

Factors affecting consumers' responses to mobile advertising from a social norm theoretical perspective

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ABSTRACT

As mobile technology continues to diffuse, the numbers of mobile subscribers continue to grow. With a high penetration of mobile subscribers in the United States, the mobile phone and network is promptly becoming a feasible marketing channel as mobile phones facilitate the exposure to advertisements deliver through a variety of mobile technologies.

The purpose of this study was to examine whether misperceptions of social norms of mobile advertising play any role in predicting consumers' responses to mobile advertising. The study used a questionnaire survey method to measure mobile users' attitudes, perceived usefulness (PU), perceived-ease-of-use (PEOU), and adoption intention of mobile advertising. A total of 343 college students from a large southwestern public university were recruited to participate in this study.

The study demonstrated that misperceptions of social norms predicted consumers' perceived usefulness (PU) and perceived ease of use (PEOU) of mobile advertising. Both PU and PEOU are critical variables predicting consumers' adoption of technologies. The study also found that PU predicted attitude towards mobile advertising, whereas PEOU did not predict attitude towards mobile advertising. Lastly attitude towards mobile advertising significantly predicted the intention to adopt mobile advertising.

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1. Background

Mobile advertising refers to advertisements sent to and received by mobile devices, i.e. cellular phones, Personal Digital Assistants (PDA), and other handheld devices which people carry with them (Salo and Tähtinen, 2005). As mobile technology applications continue to increase, so do the number of mobile subscribers. With a penetration of 84 percent of mobile subscribers in the United States, with this percentage surging to 100 percent by 2013 (Kagan, 2007), the mobile phone and network is promptly becoming a feasible marketing channel for interested marketers and advertisers (Mobile Marketing Association, 2007). Claimed to be a third screen for advertisers (Cuneo, 2005), mobile phones facilitate the exposure to advertisements deliver through a variety of mobile technologies (Khalifa and Cheng, 2002; Sidel and Mayhew, 2003). The mobile phone is one of the few devices, which people carry all day long and become a ubiquitous medium. To maximize the chances to communicate with a captive audience, advertisers are beginning to funnel money into mobile advertising (Shabelman, 2007). As more mobile users are accessing television on their phones, either live or via pod cast, advertisers are closely watching the mobile sector (Kennedy, 2006; Mobile Marketing Association, 2007). Mobile phones are being referred to as the "third screen" (Cuneo, 2005) because of the enormous potential to send targeted and personalized advertisements to consumers' on the move (Salo and Tähtinen, 2005). According to Informa Telecoms & Media, global mobile ad spending this year is projected to top \$1.5 billion, up 42% from \$871 million in 2006 (cited in Shabelman, 2007).

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Despite the fact that marketers are looking for new media options and other alternatives for TV advertising, it is not clear whether consumers are accepting mobile advertising in a positive light (Khalifa and Cheng, 2002). Mobile advertising companies face a number of challenges, most notably acceptance of the ads (Kennedy, 2006; Shabelman, 2007). However, all mobile advertising industry stakeholders appear to agree that the key to a successful mobile advertising campaign is that it should not be intrusive (Andrews, 2006). Barnes and Scornavacca (2004) stated that *user permission* is one of the variables affecting mobile advertising effectiveness. *User permission* occurs when individuals give consent to receive information from a company (Godin, 1999). Mobile users have said that they would accept mobile advertising provided that they had given prior consent (Barwise and Strong, 2002). Many users also insisted that they should have the right as with Internet newsletters to opt out quickly and easily whenever they want to (Andrews, 2006). Unlike traditional non-interactive media like newspapers, magazines, and television, consumers can opt to avoid and ignore advertising exposure delivered through new media. As a result, advertisers need to tread carefully in order to strike a balance between effective advertising and invading the privacy of mobile phone users (Kennedy, 2006). Like other interactive media, mobile technologies are often referred to permission-based media. Mobile advertising is often labeled as a tool of permission-based marketing communications (Barwise and Colin, 2002; Lebharr, 2006).

An important question thus arises. What factors are most predictive of how consumers would respond to mobile advertising? Although technical, psychological, and executional factors have been most commonly studied in mobile advertising literature (Khalifa and Cheng, 2002; Liu, 2002; Okazaki, 2005), one area that has been left unexplored is what leads to mobile users' willingness to grant permission to accept and read mobile advertisements. In this study, we argued that perceptions or misperceptions of social norms should be explored to examine the societal-level mechanism of consumers' responses to mobile advertising. We extended social norms theory to study the underlying mechanism affecting consumers' responses to mobile advertising. Social norms are standards of behavior that are based on widely shared beliefs how individual group members ought to behave in a given situation (Voss, 2001). The theory stated that human behavior is influenced by incorrect perceptions of how other members of our social groups think and act (Berkowitz, 2004; Burnkrant and Cousineau, 1975). Although macro- and societal-level factors are helpful to explain consumers' use of a technology, it does not mean that intrinsic characteristics about the technology are not essential. As a result, we integrate social norm theory with the extended technology acceptance model (TAM2), to examine the factors affecting consumers' attitudes, acceptance and intention to use of mobile advertisements. This paper reported data collected from a large scale research that measured several variables related to the influence of social norms over consumers' responses to mobile advertising.

