | <i>-.11</i> | <u>.08</u>  | <i>.04</i>  | <i>-.02</i> | <b>.33</b>  | <b>.27</b>  |
| Self Efficacy    | <b>.63</b>  | <b>.21</b>  | <b>.34</b>  | <b>.32</b>  | <b>.21</b>  | <i>-.01</i> | <i>.02</i>  | <i>-.02</i> | <i>-.07</i> | <b>-.13</b> | <i>-.01</i> | 1           | <b>.57</b>  | <i>-.02</i> | <i>.04</i>  | <b>-.17</b> | <i>-.01</i> | <i>.07</i>  | <i>-.02</i> | <i>.03</i>  | <i>-.02</i> |
| Innovativeness   | <b>.42</b>  | <b>.31</b>  | <b>.37</b>  | <b>.32</b>  | <b>.24</b>  | <i>.07</i>  | <i>.11</i>  | <i>.07</i>  | <u>-.08</u> | <i>-.02</i> | <i>.07</i>  | <b>.57</b>  | 1           | <b>.17</b>  | <b>.15</b>  | <i>-.09</i> | <i>.04</i>  | <i>.06</i>  | <i>-.05</i> | <b>.11</b>  | <b>.09</b>  |
| Social Influence | <i>-.01</i> | <b>.31</b>  | <b>.20</b>  | <i>.03</i>  | <b>.36</b>  | <b>.46</b>  | <b>.46</b>  | <b>.47</b>  | <b>-.21</b> | <b>.42</b>  | <b>.27</b>  | <i>-.02</i> | <b>.17</b>  | 1           | <b>.69</b>  | <b>-.16</b> | <i>-.01</i> | <i>.03</i>  | <i>-.03</i> | <b>.34</b>  | <b>.39</b>  |
| Compatibility    | <i>.12</i>  | <b>.33</b>  | <b>.23</b>  | <i>.06</i>  | <b>.36</b>  | <b>.48</b>  | <b>.53</b>  | <b>.53</b>  | <b>-.32</b> | <b>.49</b>  | <b>.29</b>  | <i>.04</i>  | <b>.15</b>  | <i>.69</i>  | 1           | <b>-.24</b> | <i>.01</i>  | <i>.10</i>  | <i>-.07</i> | <b>.48</b>  | <b>.49</b>  |
| Age              | <b>-.26</b> | <b>-.19</b> | <b>-.21</b> | <b>-.18</b> | <b>-.32</b> | <b>-.19</b> | <b>-.22</b> | <b>-.10</b> | <i>.02</i>  | <b>-.27</b> | <i>-.11</i> | <b>-.17</b> | <i>-.09</i> | <b>-.16</b> | <b>-.24</b> | 1           | <i>-.01</i> | <i>-.08</i> | <b>.54</b>  | <b>-.13</b> | <b>-.09</b> |
| Gender           | <i>-.01</i> | <i>.07</i>  | <i>-.07</i> | <b>-.14</b> | <i>.03</i>  | <i>.02</i>  | <i>-.04</i> | <u>.08</u>  | <i>.03</i>  | <i>.07</i>  | <u>.09</u>  | <i>-.01</i> | <i>.04</i>  | <i>-.01</i> | <i>.01</i>  | <i>-.01</i> | 1           | <i>-.03</i> | <i>-.03</i> | <i>.02</i>  | <i>.05</i>  |
| Income           | <i>.07</i>  | <b>.18</b>  | <i>.08</i>  | <u>.09</u>  | <i>.03</i>  | <i>.05</i>  | <b>.08</b>  | <i>.03</i>  | <i>.04</i>  | <i>.02</i>  | <i>.04</i>  | <i>.07</i>  | <i>.06</i>  | <i>.03</i>  | <i>.10</i>  | <i>-.08</i> | <i>-.03</i> | 1           | <i>-.04</i> | <i>-.04</i> | <i>.02</i>  |
| Education        | <b>-.15</b> | <i>-.04</i> | <b>-.11</b> | <b>-.14</b> | <b>-.18</b> | <b>-.12</b> | <i>-.12</i> | <i>-.05</i> | <i>.01</i>  | <b>-.14</b> | <i>-.02</i> | <i>-.02</i> | <i>.05</i>  | <i>-.03</i> | <i>-.07</i> | <b>.54</b>  | <i>-.03</i> | <i>.04</i>  | 1           | <i>-.03</i> | <i>-.02</i> |
| Ad Attitude      | <i>.07</i>  | <b>.19</b>  | <b>.18</b>  | <i>.06</i>  | <b>.24</b>  | <b>.52</b>  | <b>.54</b>  | <b>.54</b>  | <b>-.42</b> | <b>.39</b>  | <b>.33</b>  | <i>.03</i>  | <i>.11</i>  | <b>.34</b>  | <b>.48</b>  | <b>-.13</b> | <i>.02</i>  | <i>-.04</i> | <i>-.03</i> | 1           | <b>.52</b>  |
| Intention        | <i>-.01</i> | <b>.23</b>  | <u>.09</u>  | <i>.06</i>  | <b>.27</b>  | <b>.46</b>  | <b>.51</b>  | <b>.51</b>  | <b>-.31</b> | <b>.43</b>  | <b>.27</b>  | <i>-.02</i> | <i>.09</i>  | <b>.39</b>  | <b>.49</b>  | <i>-.09</i> | <i>.05</i>  | <i>.02</i>  | <i>-.02</i> | <b>.52</b>  | 1           |

Bold: significant at the .01 level; Italic: significant at the .05 level; Underline: significant at the .1 level.

## Regression Analysis

Multiple regression analyses were employed to further explore the relative influence of the independent variables on the dependent variables. Tables 15 and 16 summarize the results of the regression analyses predicting attitudes toward mobile advertising and behavioral intention. As illustrated, both regression models were found to be significant for predicting mobile advertising attitudes ( $R^2_{\text{adj}} = .44$ ,  $F(23, 416) = 19.11$ ,  $p < .01$ ), and behavioral intention ( $R^2_{\text{adj}} = .41$ ,  $F(23, 416) = 16.03$ ,  $p < .01$ ).

Irritation ( $\beta = -.23$ ,  $p < .01$ ), compatibility ( $\beta = .21$ ,  $p < .01$ ), entertainment ( $\beta = .18$ ,  $p < .01$ ), credibility ( $\beta = .15$ ,  $p < .01$ ), social influence ( $\beta = -.12$ ,  $p < .05$ ), message interactivity ( $\beta = .09$ ,  $p < .05$ ), and income level ( $\beta = -.08$ ,  $p = .08$ ) were found to be significant predictors of attitudes toward mobile advertising. Furthermore, relative advantage ( $\beta = .08$ ,  $p = .10$ ) was found to be a marginally significant predictor of attitudes toward mobile advertising. Among these predictors, irritation ( $\beta = -.23$ ,  $p < .01$ ) was the most powerful predictor of attitudes toward mobile advertising. That is, the intrusive nature of traditional push-type mobile advertising is the strongest factor that increases consumers' unfavorable attitudes towards mobile advertising. Thus, these results provide further support for H2, 3a, 3c, 3d, H4, H8, and H9. In contrast to the results of the correlation analyses, perceived usefulness ( $\beta = -.01$ ,  $p = .83$ ), multimedia service ( $\beta = -.02$ ,  $p = .51$ ), information ( $\beta = .09$ ,  $p = .18$ ), incentive ( $\beta = .07$ ,  $p = .27$ ), innate innovativeness ( $\beta = .03$ ,  $p = .48$ ), and age ( $\beta = .01$ ,  $p = .91$ ) were not significant predictors of attitudes toward mobile advertising.



