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ANTECEDENTS AND CONSEQUENCES OF MOBILE ADVERTISING INTRUSIVENESS

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Abstract

Consumers' negative perceptions toward mobile advertising have been a major impediment to its wider acceptance. This study examines the effects of perceived value of the mobile advertising and consumer privacy violation would have on consumers' perceived mobile advertising intrusiveness, as well as the relationships of intrusiveness with perceived ad irritation and ad avoidance behavior. Results from a survey of 103 Chinese mobile consumers suggest that informativeness of mobile advertising reduces perceived intrusiveness, consumer privacy concern positively affects intrusiveness, while a higher level of perceived intrusiveness positively impacts ad irritation and ad avoidance behavior.

Keywords: mobile advertising, perceived intrusiveness, information value, privacy concerns, ad avoidance, perceived irritation

Introduction

The rapid deployment of third-generation (3G) high-speed mobile communication systems and the proliferation of smart phones have renewed the interests in mobile commerce. These recent developments in mobile technologies and the distinct features of mobile devices - mobility, personalization and location-awareness have rekindled the hopes of merchants to perform marketing activities using the mobile medium [1, 2]. Touted as one of the most promising application of mobile marketing, mobile advertising has been utilized by both marketers who already have existing relationships with consumers and those who want to reach out to potential customers [3].

In the early stages of mobile marketing, mobile operators and marketers were largely driven by the hype effect and rushed onto the bandwagon hoping to obtain a leading position without appropriate strategies [4]. Recent research has identified that different delivery modes (push or pull) [5] and schedules (deliver time and frequency) [6] can cause consumers to form different perceptions toward mobile advertising. Negative perceptions from consumers are the prime reasons why the potential advantages of mobile advertising could not live up to the industry's expectations [4]. To ensure mobile

advertising success, consumers' negative perceptions toward mobile advertising warrant a thorough investigation, especially in the context of evolving mobile communication environment.

The intrusion of mobile advertising is regarded as the strongest stumbling block for mobile advertising development. Consumers' perceived intrusiveness, irritation towards advertising, and ad avoidance had been investigated in traditional media [7, 8] as well as in the context of Internet [9]. In the domain of mobile advertising, there is some research into the primary antecedents of the user's negative perceptions [10] or actual avoidance behavior in the mobile marketing context [11]. However, to the best of our knowledge, there is no research that has attempted to examine both the antecedents and consequences of mobile advertising intrusiveness.

This paper intends to contribute to the domain of mobile advertising by exploring the antecedents and consequences of perceived mobile advertising intrusiveness. Our research context is the use of push mode mobile advertising with no government regulation (e.g., mobile SPAM control). Our objective is to gain a comprehensive understanding of the determinants of mobile advertising intrusiveness as well as the outcomes arising from it. In section 2, we first introduce the concept of ad intrusiveness and the consequences of consumer perceived intrusiveness; then we discuss the effects of perceived value of the mobile advertising and the impact of consumer privacy violation would have on consumer's perception of mobile ad intrusiveness; we will introduce the research method in section 3; results and implications will be presented and discussed in section 4 and 5.

Conceptual Model Development

Over the past decade, widespread interest in mobile marketing has led to a considerable amount of research focusing on the attitudes toward mobile marketing [12-16], determinants of user acceptance [17-22] and mobile medium effectiveness assessment [5, 23, 24]. Although the previous works in mobile commerce have provided some understanding to the problems of mobile advertising, there is generally a lack of an overarching theoretical framework that could be adopted to help understand the intrusiveness and irritation felt by mobile users and their avoidance

behavior toward mobile advertisements. Hence, we combine cognitive psychological models with prior research from advertising and information systems to develop the research model since perceived intrusiveness is a kind of psychological perception.