2. Literature review

2.1. Social norms theory

Past studies have consistently found the importance of social norms in affecting human behavior (Lapinski and Rimal, 2005; Klein and Boster, 2006; Rimal et al., 2005). Derived from ample literature in this area, Berkowitz (2004) and his colleagues (Perkins and Berkowitz, 1986) further developed social norm theory to explain types of social norms and their influence on human behaviors. In a study by Perkins and Berkowitz (1986) about college students' drinking behavior, it was found that there was a consistent pattern of misperceptions held by students regarding the norms of alcohol use among their peers. Students typically thought that the norms for both the frequency and the quantity of drinking among their peers were higher than they actually were, and they generally believed that their peers were more permissive in their personal attitudes about substance use than was the case. The study also found that students' drinking behavior can be changed by exposing and replacing their misperceptions exaggerated by their peer norms with more accurate information regarding peer expectations and practices (Perkins and Berkowitz, 1986).

Social norms have been conceptually defined as "rules for conduct. The norms are standards by reference to which behavior is judged and approved or disapproved" (Williams, 1968, p. 204). Among researchers who applied social norms to examine various human behavior, the concept of social norms is associated with the main component of misperceptions, these resulting in *pluralistic ignorance*, *false consensus* and *false uniqueness* (Perkins and Berkowitz, 1986). The term "misperception" is used to describe the gap between actual attitudes or behavior, and what people think is true about others' attitudes or behaviors. Consequently, Berkowitz (2004) stated that a misperception occurs when there is an overestimation or underestimation of the benefit of attitudes and/or behaviors in a group or population. Individuals may misperceive their social groups or a larger community in a number of ways that influence their behavior.

Each of these misperceptions operates in a different way and may affect behavior differently (Berkowitz, 2004). Berkowitz (2004) also suggested that the majority who participate in healthy behavior may incorrectly accept or consider that they are in the minority. This is known as *pluralistic ignorance*. On the other hand, the minority of people with risky behaviors may incorrectly consider that they are in the majority, known as *false consensus*. Lastly Berkowitz (2004) further sees how an individual may enjoy thinking that its behavior is more unique than it really is, which Berkowitz (2004) calls *false uniqueness*. *Pluralistic ignorance* is the most common misperception as it occurs when the majority of individuals wrongly conclude that most of their peers behave or think differently from them, when, in fact, their behavior and attitudes are similar in context (Prentice and Miller, 1996).

Given that social norms theory has been successful in changing unwanted behavior in relation to alcohol drinking behavior and sexual behavior, the study extended the use of social norms theory to study consumers' responses to mobile

advertising. For many mobile users, receiving mobile ads is not desirable. For people around mobile users who receive and read mobile ads, for example, in class or during work, responding to mobile ads is likely to be considered as undesirable behavior. Therefore, in this study, we argue that social norms theory will better help determine consumers' responses to mobile advertising since social norms are viewed as regulations of behavior and act as social controls.

Marketing researchers have recognized that social norms are a valuable explanatory variable. Social norms point the way to acceptable standards and code of behavior, thus justifying the inclusion of this variable in the study. Social norms assist in correcting misperceptions and by examining the standards of acceptable behaviors and attitudes among the targeted community of college students towards consumers' responses to mobile advertising. Social norms help determine if misperceptions affect the response and adoption of mobile advertising by examining attitudes of consumers.

2.2. *Extended technology acceptance model (TAM2)*

Another useful theoretical framework that enhances our understanding of how consumers respond to mobile advertising is the extended technology acceptance model (TAM 2) (Venkatesh and Davis, 2000). TAM 2 extended the original TAM model to explain perceived usefulness and usage intentions in terms of social influence and cognitive instrumental processes. TAM2 differs from the original TAM model by adding three additional variables: "subjective norm", "voluntariness", and "image" (Venkatesh and Davis, 2000). Subjective norm in TAM2 is a social influence variable (Venkatesh and Davis, 2000) and was more pertinent to the present study. On the other hand, voluntariness and images were excluded from this study, so the study would focus on examining the influence of social norms and influence. In this theory, the social norm concept impacts the opportunity to adopt or reject a new system (Venkatesh and Davis, 2000). Because consumers are affected by what they perceive to be normative, subjective norm, as a variable, can help explain why consumers are willing to adopt mobile advertising. The justification for this direct influence is that people may choose to perform a behavior, even if they are not themselves favorable towards the behavior or the consequences of the chosen behavior (Venkatesh and Davis, 2000).

TAM and TAM2 have been widely used in studies examining why consumers used or adopted new communication technologies (Yang, 2007; Wu and Wang, 2004). For example, Yang (2007) studied factors affecting consumer intention to use mobile advertising in Taiwan employing the extended technology acceptance model (TAM2). The study researched how social influence and past adoption behavior influence consumers' intention to use mobile advertising (Yang, 2007). Results from his empirical data demonstrated persistent associations between attitudes towards using mobile commerce, and attitudes towards and intention to use mobile advertising (Yang, 2007). Yang's (2007) findings were concurred by Wu and Wang (2004), which found similar relationship in determining user mobile commerce acceptance. Their model was empirically tested using data from mobile commerce consumers and the findings indicated that perceived ease of use significantly affected users' behavioral intent (Wu and Wang, 2004).