The second regression result shows the relative importance of independent variables on consumers' intention to accept mobile advertising. Mobile advertising attitudes ( $\beta = .24, p < .01$ ), compatibility ( $\beta = .19, p < .05$ ) information ( $\beta = .16, p < .05$ ), and perceived ease of use ( $\beta = -.11, p < .05$ ) were found to be significant predictors of consumers' behavioral intention. Furthermore, perceived usefulness ( $\beta = .07, p = .10$ ), relative advantage ( $\beta = -.08, p = .10$ ), mobility ( $\beta = .08, p < .10$ ), incentive ( $\beta = .09, p < .10$ ), and age ( $\beta = .07, p < .10$ ) were found to be marginally significant predictors of consumers' behavioral intention. The result from this study provides further support for the importance of consumers' attitudes, compatibility, information, and mobile device factors (e.g., perceived ease of use, perceived usefulness, mobility) on consumers' intention to accept mobile advertising.

**Table 16. Summary of Multiple Regression Analysis for Predicting Attitude toward Mobile Advertising**

|                       | <b>Regression<br/>Coefficient (b)</b> | <b>Standardized regression<br/>coefficient (<math>\beta</math>)</b> | <b>t</b>       |
|-----------------------|---------------------------------------|---|----------------|
| Constant              | 1.68                                  |   |                |
| Perceived Ease of Use | -.06                                  | -.04  | .78            |
| Perceived Usefulness  | -.01                                  | -.01  | .26            |
| Relative Advantage    | .11                                   | .09   | <b>1.63*</b>   |
| Mobility              | .03                                   | .02   | .55            |
| Multimedia Service    | -.03                                  | -.02  | .63            |
| Entertainment         | .16                                   | .18   | <b>3.01***</b> |
| Information           | .08                                   | .09   | 1.49           |
| Credibility           | .15                                   | .15   | <b>2.65***</b> |
| Irritation            | -.24                                  | -.23  | <b>5.62***</b> |
| Incentive             | .06                                   | .07   | 1.29           |
| Message Interactivity | .09                                   | .09   | <b>2.38**</b>  |
| Self Efficacy         | .01                                   | .01   | .15            |
| Innovativeness        | .04                                   | .03   | .62            |
| Social Influence      | -.13                                  | -.12  | <b>2.21**</b>  |
| Compatibility         | .17                                   | .21   | <b>3.65***</b> |
| Age                   | .00                                   | .01   | .27            |
| Gender                | -.01                                  | -.00  | .07            |
| Income level          | -.05                                  | -.08  | <b>2.25**</b>  |
| Education             | .04                                   | .02   | .61            |
| $R^2_{adj}$           | <b>.44</b>                            |   |                |
| F                     | <b>19.11***</b>                       |   |                |

\*Significant at the .1 level.

\*\* Significant at the .05 level.

\*\*\*Significant at the .01 level.

**Table 17. Summary of Multiple Regression Analysis for Predicting Behavioral Intention**

|                             | <b>Regression<br/>Coefficient (b)</b> | <b>Standardized regression<br/>coefficient (<math>\beta</math>)</b> | <b><i>t</i></b> |
|-----------------------------|---------------------------------------|---|-----------------|
| Constant                    | .58                                   |   |                 |
| Perceived Ease of Use       | -.16                                  | -.11  | <b>1.91**</b>   |
| Perceived Usefulness        | .06                                   | .07   | <b>1.45*</b>    |
| Relative Advantage          | -.11                                  | -.08  | <b>1.65*</b>    |
| Mobility                    | .11                                   | .08   | <b>1.76*</b>    |
| Multimedia Service          | .06                                   | .07   | 1.50            |
| Entertainment               | .00                                   | .01   | .01             |
| Information                 | .13                                   | .16   | <b>2.35**</b>   |
| Credibility                 | .08                                   | .08   | 1.47            |
| Irritation                  | -.04                                  | -.04  | .92             |
| Incentive                   | .08                                   | .09   | <b>1.74*</b>    |
| Message Interactivity       | -.00                                  | .00   | .09             |
| Self Efficacy               | .02                                   | .02   | .38             |
| Innovativeness              | .02                                   | .02   | .34             |
| Social Influence            | -.00                                  | -.00  | .09             |
| Compatibility               | .16                                   | .19   | <b>3.19***</b>  |
| Age                         | .01                                   | .07   | <b>1.54*</b>    |
| Gender                      | .11                                   | .04   | .29             |
| Income level                | -.00                                  | -.01  | .90             |
| Education                   | -.03                                  | -.02  | .63             |
| Mobile Advertising Attitude | .23                                   | .24   | <b>4.78***</b>  |
| $R^2_{adj}$                 | <b>.41</b>                            |   |                 |
| $F$                         | <b>16.03***</b>                       |   |                 |

\*Significant at the .1 level.

\*\* Significant at the .05 level.

\*\*\*Significant at the .01 level.

## Discussion

This study intended to provide a comprehensive understanding of consumers' acceptance of mobile advertising. The empirical findings of this study suggest that (1) consumers' attitudes toward mobile advertising are largely influenced by message factors (e.g., entertainment, credibility, irritation, message interactivity) and consumer factors (e.g., social influence, compatibility, income level); (2) relative advantage is a marginally significant predictor of consumer attitudes toward mobile advertising; (3) consumers are overall negatively disposed toward mobile advertising; and (4) consumers' attitudes toward mobile advertising are the most powerful predictors of their acceptance of mobile advertising.

Interestingly, this study found that consumers' overall attitudes toward mobile advertising are negative ( $M = 2.61$ ,  $SD = 1.40$ ), despite their overall favorable perception of advertising in general ( $M = 4.52$ ,  $SD = 1.27$ ) (Table 14). One possible explanation for this finding is the perceived irritation of mobile advertising. As shown in Table 16, perceived irritation of mobile advertising ( $\beta = -.23$ ,  $p < .01$ ) was the most powerful predictor of attitudes toward mobile advertising. That is, the intrusive nature of traditional push-type mobile advertising may be responsible for consumers' overall unfavorable attitudes toward mobile advertising. As shown in Table 14, consumers generally perceive mobile advertising as an irritating practice ( $M = 4.59$ ,  $SD = 1.35$ ). A significant and negative relationship between consumers' attitudes and their attitudes toward mobile advertising ( $r = -.42$ ,  $p < .01$ ) also support this assumption.

Further, a majority of the samples in this study ( $n = 392$ , 87.1%) reported that

they have been exposed to traditional push-type mobile advertising messages (e.g., SMS or MMS). As the push-type mobile advertising is generally delivered to consumers regardless of whether the consumer has agreed to receive the message, it can be perceived more irritative to consumers than pull-type mobile advertising. Since mobile devices are often regarded as a personal and intimate medium, sending mobile advertising messages without consumers' consent is a violation of privacy. In other words, consumers may regard intrusive push-type mobile advertising messages as an intrusion of privacy. The intrusion of personal privacy, in turn, results in irritation and unfavorable attitudes toward mobile advertising. Past research has shown that a negative relationship with between consumers' perceived irritation and attitudes toward advertising (Bauer and Greyser 1973; Edwards, Li, and Lee 2002; Elliot and Speck 1998; Morimoto and Chang 2006; 2009; Okazaki 2004; Shavitt Vargas, and Lowrey 2004; Tsang et al. 2004). For example, Shavitt et al. (2004) suggested that consumers held generally less favorable attitudes toward advertising in an intrusive advertising medium. Okazaki (2004) also suggested that perceived irritation influences consumers' negative attitudes toward mobile advertising. Therefore, it may be assumed that past experience with intrusive push-type mobile advertising such as SMS or MMS mobile advertising message has contributed to consumers' overall negative attitudes toward mobile advertising.