Consequences of perceived mobile advertising intrusiveness

Perceived advertising intrusiveness is a construct that could influence consumers' attitude [25], and has been examined in research on consumers' negative reactions when faced with unwanted advertisements [26]. It is claimed to be an individual perception of advertisement, not a feature of advertisement, and is entirely different from the emotional (irritation) and behavior (avoidance) outcomes of advertising exposure [9]. The distinct features of mobile devices make marketing via mobile devices to be a new revenue stream that is attractive to marketers [2, 17, 20] and consequently, the consumers exposure to mobile advertising has become more prevalent [26]. Moreover, the fact that mobile devices are personal and are intimately carried by people has made mobile advertising potentially more intrusive than advertising channels [13].

Ad intrusiveness is considered to be a leading cause of advertising irritation [7] and advertising avoidance [8]. Advertising irritation is an emotional response to advertisement and is reflected as the negative, impatient and displeased feeling caused by ad content, execution and placement [7, 25, 26]. It is a state of response that is less negative than offensive but stronger than dislike. Advertising avoidance is a behavioral outcome of exposure to advertising [10], undermining the effect of advertising for the loss of consumer's attention [8]. In push-based mobile advertising context, we expect that perceived ad intrusiveness would result in ad irritation and ad avoidance. Hence, we hypothesize that:

Hypothesis 1 (H1): The perceived level of mobile advertising intrusiveness will have a positive influence on mobile advertising irritation.

Hypothesis 2 (H2): The perceived level of mobile advertising intrusiveness will have a positive influence on mobile advertising avoidance.

Consumer attention is a scarce resource. Therefore, consumers incur costs to read the messages [27]. The frequency the same advertisement is being delivered to consumer has been found to be negatively affecting the advertising effectiveness [28]. In addition, excessive advertisements would often elicit negative reactions [29-31]. According to the psychology reaction theory, when external sources create pressure on consumers, they would react against threats by acting in the opposite way [25]. Hence, if consumers perceive

mobile advertising as an intrusion, the delivery frequency of this intrusive mobile advertisement would reinforce the ad avoid behavior. Therefore, we hypothesize that:

Hypothesis 3 (H3): The frequency of that mobile advertising positively moderates the relationship between the perceived level of mobile advertising intrusiveness and mobile advertising avoidance.

Privacy concern due to mobile advertising

Privacy can be understood as "the ability of an individual to control the terms under which their personal information is acquired and used." [32] Privacy is a key concern of consumers [33], especially in the use of mobile devices where they can be potentially tracked ubiquitously. Privacy stresses consumer's control over personal information and how companies process and use their personal information, which has been found to be an issue in the context of Internet sites [34]. Likewise, similar concerns have been found to exist in the context of mobile marketing since obtaining and using personal data is the necessary condition that a mobile advertising campaign could be carried out [13, 19, 35]. And this initiative seeking for personal information is the most striking difference of advertising via mobile devices than advertising via other medium. Misgivings would be raised when consumers received unsolicited mobile advertisements, such as, how could they know the information, where do they get the information, why would they send this kind of advertising to me at this time, and so on. Receiving unsolicited advertisement is regarded as a direct consequence of the disclosure of personal information involuntary [36, 37]. Intrusiveness would be perceived by consumers when receiving unsolicited mobile advertising due to the loss of control over privacy information [10]. Consequently, consumers' concern about the privacy information would affect their perception toward mobile advertising intrusiveness. Therefore, we hypothesized that:

Hypothesis 4 (H4): Consumers' concern over private information will have a positive influence on perceived mobile advertising intrusiveness.

Perceived value of mobile advertising

Perceived value is closely related to the ad effectiveness and consumer behavior [20]. As a kind of positive social influence, perceived value of mobile advertising would possibly affect the perceived intrusiveness [9, 38]. In other words, if mobile advertising is regarded as high value, the perceived intrusiveness would be lessened [9]. The quality of the information advertisements delivered to the consumers has a direct influence on

consumer's perception and attitude toward advertising and the brand [15], and turned out to be strongly related to the value of advertising in traditional media [28]. Also, the level of enjoyment consumers derives from the advertisements determines the overall attitude towards them [39], and this entertainment value also proved to be related to advertising value of traditional advertising [28]. Furthermore, previous studies on mobile advertising have suggested that informativeness and entertainment are two most important predictors to

the value of mobile advertising [13, 17, 24]. Therefore, we hypothesized that:

Hypothesis 5 (H5): The informativeness of mobile advertising will have a negative influence on perceived level of mobile advertising intrusiveness.