Among many of these studies in mobile advertising acceptance, Technology Acceptance Model (Davis et al., 1989) or the extended, evolved model also known as TAM2 (Venkatesh and Davis, 2000) provide justifications to connect social norms theory with mobile advertising adoption. Research showed that under conditions of intention formation, subjective norm measured after group interaction directly affects behavior (Sapp et al., 1994). Citing Fishbein and Ajzen (1975, p. 302), Venkatesh and Davis (2000) defined "subjective norm" as an individual's perception that most people that are of importance to them think a specific behavior should or should not be performed (p. 187). Furthermore, Venkatesh and Davis (2000) emphasized that subjective norm is a direct determinant of behavior intention in theory of reasoned action (TRA). Although Venkatesh and Davis (2000) in their research illustrated that previous user acceptance research using subjective norm has found mixed results, Venkatesh and Davis (2000) also delineated that subjective norm has significantly predicted 'intention to use'. Its importance in consumer behavior will lead the study into discovering the behavioral intention of consumers' towards mobile advertising.

Furthermore, in TAM2, perceived usefulness (PU) is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989) and is when individuals tend to use or not use an application or technology, to the extent they believe it will help them perform their job better (Davis, 1989). On the other hand, perceived-ease-of-use (PEOU) is defined as "the degree to which a person believes that using a particular system would be free from effort" (Davis, 1989). Venkatesh and Davis (2000) stated that subjective norm, significantly influences perceived usefulness. Davis (1989) also stated that when a technological application has high perceived usefulness, in turn, is one for which a user believes in the existence of a positive use-performance relationship (p. 320).

2.3. *Attitude toward and intention to use mobile advertising*

Two dependent measures were used to assess the influence of social norm misperceptions over consumers' attitudes toward and intention to use mobile advertising. First, consumers' attitude toward advertising has been found to influence advertising effectiveness (Mehta, 2000). Mehta (2000) found that those who have more positive attitude toward advertising are more likely to be persuaded by advertising. Thus, consumers' positive attitude toward mobile advertising is likely to influence their willingness to accept mobile advertising. Attitude is the psychological likelihood that is demonstrated by assessing a particular object with some extent of favor or disfavor (Eagly and Chaiken, 1993). Tsang et al. (2004) provided empirical evidence that consumers' perceived value of mobile advertising was found to affect their attitudes toward mobile

advertising. In their study, entertainment was found to be the most important factor contributing to positive attitudes toward mobile advertising (Tsang et al., 2004).

Secondly, Ajzen and Fishbein's theory of reasoned action (TRA) has been applied to examine the predictive role of intention in predicting actual behavior (Mowen and Minor, 2001). According to TAM2, intention to adopt a new technology is influenced by social influence processes (such as subjective norm). Venkatesh and Davis (2000) stated that subjective norm has a direct effect on usage intentions over and above perceived usefulness and perceived ease of use for mandatory but not voluntary, usage contexts (p. 198). TAM2 posits that PU and PEOU are of prime relevance for technology acceptance behaviors. Past studies support the proposal and have found that variables similar to these can be linked to consumers' attitudes and usage (Davis et al., 1989).

2.4. Research questions and hypotheses

Given that subjective norm (Venkatesh and Davis, 2000) is conceptually similar to social norms (Perkins and Berkowitz, 1986) and have been found to influence consumer's adoption to new technologies, the research proposed the following theoretical framework (Refer to Fig. 1) that integrates both social norms theory and the extended technology acceptance model (TAM2).

First, we argue that, on the basis of past TAM2 studies (Venkatesh and Davis, 2000), social norms can influence consumers' perceived usefulness (PU) and perceived ease of use (PEOU) of mobile advertising. When mobile advertising is perceived as easy to use and useful to users, it is more likely that consumers will adopt mobile advertising (Venkatesh and Davis, 2000). Therefore, the following research hypotheses and research questions were proposed:

Research Question 1: Do types of misperceptions affect perceived usefulness of mobile advertising?

Research Question 2: Do types of misperceptions affect perceived ease of use of mobile advertising?

Research Hypothesis 1: Perceived usefulness (PU) of mobile advertising positively influences consumers' attitude towards mobile advertising.

Research Hypothesis 2: Perceived ease of use (PEOU) of mobile advertising positively influences consumers' attitude towards mobile advertising.

Research Hypothesis 3: Attitude towards mobile advertising positively influences consumers' intention to adopt mobile advertising.

3. Method

To examine if and whether misperceptions of social norms affect mobile users' perceived usefulness, perceived ease of use, attitudes towards, and intention to use mobile advertising, this study employed a questionnaire survey method to collect empirical data. The advantages of using a questionnaire survey in this study were convenience and the rapid turnaround of data collection. Surveys are also advantageous in their ability to make inferences about consumer behavior for given populations based on a sample (Babbie, 1990).