Accordingly, marketers who want to reach consumers via mobile devices need to develop better strategies to decrease consumers' negative perceptions of mobile advertising. There are two ways to decrease consumers' negative perceptions of mobile advertising.

First, marketers should employ permission marketing concepts in mobile advertising. Godin (1999) suggested that permission is an important part of building an ongoing relationship with consumers and sending messages only to consumers who grant permission is less interruptive, more relevant, and customized than traditional interruptive marketing. Tsang et al (2004) found that consumers' attitudes toward mobile advertising are generally negative; however, they found consumers' attitudes are positive if permission is obtained. This implies the importance of permission marketing in mobile advertising. Previous research from the TAM and self-efficacy further support this argument. According to the TAM, people with high self-efficacy on their perceived behavioral control would think that they have the ability to control unwanted advertising messages via their mobile devices. However, when consumers lose their control to refuse intrusive messages, they will more likely be irritated by the intrusive messages, which results in an unfavorable attitude toward mobile advertising. Although all mobile advertising messages in the U.S. are sent to consumers who previously provided their permission to the advertiser, the result from this study still found consumers' negative attitudes towards mobile advertising. Consumers might take it for granted that marketers do not send them mobile advertising messages without their permission as they are well protected by legislative system. However, consumers sometimes receive unwanted mobile advertising messages from marketers to whom they gave permission. As push-type mobile advertising messages such as SMS or MMS are sent to consumers without considering their location and time, it can be intrusive and irritative regardless of permission. Therefore, this implies the consumers' need for more relevant and interactive

but less intrusive mobile advertising.

Consumers have greater control over pull-type mobile advertising than push-type mobile advertising. For example, a consumer receives mobile advertising messages only as they requested by pulling or requesting information about the message. Marketers also provide relevant information by recognizing consumers' geographical location and checking consumers' permission. While actively interacting with marketers on their mobile devices, consumers' are more engaged with mobile advertising messages and perceive the mobile advertising as more relevant and useful. For example, Merisavo et al. (2007) suggested that contextualized advertising message on mobile devices make advertising more useful to consumers (e.g., a diner offer when passing by a favorite restaurant in the evening), which in turn increases consumers' acceptance of mobile advertising.

Secondly, marketers should provide benefits to consumers to decrease their unfavorable attitudes toward mobile advertising. Marketers may provide tangible benefits such as cash incentives, free minutes, and free ringtones to consumers to decrease their negative perceptions of mobile advertising. Past research suggested the importance of incentives in decreasing consumers' negative consequences (Edwards et al. 2002; Lee et al. 2006; Pasadeos 1990). For example, Pasadeos (1990) suggested that when ads are perceived as valuable (i.e., containing useful information), the ads elicit less irritation and avoidance. Edwards et al. (2002) also suggested that advertising that does not provide value may be perceived as coercive and unwelcome. Furthermore, Lee et al (2006) suggested that consumers are responding mobile advertising message which delivers with

free contents offers such as ring tones and mobile games more often than the mobile advertising in which only introduces service or brand.

Marketers may increase consumers' favorable attitudes toward mobile advertising by increasing the perceived usefulness of mobile advertising. Hypothesis 2 predicted that perceived usefulness of mobile devices would be positively related to consumers' attitudes toward mobile advertising. Specifically, the result from this study exhibits that multimedia features of mobile devices such as playing music, games, and watching videos have a positive relationship with consumers' attitudes toward mobile advertising. Additionally, the relationships between message factors and mobile advertising attitude (H3 & H4) further suggest the ways to increase consumers' favorable attitudes toward mobile advertising. The result from this suggests that all six message characters (i.e., entertainment, information, credibility, incentive, irritation, and interactivity) had significant and sizable relationships with mobile advertising attitudes. This implies that not only the usefulness of mobile devices (e.g. multimedia features) but also the content of mobile devices can increase consumers' favorable attitudes toward mobile advertising (Bauer et al. 2005; Okazaki 2004; Jun and Lee 2007; Leung and Wei 2000; Tsang et al. 2004).

The relationships between mobile device factors and attitudes toward mobile advertising were partly supported. Hypothesis 1 suggested that the perceived ease of using mobile devices should have a significant and positive correlation with attitudes toward mobile advertising. The results suggest that there is no such significant relationship ( $r = .07, p = .11$ ). It is a surprising result since the TAM has suggested that



perceived behavioral control (i.e., perceived ease of use and perceived usefulness) should be one of the main predictors of people's attitudes. One possible explanation could be the overall high level of perceived ease of use ( $M = 5.69$ ,  $SD = .93$ ). Specifically, young consumers between the ages of 18-24 years ( $M = 5.81$ ,  $SD = .81$ ) show higher levels of confidence in using their mobile devices than consumers between the ages of 25-34 years ( $M = 5.25$ ,  $p < .05$ ) and those over the age of 55 ( $M = 4.79$ ,  $p < .01$ ). An additional analysis was performed to find out the impact of consumer age on attitudes toward mobile advertising. One-way ANOVA was used to test the impact of age on consumer attitudes and the result shows a significant main effect ( $F(4, 445) = 2.34$ ,  $p = .05$ ). Specifically, post hoc results show a significant mean attitude difference between young consumers between the ages of 18-24 years ( $M = 2.68$ ,  $SD = 1.38$ ) and consumers over the age of 55 years ( $M = 1.84$ ,  $SD = 1.25$ ). This implies that although overall consumer perceptions of mobile advertising are negative, young consumers show more favorable perceptions of mobile advertising than older ones. Respecting consumers' perceived privacy, marketers who want to target their consumers should acknowledge the influence of age and the consequent different perceptions of mobile advertising.

Consumer factors (i.e., innovativeness, social influence, compatibility, age) exhibited significant relationships with attitudes toward mobile advertising (H5, H6, H7, H8, and H9). H5 predicted the relationship between demographic factors (e.g. age, gender, education, income) and mobile advertising attitudes. Although the results showed a significant relationship between age and attitudes toward mobile advertising, other demographic factors (e.g., gender, education, income) were not found to be significantly

related. This implies that certain demographic factors (e.g., gender, education, income) do not contribute substantially or consistently to consumers' attitudes toward mobile advertising (Haghirian and Madleberger 2005; Tsang et al. 2004). One possible reason for this lack of a significant relationship between consumers' attitudes toward mobile advertising and certain demographic factors is the homogeneity of much of the samples. As most of the sampling populations were drawn from young consumers in advertising classes, the sample population is skewed toward young females. However, as shown in Table 16, income level has a significant impact on consumer attitudes ( $\beta = -.08, p < .05$ ). Lower income consumers appear to be more likely to have favorable attitudes toward mobile advertising than those with higher incomes. Previous research supports the impact of income level on consumers' attitudes toward advertising and advertising effectiveness. For example, Wolin et al. (2002) suggested that income and education are important predictors of consumer Internet advertising behaviors (e.g., click through, pay attention). Specifically, Wolin et al. (2002) suggested that the higher the consumers' education and income level, the less likely they are to click through or pay attention to Internet advertising.