Hypothesis 6 (H6): The entertainment of mobile advertising will have a negative influence on perceived mobile advertising intrusiveness.

Figure 1 shows the research model.

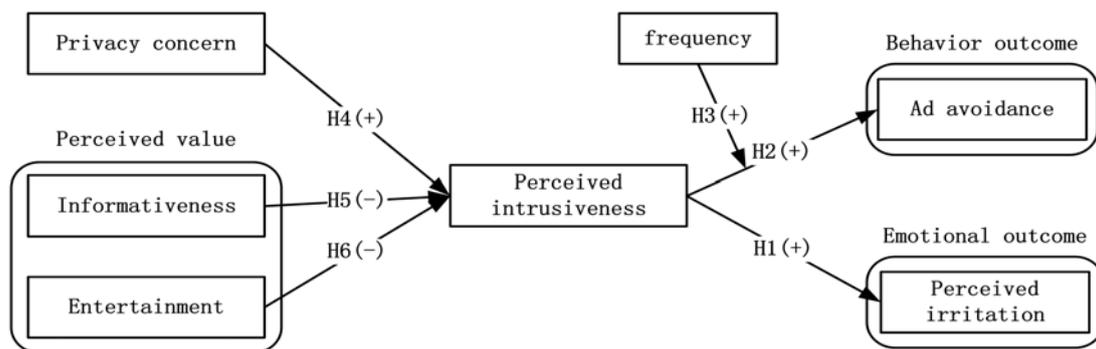


Figure 1 Research Model

Research Method

An online survey on SMS advertising was conducted to empirically test the hypotheses. SMS advertising was chosen as the research context as it is the most popular form of mobile advertising in China [16]. We collected data from 107 graduate students from a large university in Northwestern China. As the purpose of this paper is to explore consumers' reaction to mobile advertising, the prior experience in receiving mobile advertising was required. Hence, we included a manipulation check question asking "have you ever received mobile advertising?". Four respondents did not receive mobile advertisements before. Thus, our final dataset comprise of 103 respondents who have received mobile advertisements. The use of student respondents is appropriate for our research as students have been reported to form the largest group of mobile phone users in China [40]. Our dataset comprises of 54.9% male and 45.1% female participants, with 84.3% aged between 23 to 25 years, and the rest aged between 26 to 30 years.

The conceptualizations and development of the questionnaire was based on extant literature and most constructs were measured using a 7-point Likert scales ranging from (1) "strongly disagree" to (7) "strongly agree", while the frequency of mobile advertising was measured using a 5-point Likert scales from (1) "almost none" to (5) "several per day". The items used to measure ad avoidance were self-developed based on group discussion with

graduate students, taking into consideration the characteristics of mobile advertising.

Data Analysis and Results

Measurement model

We use the Smart-PLS software version 2.03 [41] to analyze the empirical data. Partial Least Squares (PLS) employs a component-based approach for estimation purpose, and can handle formative constructs. PLS has been widely used in recent IS studies. PLS was chosen over co-variance-based methods, and it's appropriate for testing theories in early stages of development, as it supports both exploratory and confirmatory research. In general, PLS is better suited for explaining complex relationships as it avoids two serious problems: inadmissible solutions and factor indeterminacy.