3.1. Sampling method and sample characteristics

This study employed a non-probability convenience sampling method. This sampling method has the following strengths: The sample selected is readily available and convenient given the time frame of the study. A total of 343 students from a large state university in the southwestern part of the United States were recruited to take part in this study. Students

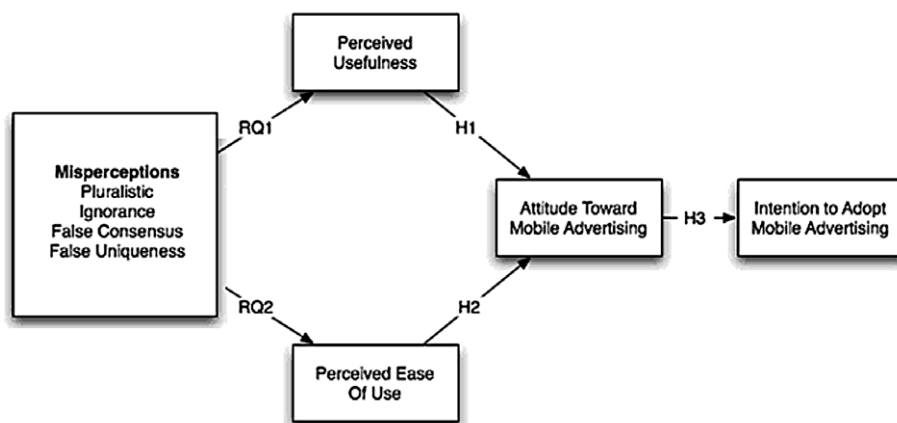


Fig. 1. Theoretical Model.

took part in this study voluntarily for extra course credits. The researcher instructed the participants about the survey questionnaire to ensure that each questionnaire was appropriately and fully filled out. The researchers reviewed the returned surveys and found 43 surveys to be invalid. These surveys were removed from the study due to discrepancies in the answers and because they had never received mobile advertisements; a crucial screening question in the survey. Correspondingly, the final sample of the study was composed of 300 participants.

The selection of college students to participate in the study was based on different reasons. College students have been used in various studies because participants were in the age range of 20–28, reflective of one of the major target groups for mobile advertising (Carroll et al., 2007). The respondents that participated in the study ranged from freshman, sophomore, junior, senior, and graduate level students. It is relevant to know the personal characteristics of the student sample in order to determine if there were any major differences among them. Among 300 respondents, 53.3% ($n = 160$) were females, while the other half, 44.7% ($n = 134$) were males. In terms of their age distribution, the majority of the participants were between the ages of 19–22 years old, 61.4% ($n = 184$). 33.5% ($n = 91$) of participants have been using a cell phone between 49 and 72 months. Lastly, 77.6% of participants ($n = 203$) have received mobile advertising messages in the last three months.

3.2. Instrumentation, reliability, and construct validity

A pre-test was conducted with a group of 40 university students from several classes in a large state university in the southwestern part of the United States to determine the inclusion or exclusion of questionnaire items that would better help determine consumer's responses to mobile advertising. The final survey administered to the participants consisted of 61 questions where all the constructs were being measured on a 5-point Likert scale. The Likert scale is a type of psychometric response scale often used in questionnaires, and is the most widely used scale in survey research. When responding to the Likert questionnaire items, the participants specified their level of agreement to a statement. The levels of agreements in the Likert scale utilized responses from 1 ("Strongly Disagree"), 2 ("Disagree"), 3 ("Neither Agree nor Disagree"), 4 ("Agree") to 5 ("Strongly Agree").

To measure misperceptions of social norms among participants, we used Klein and Boster's (2006) definition to develop three 5-point Likert statements to measure misperceptions, while Prentice and Miller's (1996) definition of pluralistic ignorance was used to develop six 5-point Likert statements to measure participants' pluralistic ignorance. Ross et al. (1977) was adapted to develop three items 5-point Likert statements measuring false consensus while Suls and Wan's (1987) definition was used to develop three 5-point Likert statements to measure false uniqueness.

To measure perceived usefulness (PU), we modified from Davis (1989) and Venkatesh and Davis (2000) to generate a five-point Likert scale and worded somewhat different to be coherent with mobile advertising statements. On the other hand, Perceived Ease of Use (PEOU) scales were modified from Davis (1989), and Venkatesh and Davis (2000) to generate a five-point Likert scale and worded somewhat different to be coherent with mobile advertising statements.

A seven-item scale was developed from Tsang et al. (2004) to measure consumers' attitude toward mobile advertising. On the other hand, scales from Davis (1989) and Venkatesh and Davis (2000) were adapted to measure consumers' intention to adopt mobile advertising.

To ensure construct validity of key constructs used in this study, factor analysis procedure with principal component analysis and varimax rotation was performed for the instrument. Scholars have used principal component analysis to identify potential factors (Wang and Mowen, 1997). The statistical procedure showed all constructs in this study converged well from theoretically-supported constructs.

The misperceptions construct measure loaded heavily with the following factor loadings: "Most people approve my usage of mobile advertising during class" (0.88), "Most people approve my usage of mobile advertising during a group meeting" (0.88), and "Most people approve my usage of mobile advertising while driving in a busy street" (0.82). Pluralistic ignorance construct show factor loading of six Likert statements ranging from 0.84 to 0.71. These items included with individual factor loading in the parentheses with the name of the university deleted to protect confidentiality of the participants: "Average students at ... feel comfortable with other students receiving mobile advertising during a group meeting" (0.84), "I am comfortable with other ... students receiving mobile advertising during a group meeting" (0.80), "Average students at ... feel comfortable with other students receiving mobile advertising during class" (0.80), "I am comfortable with other ... students receiving mobile advertising during class" (0.78), "Average students at ... feel comfortable with other students receiving mobile advertising while driving in a busy street" (0.74), and "I am comfortable with other ... students receiving mobile advertising while driving in a busy street" (0.71).