The result from this study also suggests that an individual who is more willing to take risks and try new things earlier than others have more favorable attitudes towards mobile advertising. Past research also suggested that consumers who possess certain personality attributes that set them from the general population take risks in adopting new products or services earlier than others (Bauer et al. 2005; Rogers 2003; Lassar et al. 2005; Lin 2006; Mort and Drennan 2007). The result from an additional one-way

ANOVA analysis shows the significant influence of consumers' age on their level of innovativeness. Specifically, the result from post hoc analysis exhibits that young consumers between the ages of 18-24 years ( $M = 5.16$ ,  $SD = .95$ ) exhibit significantly higher levels of innovativeness than older ones over the age of 55 ( $M = 4.61$ ,  $SD = 1.60$ ) ( $F(4, 445) = 1.78$ ,  $p = .10$ ).

Similarly, the significant and positive relationship between consumers' attitudes toward mobile advertising and compatibility suggests that an individual who perceives mobile advertising fits with their values and needs is more likely to have favorable attitudes toward mobile advertising (H9). Specifically, the significant main effect of consumers' age on their compatibility suggests that young consumers between the ages of 18-35 years exhibit significantly higher levels of compatibility ( $M = 3.31$ ,  $SD = 1.71$ ) than older ones over 55 years ( $M = 1.55$ ,  $SD = 1.12$ ) ( $F(4, 445) = 8.10$ ,  $p < .01$ ). This implies that young consumers who are more willing to take risks have more favorable attitudes toward mobile advertising and they perceive that mobile advertising fits with their values and needs. In other words, this mirrors the popularity of mobile advertising among young consumers and their perception of mobile advertising. As young consumers are tech savvy and more open to innovations, this implies that marketers should employ more advanced technology that increases consumer engagement into marketing messages. Further the result from H4 suggests that consumers are more interested in interactive features of mobile devices that empower consumers to have control on the advertising message on their mobile devices.

Lastly, the results from this study suggest the positive relationship between

consumers' attitudes toward mobile advertising and social influence (H8). This implies that consumers who are more concerned about others' opinions tend to have more favorable attitudes toward mobile advertising. Mobile devices have generally been regarded not only as a platform of mass media that provides entertainment and information but also as a personal media device that enhances an individual's social interaction with others (Leung and Wei 2000). Therefore, consumers may have more favorable attitudes toward mobile advertising due to its perceived importance in terms of group membership or social status. Recent literature suggests the importance of social influence on consumers' mobile advertising acceptance. For example, Grant and O'Donohoe (2007) found that social stimulation is the key motivation among young consumers to use mobile phones. Their findings suggest that marketers who can offer mobile advertising as tokens of social exchange to young consumers are more likely to succeed in mobile marketing. Harris Interactive's report on teenagers' use of mobile phones (2008) further suggests that the mobile phone is the second important item among teenagers to represent their social status followed by jewelry and shoes.

In summary, consumers' attitudes toward mobile advertising are closely related to all three factors used in this study (e.g., mobile device, message, consumer factors). Specifically, consumers' attitudes toward mobile advertising are strongly influenced by message factors (e.g. entertainment, credibility, irritation, message interactivity) and consumer factors (e.g. social influence, compatibility). Thus, careful considerations in message strategy and thoughtful consumer research are needed to increase the effectiveness of mobile advertising. As an innovative technology, advertising messages

sent via a mobile device can be more accessible and memorable than advertising via traditional media. The results of this study suggest that advertising messages that are entertaining, credible, and interactive will likely attract greater consumer attention. Irrelevant or intrusive advertising messages, however, will negatively affect consumers' attitudes. Results from this study also show that these challenges may be overcome by providing more consumer control of mobile devices and benefits such as coupons, free ringtones to consumers. In addition, the current study shows that mobile devices are a social medium. Furthermore, the sizable and significant impact of consumer attitudes on behavioral intention further supports findings from previous research about the close relationship between consumer attitudes and their behavioral intention. Thus, the understanding of consumer attitudes toward mobile advertising can have direct implications for understanding advertising effectiveness. Finally, the current study provides insights into how mobile advertising works. These results are useful for both academic researchers and practitioners to better understand mobile devices as an emerging medium for advertising and provide insights for further research in this emerging field.

## **CHAPTER VI**

### **IMPLICATIONS AND LIMITATIONS**

#### **Theoretical Implications**

Regardless of the increased use of mobile advertising, little is known about how persuasive communication works in this new media environment. For this reason, this study intended to provide an in-depth understanding of consumers' acceptance of mobile advertising. By exploring factors influencing consumers' attitudes toward and their acceptance of mobile advertising, this research suggests that mobile message and consumer factors are the key predictors of consumers' attitudes toward mobile advertising. Consumers' attitudes, in turn, influence their intentions to accept mobile advertising. Based on previous literature regarding consumer attitudes, media use, and innovation adoption, this study developed a conceptual framework and validated previous theories in this new media environment.

First, two theories about the influence of consumers' perceptions on their acceptance of innovative technologies were used to understand the acceptance of mobile advertising among consumers. The TAM (Davis 1989) suggests that two beliefs (e.g., perceived usefulness and perceived ease of use) predict an individual's use of technology and intention to use it with attitude as a mediating variable. Similarly, the Diffusion of Innovations suggests that the relative advantage and complexity, which already have comparable representations in TAM through the perceived usefulness and ease of use, are the predictors of consumers' acceptance of innovation. The correlation analysis result from Table 15 suggests the significant relationships between consumers' attitudes toward

mobile advertising and certain components of perceived usefulness (i.e., relative advantage and multimedia feature). However, the result shown in Table 16 only exhibits the marginally significant influence of one component of perceived usefulness (i.e., relative advantage) on consumers' attitudes toward mobile advertising. Further, the results of this study suggest that the perceived ease of use and usefulness predict consumers' intention to accept mobile advertising (Table 17). These results imply that consumers' acceptance of mobile advertising may be directly influenced by the relative advantage rather than mediated through consumer attitudes. Previous TAM2 research has suggested the direct relationships between consumers' acceptance of mobile devices, perceived usefulness, and perceived ease of use (Vankatesh, Morris, Davis, and Davis 2003; Vatanparast and Asil 2008; Wu and Wang 2005). For example, Wu and Wang (2005) suggested that consumers' perceived usefulness and ease of mobile commerce indirectly predict mobile commerce adoption via intention to engage in mobile commerce. This implies the need for additional analysis to test the mediating effect of consumers' attitudes on their intention to accept mobile advertising.

Accordingly, Baron and Kenny's (1986) mediation analysis was performed to test the mediating effect of consumers' attitudes on their acceptance of mobile advertising. Regression analyses were conducted to examine (1) whether the independent variable (i.e., relative advantage) significantly accounted for variance in the hypothesized mediator (i.e., attitudes toward mobile advertising), (2) whether variance in the mediator (i.e., attitudes toward mobile advertising) accounted for variance in the dependent variable (i.e., intention to accept mobile advertising), and (3) whether the relationship

between the independent variable (i.e., relative advantage) and dependent variable (i.e., intention to accept mobile advertising) would no longer be significant once the variance in the dependent variable accounted for by the mediator was partialled out.