As shown in Table 1 and 2, all of the reliability coefficients were above 0.7 and AVE of each construct was above 0.5. This indicated that the measurements are reliable and the latent construct can account for at least 50 percent of the variance in the items. The square root of the AVE is greater than all of the inter-construct correlations, showing evidence of sufficient discriminant validity [42]. In order to further assess validity of our measurement instruments, we used the cross-loading matrix to ensure that each item loading is much higher on its assigned construct than on the other constructs. This provided further assurance that our measurement instruments have adequate convergent and

discriminate validity. Construct validity assesses the extent to which a construct measures the variable of interest. Results of the item loadings are given in Table 1. All loadings are greater than 0.5, as recommended by Hair et al. [43] (convergent validity). There are no high cross-loadings of items in one construct with items in other constructs (discriminate validity). As shown in Table 2, this

criterion is met. Internal consistency (construct reliability) of the eight factors was examined using Cronbach α value. As shown, Cronbach α values ranged from 0.72 to 1, which is well past the threshold recommended by Rivard and Huff [44] and Nunnally [45]. Therefore, our instrument encompassed satisfactory content, convergent validity, and discriminate validity.

Table 1 Factor loadings and Reliability

Variable	Item	Loading	Cronbach α (Composite Reliability)	Variable	Item	Loading	Cronbach α (Composite Reliability)
Ent	ENT1	0.93	0.92 (0.95)	Inf	IFO1	0.78	0.72 (0.83)
	ENT2	0.92			IFO2	0.92	
	ENT3	0.93			IFO3	0.65	
PC	PC1	0.58	0.81 (0.88)	Fre	FRE	1	1 (1)
	PC2	0.86					
	PC3	0.88					
	PC4	0.87					
P Intr	INTRU1	0.79	0.89 (0.90)	P Irr	IRR1	0.92	0.80 (0.88)
	INTRU2	0.86			IRR2	0.67	
	INTRU3	0.78			IRR3	0.91	
	INTRU4	0.70		AB	AVOID	1	1 (1)
	INTRU5	0.86					
	INTRU6	0.83					

AB=avoidance behavior, Ent=entertainment, Fre=frequency, Inf=informativeness, P Intr=perceived intrusiveness, P Irr=perceived irritation, PC= privacy concern

Table 2 Discriminant Validity of Constructs

	PC	AB	Ent	Fre	Inf	P Intr	P Irr
PC	0.81						
Avoidance Behavior (AB)	0.26	1					
Entertainment (Ent)	-0.37	-0.42	0.93				
Frequency (Fre)	-0.06	0.15	-0.08	1			
Informativeness (Inf)	-0.36	-0.34	0.5	-0.04	0.79		
Perceived Intrusiveness (P Intr)	0.48	0.45	-0.46	0.07	-0.48	0.81	
Perceived Irritation (P Irr)	0.37	0.28	-0.38	0.09	-0.49	0.82	0.84
Average Variance Extracted (AVE)	0.65	1	0.86	1	0.62	0.70	0.71

Hypothesis testing

Figure 2 shows the results of the analysis. As recommended by Chin [46], bootstrapping was performed to test the statistical significance of each path coefficient. As shown in Table 3 all of the structural model paths' t-values were significant at $p < 0.05$ except H6.

Results suggest that users' perceived intrusiveness has an impact on both of the users' behavioral consequences of ad avoidance and perceived irritation. Next, informativeness of mobile

ads has been found to reduce perceived intrusiveness while privacy concerns are positively related to perceived intrusiveness. The entertainment value of mobile ads did not significantly reduce perceived intrusiveness. Our findings in a mobile advertising context are consistent with those by Edwards [9] examining pop-up ads. Approximately 68% of the variance of perceived irritation towards mobile SMS advertising and almost 31% of the variance for avoidance behavior towards mobile SMS advertising, and 37% of variance in perceived intrusiveness can

be explained by the variables in the model.