False consensus construct was also loaded heavily with the following factor loadings: "Most students at ... will receive mobile advertising during class" (0.93), "Most students at ... will receive mobile advertising during a group meeting" (0.93), "Most students at ... will receive mobile advertising while driving in a busy street" (0.88). Lastly, three items converged to form the false uniqueness construct with the following factor loadings: "I am among the only few students at ... who do not receive mobile advertising during class" (0.94), "I am among the only few students at ... who do not receive mobile advertising during a group meeting" (0.94), and "I am among the only few students at ... who do not receive mobile advertising while driving in a busy street" (0.92).

Items on PU and PEOU show factors loadings from 0.50 to 0.85. Statements (factor loadings reported in parentheses) that constitute the PU construct are as follow: "Mobile advertising is a source for timely information" (0.74), "Mobile advertising is credible" (0.70), "Mobile advertising is useful for my everyday life" (0.69), "Mobile advertising is likely to invade personal

privacy" (0.61), "Mobile advertising is informative" (0.58), "Receiving mobile advertising makes shopping easier" (0.50). The PEOU constructs mostly load heavily with the following Likert statements (factor loadings reported in parentheses): "Becoming skillful at receiving mobile advertising is easy" (0.82), "Receiving mobile advertising is easy" (0.78), "Getting timely information from mobile advertising is easy" (0.78), "Mobile advertising is easy to use" (0.63).

Most of the statements for attitude toward mobile advertising construct were heavily loaded into one converged dimension, such as "Mobile advertising is irritating" (0.85), "I like mobile advertising" (0.84), "Mobile advertising is annoying" (0.82), "I like receiving mobile advertising" (0.81), "Mobile advertising is enjoyable" (0.80), "I trust mobile advertising" (0.71), "Mobile advertising is intrusive" (0.70).

All constructs used a composite index by averaging all items measuring the construct to avoid Type I error in statistical analyses. Cronbach's alpha coefficients were computed to assess the internal consistency and reliability of the scales measuring key variables in the model (Patten, 2005). Cronbach's alphas of 0.60 or greater indicate strong internal consistency as an indicator of the instrument's reliability (Nunnally, 1976). Misperceptions ($\alpha = 0.89$), pluralistic ignorance ($\alpha = 0.89$), false consensus ($\alpha = 0.91$), and false uniqueness ($\alpha = 0.93$) show high alpha coefficients. Perceived usefulness and perceived ease of use on the other hand, show acceptable coefficients of ($\alpha = 0.77$) and ($\alpha = 0.79$) respectively. Lastly, attitude towards the mobile ad had a high alpha coefficient of ($\alpha = 0.90$). All constructs in the model show high internal consistency with reporting high or acceptable alpha coefficients (α).

4. Findings

4.1. Types of misperceptions and PU of mobile advertising

For Research Question 1, a simple linear regression was done to examine if types of misperceptions predicted perceived usefulness of mobile advertising (Table 1). A significant regression equation was found ($F(3, 296) = 10.45, p = 0.000 < 0.001$). While the model predicted that types of misperceptions were useful predictors, not all misperception types were significant predictors. Regression analysis predicted that pluralistic ignorance ($\beta = 0.28, p < 0.001$), explained perceived usefulness of mobile advertising, while false uniqueness ($\beta = 0.01, p > 0.05$), false consensus ($\beta = 0.02, p > 0.05$) did not. Overall, consumers' various types of misperceptions were found to account for 10% of variance in their perceived usefulness of mobile advertising ($R^2 = 0.10$).

4.2. Types of misperceptions and PEOU of mobile advertising

To provide empirical results for Research Question 2, a simple linear regression was calculated to explain if types of misperceptions affected perceived ease of use of mobile advertising (Table 2). A regression equation was found ($F(3, 296) = 5.32, p = 0.001 < 0.05$). Although the complete model demonstrated that misperceptions were capable of explaining consumers' PEOU, only Pluralistic ignorance can significantly predict their PEOU ($\beta = 0.18, p < 0.05$). Other types of misperceptions did not show that they were significant predictors. Consumers' misperceptions were found to account for 5% of variance in their perceived ease of use of mobile advertising ($R^2 = 0.05$).

4.3. The roles of PU and PEOU in predicting attitude towards mobile advertising

To examine the roles of PU (RH1) and PEOU (RH2) in predicting consumers' attitude toward mobile advertising, we conducted a simple linear regression (Table 3). A significant regression equation was found ($F(2, 297) = 149.00$,

Table 1
Simple linear regression of types of misperceptions and PU of mobile advertising.

Multiple R: 0.31 R square: 0.10 Adjusted R square: 0.09 Standard error: 0.73 F value: 10.45				
	Sum of squares	df	Mean square	
Regression	16.47	3	5.49	
Residual	155.47	296	0.53	
Total	171.94	299		
	Unstandardized coefficients β	Standardized coefficients β	t	p
Pluralistic ignorance	0.28	0.30	5.44	0.00
False uniqueness	0.01	0.02	0.27	0.79
False consensus	0.02	0.02	0.42	0.67

Table 2

Simple linear regression of types of misperceptions and PEOU of mobile advertising.