As shown in Table 18, the first regression model was tested in which relative advantage (RA) was regressed on attitudes toward mobile advertising (Matt). The effect of the independent variable (RA) significantly explained the variance in the hypothesized mediator attitudes toward mobile advertising (Matt) ( $t = 3.85$ ,  $F = 14.80$ ,  $p < .001$ ,  $R^2 = .03$ ). This result suggested that the independent variable (RA) is related to the mediator (Matt). Another regression model was tested by regressing the mediator (Matt) on the dependent variable (BI). Attitudes toward mobile advertising significantly accounted for variance in the dependent variable BI ( $t = 12.89$ ,  $F = 166.34$ ,  $p < .001$ ,  $R^2 = .27$ ). A third regression model was tested with BI as the dependent variable and relative advantage as an independent variable. Relative advantage significantly accounted for variance in the dependent variable (BI) ( $t = 1.85$ ,  $F = 3.42$ ,  $p = .06$ ,  $R^2 = .01$ ). Finally, a fourth model was tested with BI as the dependent variable and relative advantage and attitude toward mobile advertising as independent variables. The effect of relative advantage was not significant ( $t = .15$ ,  $p = .88$ ) after the significant effect of the hypothesized mediator (attitudes toward mobile advertising) ( $t = .52$ ,  $p < .001$ ) was partialled out. These results support the mediation effect of consumer attitudes between relative advantage and behavioral intention. This implies the validity of using the TAM model to understand how mobile advertising works. Specifically, the result from this study supports the strong relationship between consumers' attitudes and their behavioral intention.



**Table 18. Testing the Mediating Effect of Attitudes toward Mobile Advertising on Intention to Accept Mobile Advertising**

| Model  | Regression Coefficient (b) | Standardized regression coefficient ( $\beta$ ) | t                      |
|--|----------------------------|---|------------------------|
| $\text{Matt} = \beta_0 + \beta_1 * \text{RA}$                            | .23                        | .18   | <b>3.85***</b>         |
| $\text{BI} = \beta_0 + \beta_1 * \text{Matt}$                            | .51                        | .52   | <b>12.89***</b>        |
| $\text{BI} = \beta_0 + \beta_1 * \text{RA}$                              | .11                        | .09   | <b>1.85*</b>           |
| $\text{BI} = \beta_0 + \beta_1 * \text{RA}$<br>+ $\beta_2 * \text{Matt}$ | .00<br>.51                 | -.01<br>.52                                     | .15<br><b>12.70***</b> |

\*Significant at the .1 level.

\*\* Significant at the .05 level.

\*\*\*Significant at the .01 level.

Second, consistent with the findings from previous studies on the U&G, TRA, and Ducoffe model, results of the current study observed the significant influence of message factors on consumers' attitudes toward mobile advertising (Bracket and Carr 2001; Ducoffe 1996; Haghirian et al. 2005; Tsang et al. 2004; Leppäniemi et al. 2005; Pastel 2001; Schlosser et al. 1999). Specifically, the significant impact of four message factors (e.g., entertainment, credibility, irritation, message interactivity) on consumers' attitudes toward mobile advertising supports the validity of the Ducoffe model (1996) in new media environments. The U&G assumes that the consumer use of media is predicted by common factors such as entertainment, credibility, irritation, and interactivity. That is, consumers are more likely to have favorable attitudes toward mobile advertising when they perceive mobile advertising as entertaining, credible, less irritating, and more interactive. As consumers are faced with an excessive amount of ads everyday that create clutter, the effectiveness of advertising using traditional media has been decreased. This challenges the validity of traditional one-way models of persuasive communication and

calls for a need for more advanced theories to predict consumer behavior in competitive new media environments. As mentioned earlier, there are many concerns about irritative push-type mobile advertising which is similar to traditional one-way media. Specifically, consumers feel irritated and have negative attitudes toward mobile advertising when they lose control of the advertising messages on their mobile devices regardless of the values the messages provide to consumers. This implies the importance of interactive pull-type mobile advertising that enables consumers to engage in marketing messages and provide more consumer control. In summary, the results from this study not only resonate with the findings from previous U&G research but also suggest the importance of an interactive message strategy to increase consumers' engagement in marketing messages.

Lastly, the results from this study highlight the importance of consumer factors predicting consumers' acceptance of mobile advertising. Specifically, the impact of social influence on consumers' attitudes toward mobile advertising supports the basic assumptions of the TRA and TAM2. Both TRA and TAM2 suggest the importance of social influence on consumers' attitudes and behaviors. The empirical findings from this study also suggest that an individual who is more highly concerned about peer feedback is more likely to have favorable attitudes toward mobile advertising than others who do not. Therefore, this study supports the theoretical validity of both TRA and TAM2 in a mobile media environment. In addition, the result from this study suggests that there is a positive relationship between an individual's inherent personality and his/her attitude toward mobile advertising. However, the regression analysis result in Tables 15 and 16 failed to find a significant impact of individuals' inherent personality on their attitudes or

behavioral intentions. This is a rather surprising result because past research of the Diffusion of Innovations suggests that innate innovativeness is one of the important predictors of consumers' acceptance of innovations. For example, Bauer et al. (2005) suggested that consumers' innate innovativeness is highly relevant for investigating the acceptance of mobile marketing. This implies that there is a need for revisiting the Diffusion of Innovations and other theories that explains consumers' acceptance of innovation to expand our knowledge to understand consumers' acceptance of mobile advertising.

### **Practical Implications**

Recently, consumers shifted their media habits by reducing the amount of time they spent on traditional media such as radio, broadcast TV, and newspaper by more than 10 percent, and they increased the amount of time they spend on new media. For example, consumers have increased the amount of time they spend on the Internet four-fold and on mobile devices more than ten-fold (Vollmer and Precourt 2008). In this changing media environment, marketers can no longer successfully capture consumer attention simply through traditional interruptive messages. In addition, the wide adoption of consumer centric devices (e.g., smartphone, digital video recorder, MP3 player, commercial satellite radio) has empowered consumers to avoid unwanted persuasive messages. Therefore, engaging consumer interest in messages for products and services is becoming more challenging for marketers. The results of this study suggest practical implications for marketers.

First, marketers may increase consumer engagement of marketing messages by providing more consumer control of messages. In the new media environment, consumers are exposed to excessive amounts of ads everyday and are eager to receive only relevant and important messages on their mobile devices. For example, as shown in Table 10, the results from this study show consumers' changing media consumption habits. Respondents spend greater amount of time on new media such as Internet and Mobile devices. This implies that consumers spend more time with consumer centric media that provide more consumer control on the flow of information. In other words, today's consumers are empowered by technological advances to avoid unwanted marketing messages and to receive relevant messages. In every medium, technological advances have resulted in innovations that give consumers unprecedented power to determine what they view, when they view it, and how they view it. Today's consumers are mobile media mavens who pull required content from a variety of resources in a virtual, multitasking frenzy and they are skeptical about traditional, intrusive marketing messages. The results of this study suggest an overall negative attitude toward mobile advertising primarily due to factors such as irritation. Accordingly, marketers should provide consumers with interactive messages to decrease negative perceptions. For example, the use of pull-type mobile advertising campaigns through Bluetooth technology and RFID will provide a greater sense of interactivity. This, in turn, may increase consumers' motivation to process advertising messages on their mobile media.