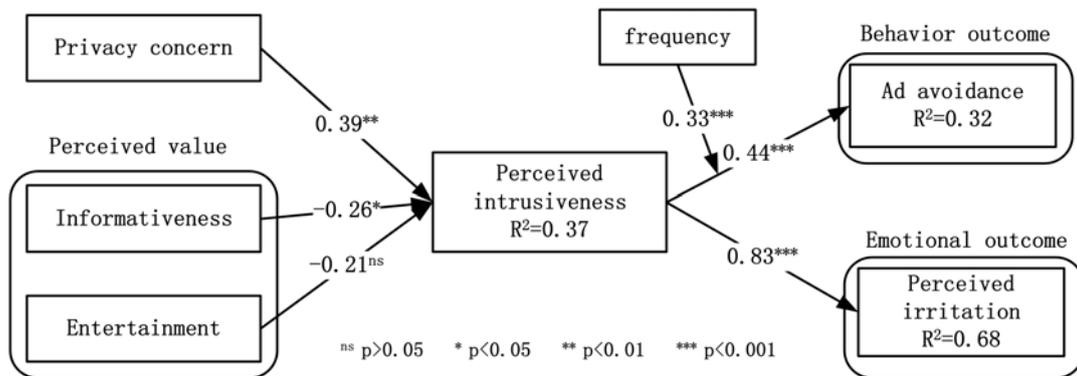


Figure 2 PLS Results of Structural Model

Table 3: Results of Hypotheses Testing

Hypothesis	Casual Path	Path Coefficient	T-Values	Supported ^a
H1	Perceived Intrusiveness -> Perceived Irritation	0.83	24.77***	Yes
H2	Perceived Intrusiveness -> Avoidance Behavior	0.44	5.49***	Yes
H3	Perceived Intrusiveness * Freq -> Avoidance Behavior	0.33	3.81***	Yes
H4	PC -> Perceived Intrusiveness	0.39	3.12**	Yes
H5	Informativeness -> Perceived Intrusiveness	-0.26	2.07*	Yes
H6	Entertainment -> Perceived Intrusiveness	-0.21	1.7 ^{ns}	No

^{ns} p > 0.05 * p < 0.05 ** p < 0.01 *** p < 0.001 ^a Hypotheses were tested at 5% level of significance.

Discussion

Overall, results provide insights to understand the impacts of both the consumers' concern of their control over private information and the perceived value of push mobile advertising on perceived ad intrusiveness, as well as the impacts of perceived mobile ad intrusiveness on ad irritation and ad avoidance behavior. In line with prior research reporting consequences of perceived ad intrusiveness in other advertising medium, perceived ad intrusiveness is also the cause of ad irritation and ad avoidance in mobile advertising context. In addition, our findings reveal that the frequency of consumers' exposure to advertising would significantly and positively reinforce the influence of perceived ad intrusiveness on ad avoidance behavior. Consumer's attention span is limited. Hence, an overwhelming amount of push advertisements would be perceived as spam and therefore result in consumers wanting to avoid the mobile ads.

Interestingly, we found that perceived entertainment value of mobile advertising would not

significantly relieve the negative perception of mobile advertisement, but informativeness value could. This finding is different from prior studies and we attribute this probably to the characteristic of mobile devices because its primary function is for communication but not for recreation. Therefore, the perceived informative value of mobile advertising has a greater impact than entertainment in reducing perceived intrusiveness. Nevertheless, we need to acknowledge the possibility that since our research context is based on SMS advertising, the text-only medium might limit the entertainment value compared to perhaps multimedia messaging system (MMS) advertising.

Another significant finding is that consumers' privacy concern significantly influences their perception of mobile ad intrusiveness. Though permission has been emphasized to be a hygiene factors for push mobile advertising, this just take into account one dimension of consumer privacy, the more important part of consumer privacy is the control over the private information, as the unwanted advertisements are the direct consequences of

personal information disclosure. In addition, owing to the mobile technology, once consumers' personal information (cell phone number) has been disclosed, they would become identifiable and traceable. As a result, they could be reached by commercial parties anytime, anywhere.

Several limitations of the study should be acknowledged. First, our sample size is limited, and can only be regarded as an exploratory research according to Babbie's [47] classification of survey research. Further research would require a larger and more diverse sample. Second, we used a sample that comprised of graduate students aging from 23 to 25 years. Although this corresponds to the target customer group of mobile commerce, the education level is an important factor that contributes to consumers' perceptions. Therefore, our findings would be more generalizable if we are able to obtain a sample with broader demographic characteristics. Finally, we take into account the time effect that perceived intrusiveness could be accumulated. Further longitudinal research could be done to incorporate the time effect.