Multiple R: 0.23 R square: 0.05 Adjusted R square: 0.04 Standard error: 0.80 F value: 5.32				
	Sum of squares	df	Mean square	
Regression	10.19	3	3.40	
Residual	189.05	296	0.64	
Total	199.25	299		
	Unstandardized coefficients β	Standardized coefficients β	t	p
Pluralistic ignorance	0.18	0.18	3.12	0.00
False uniqueness	0.03	0.04	0.64	0.53
False consensus	0.10	0.11	1.91	0.06

$p = 0.000 < 0.001$). Although the linear regression model showed the predictive power of PU and PEOU, not all perceptions of mobile advertising were found to be significant. Regression analysis predicted that perceived usefulness ($\beta = 0.72$, $p < 0.001$) predicted attitude towards mobile advertising. However, perceived ease of use ($\beta = 0.61$, $p > 0.05$) was not found to be a significant predictor of consumers' attitudes towards mobile advertising. Consumers' PU and PEOU, combined, were found to account for 50% of variance in their attitude towards mobile advertising ($R^2 = 0.50$).

4.4. Consumers' attitude towards mobile advertising and adoption intention

For Research Hypothesis 3, we also conducted a simple linear regression to examine if attitude towards advertising predicted the intention to adopt mobile advertising (Table 4). A significant regression equation was found ($F(1, 299) = 219.24$, $p < 0.001$). The regression analysis explained that attitude towards mobile advertising ($\beta = 0.77$, $p < 0.001$) predicted the behavior intention of mobile advertising with high significance. Consumers' attitude towards mobile advertising was found to account for 42% of variance in their intention to adopt mobile advertising ($R^2 = 0.42$).

5. Discussion and conclusion

5.1. Types of misperceptions and consumers' perceived usefulness of mobile advertising

The term, misperception, is used to describe the gap between actual attitudes or behavior and what people think is true about others' attitudes or behaviors (Berkowitz, 2004). The study examined if different types of misperceptions predicted perceived usefulness of mobile advertising. The regression model has found that types of misperceptions were useful predictors of consumers' perceived usefulness of mobile advertising; however, not all types of misperceptions were significant predictors of PU, as shown by the empirical data. For example, pluralistic ignorance and false consensus were significant predictors in the study, while false uniqueness did not predict PU of mobile advertising.

False uniqueness occurs when individuals who are in the minority assume that the difference between themselves and others is greater than is actually the case (Suls and Wan, 1987). Because college students are among those who adopt mobile

Table 3

Simple linear regression of PU, PEOU and attitude towards mobile advertising.

Multiple R: 0.71 R square: 0.50 Adjusted R square: 0.50 Standard error: 0.58 F value: 149.00				
	Sum of squares	df	Mean square	
Regression	99.31	2	49.65	
Residual	98.98	297	0.33	
Total	198.28	299		
	Unstandardized coefficients β	Standardized coefficients β	t	p
Perceived usefulness	0.72	0.67	14.09	0.000
Perceived ease of use	0.61	0.61	1.29	0.200

Table 4

Simple linear regression of attitude towards mobile advertising and adoption intention.

Multiple R: 0.65				
R square: 0.42				
Adjusted R square: 0.42				
Standard error: 0.73				
F value: 219.24				
	Sum of squares	df	Mean square	
Regression	118.09	1	118.09	
Residual	160.51	298	0.54	
Total	278.60	299		
	Unstandardized coefficients β	Standardized coefficients β	t	p
Attitude towards MA	0.77	0.52	14.80	0.000

phone technology first and there is a high penetration of mobile phones, it is likely that they do not perceive themselves to be in the minority. As shown in the empirical data, false uniqueness construct showed a neutral position among participants in the study. Participants neither agreed nor disagreed to be among the only few students who do not receive mobile advertising during class, during a group meeting or while driving in a busy street. This type of misperception therefore cannot fully account for PU of mobile advertising. Berkowitz (2004) stated that participants are likely to initially question the validity of survey data because of misperceptions they hold, but will rethink their assumptions if the data are reliable and presented in an open manner (p. 25). With high penetration of mobile devices and the amount of advertising being sent among students, participants' most likely believe that everyone receives these kinds of advertisements, so a generalization could probably have been made.

According to Berkowitz (2004) pluralistic ignorance is the most common misperception among individuals. Empirical results from this study showed that this variable is also the most predictive of consumers' perceptions (such as PU and PEOU), attitudes toward, and intention to use mobile advertising. On the other hand, false consensus is the incorrect belief that others are like one-self when in fact they are not. Previous social norms research stated that members of campus communities usually held alcohol misperceptions (Berkowitz, 2004, 2006; Perkins and Berkowitz, 1986). Other studies have reported misperceptions about smoking cigarettes, marijuana and other illegal drugs (Haines et al., 2005). These misperceptions included the amount of alcohol consumption by students in one sitting, the percentage of students that chose to abstain from drinking in a specific time period, along with those students who chose to get drunk in the same time period, and lastly where those who chose to be alcohol free at parties (Haines et al., 2005).