Push and pull type mobile advertising can be simply differentiated by identifying the origin of the message. The push-type mobile advertising is outbound communication

originating from the marketer, while pull-type mobile advertising is inbound communication that is initiated by the consumer (Unni and Harmon 2007). The main advantage in pursuing push-type mobile advertising among marketers is the opportunity to increase impulse buying among consumers who have already expressed their preferences by opting in for the mobile advertising (Unni and Harmon 2007). However, it is challenging to provide relevant information to consumers without identifying their location and time. Therefore, marketers should explore more innovative ways to increase consumers' favorable attitudes such as employing pull-type mobile advertising. For example, consider a consumer who is heading to the mall. As the consumer approaches the mall, the consumer could use his/her mobile devices to check for promotions in his/her preferred retailers. The inbound marketing communication efforts such as location based mobile advertising not only increase the perceived values of mobile advertising but also increase consumers' acceptance of mobile advertising.

Second, marketers may increase consumers' acceptance of mobile advertising by increasing perceived values of mobile advertising messages. The results of this study suggest that consumers' needs for entertaining and credible marketing messages are increasing. Accordingly, marketers should try to satisfy consumers' needs by providing both entertainment and information messages instead of sending intrusive SMS messages. For example, product/brand placement in mobile games will provide both entertainment and a valuable increase of consumer trials of the service or products. The most successful case of engaging consumers with branded entertainment is Apple's iPhone application store. For example, Zippo's lighter application in iPhone features a virtual lighter that can

be lit, rotated and blown out. Users of the Zippo lighter application are encouraged to change the lighter's appearance by adding emblems and monograms, and pass it along to their friends (eMarketer 2009). The users of the Zippo lighter applications not only enjoy the free application on their mobile phone but also increase familiarity and favorable attitudes toward Zippo lighters. Additionally, the pass along to friends function in the Zippo lighter application increases both the number of users of the application and the credibility of the brand through electronic word of mouth among consumers. The success of iPhone implies that the use of marketing messages that satisfies consumer needs will eventually increase the effectiveness of mobile advertising. The results from this study suggest that the use of smartphones such as iPhone and Blackberry is prevalent among consumers. According to the survey result from Best Buy and GfK, approximately half of the survey respondents (47%, n = 470) say that they are willing to switch their regular mobile phone to a smartphone in next 12 months. The increasing number of smartphones implies the possibilities of wide acceptance of ad-supported free mobile application on consumers' mobile devices. In summary, the wide acceptance of ad-supported mobile application increases favorable consumers' attitudes not only because such ads are perceived to be less intrusive but also because they empower consumers to obtain entertaining and useful information.

Lastly, the result from this study suggests that today's consumers are concerned more about peer feedback. Specifically, this is more evident among young consumers between the ages of 18 -24 years who are the main target of most mobile marketing campaigns. Therefore, developing a successful marketing strategy for this group will

provide valuable insights to expand success into broader age groups. The results of this study suggest the impact of social influence and compatibility on consumer attitudes and behavioral intentions. The significant impact of social influence on consumers' attitudes toward mobile advertising implies that marketers should develop marketing messages that will increase the social value of the message delivered on mobile devices. For example, the increasing popularity of mobile social networking functions (e.g., Twitter) shows the importance of social values among consumers. Twitter is a free social networking and micro-blogging service that enables its users to send and read each others' updates. Users can send and receive updates via Twitter website, SMS, or external applications. Many marketers have already started to utilize this social network function to deliver exclusive messages and coupons for their loyal customers. For example, Dell reported that the company had generated one million dollars in computer-related sales through alerts posted to Twitter. Accordingly, the use of mobile social networking functions will increase not only the acceptance of mobile advertising but also the effectiveness of mobile advertising by creating a positive buzz among consumers.

### **Limitations and Issues for Future Research**

As with any empirical investigation, this study has some limitations that should be noted. The first limitation of this study is employing only mobile advertising users as a sampling population. Although current or past users of mobile advertising provide more accurate information about how they accepted mobile advertising, it limits the generalizability of this study. Specifically, users of mobile advertising may have more

favorable attitudes toward mobile advertising than non users due to cognitive dissonance. The theory of cognitive dissonance states that when a person is confronted with inconsistencies among attitudes or behaviors, he/she will take some action to resolve the dissonance, perhaps by changing an attitude or modifying a behavior. That is, although users of mobile advertising perceive mobile advertising as highly unfavorable, they may change their unfavorable attitudes to decrease cognitive dissonance. When consumers are confronted with a situation where there is some confliction between attitudes (i.e., unfavorable attitudes) and behaviors (i.e., current mobile advertising subscription), consumers will try to change their negative attitudes toward mobile advertising to decrease the discrepancy between their attitudes and behaviors.

This study intended to explore the underlying motives and acceptance of mobile advertising by tapping consumer attitudes based on personal experience with mobile advertising. Although, use of purposive samples limits the generalizability of this study, current or past users of mobile advertising provide more accurate information about how they accepted mobile advertising. Accordingly, drawing samples from mobile advertising users provides a more in-depth understanding of what factors influenced consumers' acceptance of mobile advertising by asking past or current users' experience of mobile advertising.

Secondly, due to the exploratory nature of this study, the findings are somewhat limited to fully understand the acceptance of mobile advertising. Instead, this study was intended to provide a foundation for future research. Specifically, future research should propose and test a more comprehensive theoretical model to explain consumers'



perceptions and acceptances of mobile advertising by identifying underlying antecedents and determinants (i.e., consumer beliefs and motives) of mobile advertising acceptance. Therefore, based on the findings of this research, further research can be done to construct and test a more comprehensive predictive model of mobile advertising acceptance in the future.

Thirdly, this study collected data primarily from young consumers (i.e., college students). Although concerns regarding the merits of data yielded by college students in advertising research have been raised, such a sample is appropriate for this study because they are heavy users and quite representative samples of the mobile phone user population (Stroud 2006; Mintel 2007). However, use of a homogeneous group limits insightful analysis of between-group differences such as consumers' income, gender, and education. For this reason, this study supplemented samples using an online consumer panel to address this limitation. However, regardless of the effort to achieve a more representative sample, a significant impact of demographic factor on consumers' attitudes was not found due to a low response rate of the online consumer panel. Accordingly, future studies need to use more diverse samples from all segments of the population (e.g., age, income, education, geographic, ethnicity) to explore similarities and differences between groups, thereby increasing the external validity of the study

Lastly, this study was conducted only with U.S. consumers and may not reflect the views of consumers in other countries. Thus, in order to reveal cultural and market differences, it would be interesting to repeat this study in different countries. Specifically, it would be appealing to see if the research findings vary in other countries with far

higher mobile phone penetrations such as South Korea, Japan, or the United Kingdom.

## APPENDIX A: Online Survey Questionnaire

### MOBILE ADVERTISING STUDY

Thank you for agreeing to participate in this study. The current study is designed to understand consumer acceptance of mobile advertising. Mobile advertising is defined as the advertisement sent to and presented on mobile devices (e.g., mobile/cellular phone, PDA, iPod, or Black Berry). All of your responses throughout the study will be completely confidential. This survey will take approximately 20-25 minutes or less. Your answer to this survey will be kept confidential and you as an individual will never be associated with your responses. I greatly appreciate your time and effort. Thank you.

#### Section A

Please answer following questions about your mobile device usage.

Do you currently use mobile phone service?

- 1) Yes
- 2) No

How long have you been used mobile phone service?

\_\_\_\_years \_\_\_\_months

On average, how much time do you use your mobile phone a day?

\_\_\_\_minutes

On average, how many text messages do you receive or send a day?