Nevertheless, our exploratory efforts in examining the antecedents and consequences of mobile advertising intrusiveness can offer several theoretical and managerial implications. From a theoretical perspective, our model builds on the psychological reaction theory and integrates research from advertising and information systems domain, and contextualizing them to mobile advertising context. Our model has comprehensively investigated both the drivers and outcomes in the mobile advertising context. In doing so, we have contributed knowledge to enrich the understanding of advertising intrusiveness in the mobile commerce domain. In terms of managerial implications, our findings offer practical insights for managing the mobile advertising negative reactions among users of mobile services. When the nature of the service is ubiquitous, and that personal information is required to offer the service, perceived intrusiveness may not be eradicated. Considering that perceived intrusiveness is central in determining the level of irritation and avoidance behavior experienced by users, taking appropriate measures to reduce this intrusiveness would be worthwhile. This suggests that marketers could push more relevant or even personalized commercial information to consumers as the perceived informativeness would be lessened the perceived intrusiveness of mobile advertising. Furthermore, since frequency would significantly reinforce the effect of perceived intrusiveness on ad avoidance behavior, governmental regulations could be put in place to control mobile advertising campaigns. Corresponding legal provisions to protect consumers' privacy would also be useful to support the growth of mobile advertising.

This exploratory study has examined Chinese consumers' perceptions of the determinants and outcomes of mobile advertising intrusiveness. Results highlight the importance of consumer privacy, information value, and frequency of campaign schedule as critical success factors of mobile advertising. With the ongoing technical developments in mobile communication technologies, further research into the topic of mobile advertising intrusiveness would certainly be a promising pursuit to gain deeper insights for more effective mobile advertising.

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References

- [1] S. Barnes, "The Mobile Commerce Value Chain: Analysis and Future Developments," *International Journal of Information Management*, vol. 22, pp. 91-108, 2002.
- [2] E. B. Cleff, "Privacy Issues in Mobile Advertising," in *BILETA 2007 Annual Conference* Hertfordshire, 2007, pp. 1-10.
- [3] J. Tähtinen, "Mobile Advertising or Mobile Marketing. A Need for a New Concept," in *FeBR 2005 -Frontiers of e-Business Research 2005, Conference Proceedings of eBRF 2005*, pp. 152-164.
- [4] L. Burke, "Mobile advertising: Which way does the wind blow? Market opportunities and challenges for mobile operators," *Journal of Telecommunications Management*, vol. 1, pp. 381 - 384, November 2008.
- [5] R. Unni and R. Harmon, "Perceived Effectiveness of Push vs. Pull Mobile Location-Based Advertising," *Journal of Interactive Advertising*, vol. 7, pp. 1-24, Spring 2007.
- [6] P. Haghirian, M. Madlberger, and A. Tanuskova, "Increasing Advertising Value of Mobile Marketing - An Empirical Study of Antecedents," in *Proceedings of the 38th Hawaii International Conference on System Sciences (HICSS 2005)* Hawaii, USA, 2005.
- [7] D. A. Aaker and D. E. Bruzzone, "Causes of Irritation in Advertising," *Journal of Marketing*, vol. 49, pp. 47-57, Spring 1985.
- [8] P. S. Speck and M. T. Elliott, "Predictors of Advertising Avoidance in Print and Broadcast Media," *Journal of Advertising*, vol. 26, pp. 61-76, 1997.
- [9] S. M. Edwards, H. Li, and J.-H. Lee, "Forced Exposure and Psychological Reactance: Antecedents and Consequences of the Perceived Intrusiveness of Pop-Up Ads," *Journal of Advertising*, vol. 31, pp. 83-95, 2002.