Misperception patterns in this mobile advertising study seemed to mirror those from other social norms research (Berkowitz, 2004, 2006; Perkins and Berkowitz, 1986). Even though all other social norms studies have exclusively focused on risky behaviors, such as alcohol and drug use, the study aimed to extend the applicability of social norms theory to study mobile advertising. As shown in the regression model, pluralistic ignorance was found to be significant predictors in the study, while false uniqueness and false consensus did not predict PU of mobile advertising. Pluralistic ignorance was able to account for consumers' PU of mobile advertising perhaps due to both high penetration levels and social acceptance of mobile devices. On the other hand, false uniqueness and false consensus did not account of PU because college students did not perceive receive mobile advertising to be either a minority of majority behavior. It is also likely that, given that receiving mobile advertising is just at the very early diffusion stage, there has been little or no application in the marketplace. Therefore, participants cannot assess whether receiving mobile advertising will constitute a social norm at the current rate of diffusion.

The social disconnect or misperceptions appear to be present for more issues than just problematic behaviors such as drinking, sexual behavior, etc. As previous research works to correct misperceptions, by marketing the correct perception in a socially pleasing manner, they effectively reduce the incidences of the problematic behavior. Concurrently, by correcting these misperceptions of mobile advertising, it will increase the perceived usefulness of mobile advertising among consumers. The study demonstrated that most types of misperceptions predicted perceived usefulness of mobile advertising. On the other hand, mobile marketers and advertisers can also create misperceptions (or perceptions) to encourage mobile advertising adoption by shaping what consumers view what will be the norms in society. For example, by using celebrity endorsers to show that they are using mobile advertising, mobile users may view receiving mobile advertising to be socially prevailing, thus prompting people to adopt this new form of advertising as anticipated by mobile marketers and advertisers. Therefore, although some types of misperceptions were not found to be significant predictors in this study, the results help both researchers and practitioners to better understand the underlying mechanisms, so as to create more effective mobile advertising campaigns.

5.2. Types of misperceptions and perceived ease of use of mobile advertising

The study examined if misperceptions predicted perceived ease of use of mobile advertising. The regression model found that types of misperceptions were useful predictors of consumers' perceived ease of use of mobile advertising; however, not

all types of misperceptions were significant predictors of PEOU, as shown by the empirical data. For example, pluralistic ignorance was a significant predictor in the study, while false uniqueness and false consensus did not predict PEOU of mobile advertising.

Misperception patterns in this mobile advertising study seemed to mirror those from other social norms research (Berkowitz, 2004; Berkowitz, 2006; Perkins and Berkowitz, 1986). Even though all other social norms studies have exclusively focused on risky behaviors, such as alcohol and drug use, the study aimed to extend the applicability of social norms theory to study mobile advertising. As shown in the regression model, pluralistic ignorance was found to be a significant predictor in the study, while false uniqueness and false consensus did not predict PEOU of mobile advertising. The study demonstrated that not all types of misperceptions predicted perceived usefulness of mobile advertising. Furthermore, a combination of different types of misperceptions also accounted for 5% of variance in consumers' perceived ease of use of mobile advertising. Therefore, although some types of misperceptions were not found to be significant predictors in this study, the results help both researchers and practitioners to better understand what types of misperceptions will be most useful in affecting consumers' attitudes, thus helping marketers and advertisers to create more effective mobile advertising campaigns to change their perceptions and attitudes.

5.3. The roles of PU and PEOU in predicting mobile advertising adoption

Unexpectedly, the study did not find PEOU to be a predictor of attitude towards mobile advertising along with PU in the regression model. It is likely that may have been due to the fact that mobile advertising is not perceived as a difficult thing to do. Moreover, perceived ease of use might not be significant in the study, due to the known role of direct hands-on experience in forming this belief (Davis, 1989).

However, a favorable attitude toward mobile advertising can lead to adoption of this new advertising format. Numerous researchers have studied the relationship between attitudes towards an object (mobile advertising, in this study) and behavioral intentions for quite some time now (Fishbein and Ajzen, 1975; MacKenzie et al., 1986; Rimal et al., 2005; Tsang et al., 2004; Jun and Lee, 2007; Yang, 2007). TAM researchers have observed a significant link between attitudes and usage (Davis et al., 1989, p. 986). Additionally, Jun and Lee (2007) reiterated that the more consumers have a positive attitude towards mobile advertising, the more they have positive behavioral intentions for mobile advertising.

Moreover, Tsang et al. (2004) empirical data showed that respondents in their study held overall negative attitudes about receiving mobile advertising. These negative attitudes may be attributed to annoying and irritating nature of mobile advertising. Tsang et al. (2004) suggested that consumers' attitude toward mobile advertising would be favorable if mobile advertising was sent with permission. In other words, if consumers held positive attitudes toward mobile advertising, it is likely that mobile advertising will be more effective.

The regression model showed that positive attitudes towards mobile advertising could predict adoption intention in general. Given the findings of the study and that attitude towards mobile advertising predicted adoption intention of mobile advertising; the results of the study should lead into future research to determine the specifics on why consumers' have negative attitude towards mobile advertising and what causes these negative attitudes. In order to successfully adopt mobile advertising, consumers' should have a positive attitude.