\_\_\_\_text messages

Have you ever received/exposed any types of advertising messages on your mobile devices? (e.g., text message, banner ads on mobile website, and etc.)

- 1) Yes
- 2) No

Which of the following types of mobile advertising messages you have experienced (multiple choices)?

- 1)Text message
- 2)Text link ads on mobile website
- 3)Graphic banner ads on mobile website
- 4)Combination of text and graphic banner ad on mobile website
- 5)Multimedia advertising messages (e.g., picture or movie clip)

On average, how many mobile advertising message do you receive/exposed a day?

\_\_\_\_ messages a day

- Who currently pays your monthly mobile phone bill?
- 1) Myself
  - 2) Parents or someone else
- Do you have unlimited text message service on your mobile phone service plan now?
- 1) Yes
  - 2) No
  - 3) Don't know
- Do you signed up your mobile phone number on National Do Not Call Registry?
- 1) Yes
  - 2) No
  - 3) Don't know
- Do you currently opt-in for any mobile phone advertiser or service providers?
- 1) Yes
  - 2) No
  - 3) Don't know

If yes please specify the name of advertiser or service (List all).

Which of the following features do you usually use on your mobile devices (multiple choices)?

- |   |     |
|---|-----|
| Update social network site (e.g. Twitter) | ( ) |
| Watch video or movie clip                 | ( ) |
| Listen Music                              | ( ) |
| Take picture                              | ( ) |
| Play game                                 | ( ) |
| Surf Internet                             | ( ) |
| Check email                               | ( ) |
| Read ebook                                | ( ) |
| Manage daily schedule                     | ( ) |
| Others (please specify):                  | ( ) |

## Section B

The following questions ask your opinion about mobile devices you own (e.g., cellular phone, PDA, iPod, and iPhone/Blackberry). Please rate the following statements on a scale of 1 to 7 (where 7 means "Strongly Agree", 1 means "Strongly Disagree").

- |   |                                       |
|---|---------------------------------------|
| (1) I believe that mobile devices are cumbersome to use (Reverse code)  | Strongly disagree ____ Strongly agree |
| (2) I believe that it is easy to get mobile devices to do what I want it to do  | Strongly disagree ____ Strongly agree |
| (3) Overall, I believe that using mobile devices are easy   | Strongly disagree ____ Strongly agree |
| (4) Learning to operate mobile devices are easy for me  | Strongly disagree ____ Strongly agree |
| (5) My interaction with mobile devices are clear and understandable   | Strongly disagree ____ Strongly agree |
| (6) Using features (e.g., checking email, texting, surfing Internet) in mobile devices does not require a lot of my mental effort | Strongly disagree ____ Strongly agree |
| (7) I would be able to use any types of mobile devices  | Strongly disagree ____ Strongly agree |
| (8) Using mobile devices are entirely within my control   | Strongly disagree ____ Strongly agree |

|   |   |
|---|---|
| (9) I have the knowledge and the ability to make use of any types of mobile devices       | Strongly disagree __:__:__:__:__:Strongly agree |
| (10) Using mobile devices would improve my performance in my work                         | Strongly disagree __:__:__:__:__:Strongly agree |
| (11) Using mobile devices would increase my productivity in my work                       | Strongly disagree __:__:__:__:__:Strongly agree |
| (12) Using mobile devices would enhance my effectiveness in my job/work                   | Strongly disagree __:__:__:__:__:Strongly agree |
| (13) Using mobile devices would make it easier for me to do my daily work/duty            | Strongly disagree __:__:__:__:__:Strongly agree |
| (14) Using mobile devices enable me to better manage my daily activities                  | Strongly disagree __:__:__:__:__:Strongly agree |
| (15) Mobile devices can be configured to meet my needs                                    | Strongly disagree __:__:__:__:__:Strongly agree |
| (16) Mobile devices offer me personalized services  | Strongly disagree __:__:__:__:__:Strongly agree |
| (17) Using mobile devices enable me to have access to timely information and services     | Strongly disagree __:__:__:__:__:Strongly agree |
| (18) Mobile devices portability makes it an ideal product/service information search tool | Strongly disagree __:__:__:__:__:Strongly agree |
| (19) I use mobile devices because I can easily carry product/service coupon (added)       | Strongly disagree __:__:__:__:__:Strongly agree |
| (20) I use mobile devices because I can access to product/service information immediately | Strongly disagree __:__:__:__:__:Strongly agree |
| (21) I use mobile devices because I can use it anywhere                                   | Strongly disagree __:__:__:__:__:Strongly agree |
| (22) I use mobile devices because I can use it whenever I want                            | Strongly disagree __:__:__:__:__:Strongly agree |
| (23) I use mobile devices because I can use it while I am doing anything else             | Strongly disagree __:__:__:__:__:Strongly agree |
| (24) I use mobile devices because I can move place to place while I am using it           | Strongly disagree __:__:__:__:__:Strongly agree |
| (25) I use mobile devices because I enjoy games with it                                   | Strongly disagree __:__:__:__:__:Strongly agree |
| (26) I use mobile devices because I can watch video clip with it                          | Strongly disagree __:__:__:__:__:Strongly agree |
| (27) I use mobile devices because I can listen to music with it                           | Strongly disagree __:__:__:__:__:Strongly agree |
| (28) I use mobile devices because I can take picture with it                              | Strongly disagree __:__:__:__:__:Strongly agree |
| (29) I use mobile devices because I can listen to podcast with it                         | Strongly disagree __:__:__:__:__:Strongly agree |

## Section C

The following questions ask your opinion about mobile advertising. Please rate the following statements on a scale of 1 to 7 (where 7 means “Strongly Agree”, 1 means “Strongly Disagree”).

- |   |  |
|---|--|
| (1) Mobile advertising is entertaining                                    | Strongly disagree __:__:__:__:__: Strongly agree |
| (2) Mobile advertising is enjoyable                                       | Strongly disagree __:__:__:__:__: Strongly agree |
| (3) Mobile advertising is pleasing  | Strongly disagree __:__:__:__:__: Strongly agree |
| (4) Mobile advertising is fun to use                                      | Strongly disagree __:__:__:__:__: Strongly agree |
| (5) Mobile advertising is exciting  | Strongly disagree __:__:__:__:__: Strongly agree |
| (6) Mobile advertising is a good source of product information            | Strongly disagree __:__:__:__:__: Strongly agree |
| (7) Mobile advertising supplies relevant product information              | Strongly disagree __:__:__:__:__: Strongly agree |
| (8) Mobile advertising provides timely information                        | Strongly disagree __:__:__:__:__: Strongly agree |
| (9) Mobile advertising is a good source of up-to-date product information | Strongly disagree __:__:__:__:__: Strongly agree |
| (10) Mobile advertising makes product information immediately accessible  | Strongly disagree __:__:__:__:__: Strongly agree |
| (11) Mobile advertising is a convenient source of product information.    | Strongly disagree __:__:__:__:__: Strongly agree |
| (12) Mobile advertising supplies complete product information             | Strongly disagree __:__:__:__:__: Strongly agree |
| (13) I use mobile advertising as a reference for purchasing               | Strongly disagree __:__:__:__:__: Strongly agree |
| (14) I trust mobile advertising   | Strongly disagree __:__:__:__:__: Strongly agree |
| (15) Mobile advertising is believable                                     | Strongly disagree __:__:__:__:__: Strongly agree |
| (16) Mobile advertising is convincing                                     | Strongly disagree __:__:__:__:__: Strongly agree |
| (17) Mobile advertising is credible                                       | Strongly disagree __:__:__:__:__: Strongly agree |
| (15) Mobile advertising is insulting people's intelligence                | Strongly disagree __:__:__:__:__: Strongly agree |
| (16) Mobile advertising is annoying                                       | Strongly disagree __:__:__:__:__: Strongly agree |
| (17) Mobile advertising is irritating                                     | Strongly disagree __:__:__:__:__: Strongly agree |