- [10] K. Wehmeyer, "Mobile ad intrusiveness –the effects of of message type and situation," in *proceedings of the 20th Bled eConference "eMergence: Merging and Emerging Technologies, Processes, and Institutions"* Bled, Slovenia, 2007.
- [11] C. Gauzente, "Attitude toward M-Advertising, Perceived Intrusiveness, Perceived Ad-Clutter and Behavioral Consequences: A Preliminary Study," in *Proceedings of the 19th International Conference on Database and Expert Systems Application (DEXA '08)* Turin, Italy, 2008, pp. 461-465.
- [12] A. Carroll, S. J. Barnes, E. Scornavacca, and K. Fletcher, "Consumer perceptions and attitudes towards SMS advertising: recent evidence from New Zealand," *International Journal of Advertising*, vol. 26, pp. 79-98, 2007.
- [13] P. Haghirian and M. Madlberger, "Consumer Attitude toward Advertising via Mobile Devices - An Empirical Investigation among Austrian Users," in *Proceedings of the 13th European Conference on Information Systems (ECIS 2005)* Regensburg, Germany, 2005.
- [14] P. Haghirian, M. Madlberger, and A. Inoue, "Mobile Advertising in Different Stages of Development: A Crosss-Country Comparision of Consumer Attitudes," in *Proceedings of the 41st Hawaii International Conference on System Sciences (HICSS 2008)* Hawaii, USA, 2008.
- [15] M. M. Tsang, S.-C. Ho, and T.-P. Liang, "Consumer Attitudes Toward Mobile Advertising: An Empirical Study," *International Journal of Electronic Commerce*, vol. 8, pp. 65-78, Spring 2004.
- [16] D. J. Xu, "The Influence of Personalization in Affecting Consumer Attitudes Toward Mobile Advertising in China," *Journal of Computer Information Systems*, vol. 47, pp. 9-19, 2006.
- [17] H. Bauer, S. Barnes, T. Reichardt, and N. M.. "Driving Consumer Acceptance of Mobile Marketing: A Theoretical Framework and Empirical Study," *Journal of Electronic Commerce Research*, vol. 6, pp. 181-192, 2005.
- [18] D. He and Y. Lu, "Consumers Perceptions and Acceptances Towards Mobile Advertising: An Empirical Study in China," in *International Conference on Wireless Communications, Networking and Mobile Computing, 2007. WiCom 2007*, pp. 3775-3778.
- [19] C. Jayawardhena, A. Kuckertz, H. Karjaluoto, and T. Kautonen, "Antecedents to permission based mobile marketing: an initial examination," *European Journal of Marketing*, vol. 43, pp. 473-499, 2009.
- [20] M. Leppäniemi and H. Karjaluoto, "Factors influencing consumers' willingness to accept mobile advertising: a conceptual model," *International Journal of Mobile Communications*, vol. 3, pp. 197-213, 2005.
- [21] M. Merisavo, S. Kajalo, H. Karjaluoto, V. Virtanen, S. Salmenkivi, M. Raulas, and M. Leppäniemi, "An Empirical Study of the Drivers of Consumer Acceptance of Mobile Advertising," *Journal of Interactive Advertising*, vol. 7, pp. 1-18, Spring 2007.
- [22] A. Scharl, A. Dickinge, and J. Murphy, "Diffusion and success factors of mobile marketing," *Electronic Commerce Research and Applications* vol. 4, pp. 159-173, Summer 2005.
- [23] D. Drossos, G. M. Giaglis, G. Lekakos, F. Kokkinaki, and M. G. Stavradi, "Determinants of Effective SMS Advertising: An Experimental Study," *Journal of Interactive Advertising*, vol. 7, pp. 1-23, 2007.
- [24] H. Xu, L.-B. Oh, and H.-H. Teo, "Perceived effectiveness of text vs. multimedia Location-Based Advertising messaging," *International Journal of Mobile Communications*, vol. 7, pp. 154-177, 2009.
- [25] M. Morimoto and S. Chang, "Consumers' Attitudes toward Unsolicited Commercial E-mail and Postal Direct Mail Marketing Methods: Intrusiveness, Perceived Loss of Control, and Irritation," *Journal of Interactive Advertising*, vol. 7, pp. 8-20, Fall 2006.
- [26] H. Li, S. M. Edwards, and J.-H. Lee, "Measuring the Intrusiveness of Advertisments: Scales Development and Validation," *Journal of Advertising*, vol. 31, pp. 37-47, 2002.
- [27] I. H. Hann, K. L. Hui, T.S.Y. Lee, and I. P. L. Png, "Consumer Privacy and Marketing Avoidance: A Static Model," *Management Science*, vol. 54, pp. 1094-1103, 2008.
- [28] R. H. Duoffe, "How Consumers Assess the Value of Advertising," *Journal of Current Issues and Research in Advertising*, vol. 17, pp. 1-18, 1995.
- [29] P. Barwise and C. Strong, "Permission-based mobile advertising," *Journal of Interactive Marketing*, vol. 16, pp. 14-24, 2002.
- [30] L. Ha, "Advertising Clutter in Consumer Magezines: Dimensions and Effects," *Journal of Advertising Research*, vol. 36, pp. 76-83, Jul/Aug 1996.
- [31] G. J. Tellis, "Effective Frequency: One Exposure or Three Factors?," *Journal of Advertising Research*, vol. 37, pp. 75-80, 1997.
- [32] M. J. Culnan, "Protecting Privacy Online: Is Self-Regulation Working?," *Journal of Public Policy & Marketing*, vol. 19, pp. 20-26, 2002.
- [33] A. Westin, "Opinion Surveys: What Consumers Have To Say About Information Privacy, Prepared Witness Testimony, ," in *The House Committee on Energy and Commerce W.J. "Billy", Tausin, Chairman, 2001.*