5.4. Contribution and implications

The theoretical contribution of this study lies in outlining the key factors that influence consumers' attitudes, perceptions, and adoption of mobile advertising. To date, the majority of mobile advertising literature (except for Venkatesh and Davis, 2000; Yang, 2007) has not systematically addressed the role of social norm misperceptions in predicting adoption intention for mobile advertising. As a theory, social norms theory has been found to reduce risky behaviors by using social norms interventions (Berkowitz, 2004; Haines et al., 2005; Perkins and Berkowitz, 1986). As a result, social norms theory is a useful theoretical framework to understanding and predicting consumers' behavior and adoption behavior for mobile advertising. Social norms should be considered as interventions in decision-making for mobile users, as social norms have been found to be effective in changing the behavior of students (Berkowitz, 2004). Social norms theory can be used to develop interventions that focus on mobile advertising perceptions in order to correct misperceptions among students and positively affect adoption intention. For example, by emphasizing the social importance of using mobile advertising as a trendy and fashionable thing among selected target audiences, advertisers can create perceptions that promote the use of mobile advertising. Advertising strategies that use celebrity endorsers or reference group influence have generated similar effects on targeted audience for either commercial or non-profit causes. For mobile advertisers and marketers, such intervention can prove beneficial to increase the adoption and effectiveness of mobile advertising. The application of social norms theory to examine mobile advertising adoption will enhance scholars in the understanding the influence of various types of social norms and its effectiveness in influencing human behavior among members of a social group.

Mobile advertising is an unprecedented way of marketing communications (Vatanparast and Asil, 2007). Nevertheless, low acceptance rate will hinder the success of mobile advertising campaigns (Mobile Marketing Association, 2007). As a result, it is crucial to understand what factors can enhance people's acceptance and adoption behavior of mobile advertising. If misperceptions are corrected among students, mobile advertising responses will be higher.

For advertisers as well as media and marketing professionals, the managerial implications of this study are to help them better understand mechanisms and factors leading to more effective mobile advertising campaigns. For mobile marketers and advertisers, it is important to understand that mobile advertising is a personal communication medium that empowers them to engage consumers in a one-on-one relationship. If mobile advertising is conceptualized as a permission-based, it is thus important to ensure that mobile users will accept mobile advertising as expected. Therefore, findings from this study help mobile advertisers and marketers understand if and how social norms and misperceptions can be tailored into mobile advertising campaigns to ensure higher level of adoption and acceptance. In addition to creating attention-getting advertising, advertising message promoting mobile ads can be persuasive by relying adoption influence generated from social norms influence. Without encouraging mobile users to first accept mobile advertising, it is difficult to ensure mobile advertising will be processed.

Although mobile advertising adoption and acceptance is on the rise (Becker, 2005), without an unambiguous understanding of the fundamentals affecting consumers' responses' to mobile advertising, mobile marketing and advertising professionals will have a limited power to constantly generate positive and effective yields from their programs. Mobile advertising is only in its infancy stage; however, it promises a bright future in the mobile advertising and marketing industry.

5.5. Limitations of the study and future directions

While the study provides useful theoretical and managerial contributions on understanding factors influencing consumers' responses to mobile advertising, there are some limitations when interpreting the results. More importantly, these limitations must be addressed and taken into consideration before constructing any generalizations. New research directions can be derived from these limitations.

In terms of sampling method, the need to access a probability sample as opposed to a convenience sample would generate better results. That is, a probability sample will infer that the characteristics of the sample probably are the characteristics of the population. Although the sample size and response rate was in-tune with other studies of college students (Jun and Lee, 2007; Yang, 2007), the study proposes that future research uses a larger number of mobile users in order to generate less likely incorrect inferences as well as the use of additional methodologies such as telephone surveys or web-based surveys in an attempt to develop and expand student response rates. Although college students constitute a significant percentage of mobile phone users in the United States, they are not representatives of the general mobile user population (Jun and Lee, 2007). Future research should recruit mobile users from other parts of the country to generate results more applicable to advertisers. Furthermore, as social norms and the perceptions/misperceptions of these norms are contingent on cultural variations, cross-cultural studies involving several countries should further validate the usefulness of the proposed theoretical framework in a global context.

As to the scenarios tested to assess respondents' evaluation of norms, only three scenarios (e.g., during class, during a group meeting, and while driving in a busy street) were used. However, as suggested by some of the participants in this study, more scenarios should be added to better assess what student respondents feel in order to detect their adoption behavior of mobile advertising. In some instances, respondents have suggested adding a scenario for campus shuttles. Other scenarios can be added for future research when examining other groups of mobile users to examine the rigor of the proposed framework.

Furthermore, mobile advertising was defined broadly in this study, future research is needed to test consumers' acceptance of mobile advertising using the different types of mobile advertising that exist (i.e., mobile games, MMS, ring tones, videos, etc.). For example, consumers may perceive receiving a fancy MMS mobile advertising to be more socially visible than traditional text-based SMS mobile advertising. Therefore, examining types of mobile advertising will be necessary to examine the interactions between social norms and types of mobile advertising in order to better understand this critical issue. Nevertheless, the study opens a new channel of communication on multiple unexamined matters concerning the mobile advertising industry.

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