|   |  |
|---|--|
| (18) Mobile advertising is deceptive  | Strongly disagree __:__:__:__:__: Strongly agree |
| (19) Mobile advertising is confusing  | Strongly disagree __:__:__:__:__: Strongly agree |
| (20) I receive incentive for receiving mobile advertising   | Strongly disagree __:__:__:__:__: Strongly agree |
| (21) Receiving mobile advertising provides me benefits  | Strongly disagree __:__:__:__:__: Strongly agree |
| (22) I am given incentives for my loyalty/ after viewing mobile advertising   | Strongly disagree __:__:__:__:__: Strongly agree |
| (23) I am in control of advertising message on my mobile devices  | Strongly disagree __:__:__:__:__: Strongly agree |
| (24) I can choose the type of advertising message to receive on my mobile devices   | Strongly disagree __:__:__:__:__: Strongly agree |
| (25) I am in control over the quantity of mobile advertising message to receive   | Strongly disagree __:__:__:__:__: Strongly agree |
| (26) I can communicate with an advertiser/company directly for further questions about the company or its products if I wanted to | Strongly disagree __:__:__:__:__: Strongly agree |
| (27) The mobile advertising has the ability to respond to my specific questions quickly and efficiently.                          | Strongly disagree __:__:__:__:__: Strongly agree |
| (28) I can communicate in real time with company with mobile advertising  | Strongly disagree __:__:__:__:__: Strongly agree |
| (29) I felt I just had a personal conversation with a sociable, knowledgeable and warm representative from The company.           | Strongly disagree __:__:__:__:__: Strongly agree |
| (30) The website was like talking back to me while I clicked through the website.   | Strongly disagree __:__:__:__:__: Strongly agree |
| (31) I perceive the website to be sensitive to my needs for product information.  | Strongly disagree __:__:__:__:__: Strongly agree |
| (32) I would only prepared to receive mobile advertising if I had provided my permission  | Strongly disagree __:__:__:__:__: Strongly agree |
| (33) It is important for me that I can control the permission to receive mobile advertising                                       | Strongly disagree __:__:__:__:__: Strongly agree |
| (34) It is important for me that I can refuse to receive mobile advertising   | Strongly disagree __:__:__:__:__: Strongly agree |
| (35) It is important for me that I can filter mobile advertising to match my needs  | Strongly disagree __:__:__:__:__: Strongly agree |

## Section D.

The following questions ask your opinions about mobile advertising and devices usage. Please rate the following statements on a scale of 1 to 7 (where 7 means “Strongly Agree”, 1 means “Strongly Disagree”).

- |  |  |
|--|--|
| (1) I am confident of using various features on mobile device even if there is no one to show me how to do   | Strongly disagree __:__:__:__:__: Strongly agree |
| (2) I am confident of using various features on mobile device even if I have never used such a device before | Strongly disagree __:__:__:__:__: Strongly agree |
| (3) I am confident of using mobile devices if I have just seen someone using it before trying it myself      | Strongly disagree __:__:__:__:__: Strongly agree |
| (4) I am confident of using mobile devices if I have only the manufacture’s manual for reference             | Strongly disagree __:__:__:__:__: Strongly agree |
| (5) I often seek out information about new products  | Strongly disagree __:__:__:__:__: Strongly agree |
| (6) I am comfortable in ambiguous situations   | Strongly disagree __:__:__:__:__: Strongly agree |
| (7) I am curious about how things work   | Strongly disagree __:__:__:__:__: Strongly agree |
| (8) I like to experiment with new ways of doing things   | Strongly disagree __:__:__:__:__: Strongly agree |
| (9) I like to take a chance  | Strongly disagree __:__:__:__:__: Strongly agree |
| (10) I like to be around unconventional people who dare to try new things.                                   | Strongly disagree __:__:__:__:__: Strongly agree |
| (11) Using mobile advertising improves my image within the organization                                      | Strongly disagree __:__:__:__:__: Strongly agree |
| (12) People who use mobile advertising are IT savvy  | Strongly disagree __:__:__:__:__: Strongly agree |
| (13) People who use mobile advertising are trendy  | Strongly disagree __:__:__:__:__: Strongly agree |
| (14) Only young people use mobile advertising  | Strongly disagree __:__:__:__:__: Strongly agree |
| (15) People who use mobile advertising have more prestige  | Strongly disagree __:__:__:__:__: Strongly agree |
| (16) Using mobile advertising phone fits well with my life style   | Strongly disagree __:__:__:__:__: Strongly agree |
| (17) Using mobile advertising is completely compatible with my current situation                             | Strongly disagree __:__:__:__:__: Strongly agree |
| (18) Using mobile advertising is compatible with all aspect of my lifestyle                                  | Strongly disagree __:__:__:__:__: Strongly agree |



### Section E.

Below is a list of statements regarding your attitude toward mobile advertising. Please mark the answer that best represent your opinion. Please rate the following statements on a scale of 1 to 7.

- (1) To me mobile advertising is
- (2) To me mobile advertising is
- (3) To me mobile advertising is
- (4) To me mobile advertising is

Unfavorable \_\_\_\_ Favorable  
Bad \_\_\_\_ Good  
Unlikable \_\_\_\_ Likable  
Negative \_\_\_\_ Positive

### Section F.

The following questions ask your opinions about receiving advertising on your mobile devices. Please rate the following statements on a scale of 1 to 7 (where 7 means "Very Likely", 1 means "Very Unlikely").

- (1) If I see advertising asking me send text message or click on link to get free coupon on my mobile devices, I will send the text message to the number
- (2) If I receive a useful mobile advertising message, I will call back to the number to get more information
- (3) If I receive a useful mobile advertising message, I will send back text message to the number to ask more information
- (4) If I receive a coupon message on my mobile devices, I will visit the specific shop to use the coupon
- (5) If I can get free coupon regularly, I will allow ad messages on my mobile devices

Very Unlikely \_\_\_\_ Very Likely  
Very Unlikely \_\_\_\_ Very Likely  
Very Unlikely \_\_\_\_ Very Likely  
Very Unlikely \_\_\_\_ Very Likely  
Very Unlikely \_\_\_\_ Very Likely

### Misc.

Now, please answer these last few questions about yourself. All of the questions are for purpose of aggregating the data and you will NOT be asked your name or identity. Please select the answer that best describes you.

What is your gender?

1) Male\_\_ 2) Female\_\_

What is your age?

Open ended

How would you classify yourself?

- 1) African American
- 2) Anglo American
- 3) Asian American
- 4) Hispanic American
- 5) Multiracial
- 6) International
- 7) Other

What is your class in college?

- 1) Freshmen
- 2) Sophomore
- 3) Junior
- 4) Senior
- 5) Graduate Student

What is your annual family income level?

- 1) Below \$25,000
- 2) \$25,001 - \$35,000
- 3) \$35,001 - \$50,000
- 4) \$50,000 - \$ 65,000
- 5) \$65,001 - \$80,000
- 6) \$80,00 – \$100,000
- 7) Over \$100,000

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