- [34] T. Dinev and P. Hart, "Internet Privacy Concerns and Social Awareness as Determinants of Intention to Transact," *International Journal of Electronic Commerce*, vol. 10, pp. 7-29, Winter 2005.
- [35] G. Camponovo and D. Cerutti, "The Spam Issue In Mobile Business: A Comparative Regulatory Overview," in *Proceedings of The 3th International Conference on Mobile Business*, New York, 2004.
- [36] K. L. Hui and I. P. L. Png, "The Economics of Privacy," in *Economics and Information Systems, Handbooks in Information Systems*, Terrence Hendershott, Elsevier ed. vol. 1, 2006.
- [37] L. Wathieu and A. Frieman, "An Empirical Approach to Understanding Privacy Valuation," in *WEIS-Workshop on the Economics of Information Security Series* Cambridge, MA, 2005.
- [38] W. J. McGuire, "Some Internal Psychological Factors Influencing Consumer Choice," *The Journal of Consumer Research*, vol. 2, pp. 302-319, 1976.
- [39] S. Shavitt, P. Lowrey, and J. Haefner, "Public Attitudes Towards Advertising: More Favourable Than You Might Think," *Journal of Advertising Research*, vol. 38, pp. 7-22, 1998.
- [40] CNNIC, "Survey Report on the Behaviour of China's Mobile Internet," 2009.
- [41] C. M. Ringle, S. Wende, and A. Will, "SmartPLS," University of Hamburg, Hamburg, Germany, 2005.
- [42] C. Fornell and D. F. Larcker, "Evaluating structural equation models with unobserved variables and measurement error," *Journal of Marketing Research*, vol. 18, pp. 39-50, 1981.
- [43] J. F. Hair, *Multivariate Data Analysis with Readings*, fourth ed. Englewood Cliffs, NJ: Prentice-Hall, 1995.
- [44] S. Rivard and S. Huff, "Factors of success for end user computing," *Communications of the ACM*, vol. 31, pp. 552-561, 1988.
- [45] J. C. Nunnally, *Psychometric Theory*, second ed. New York: McGraw Hill, 1978.
- [46] W. W. Chin and P. A. Todd, "On the Use, Usefulness, and Ease of Use of Structural Equation Modeling in MIS Research: A Note of Caution," *MIS Quarterly*, vol. 19, pp. 237-246, Jun., 1995.
- [47] E. R. Babbie, *The Practice of Social Research*, 10th ed.: Thomos/Wadsworth, 2004.