

## Consumer Attitudes Toward Mobile Advertising: An Empirical Study

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**ABSTRACT:** The rapid proliferation of mobile phones and other mobile devices has created a new channel for marketing. The use of Short Messaging Service to access customers through their handheld devices is gaining popularity, making the mobile phone the ultimate medium for one-to-one marketing. The present research investigates consumer attitudes toward mobile advertising and the relationship between attitude and behavior. An instrument for measuring attitudes toward mobile advertising is developed. The results of a survey indicate that (1) consumers generally have negative attitudes toward mobile advertising unless they have specifically consented to it, and (2) there is a direct relationship between consumer attitudes and consumer behavior. Thus it is not a good idea to send SMS advertisements to potential customers without prior permission.

**KEY WORDS AND PHRASES:** Consumer attitudes, electronic commerce, mobile advertising, mobile commerce.

The high penetration rate of mobile phones has resulted in the increasing use of handheld devices to deliver advertisements for products and services. Short Messaging Service (SMS), in particular, has been very successful. A series of surveys conducted by A.T. Kearney indicates that the use of mobile information services and SMS has increased dramatically since 2001 [20]. More than 100 billion SMS messages were sent worldwide in a single year. More than half of the 19–34 age group in Taiwan use SMS at least once a day. The rising popularity of SMS has created a new channel for advertising, called *mobile advertising*. Ads are rendered as short textual messages and sent to mobile phones.

The growth of mobile advertising has opened a new area for research. For instance, given its limited textual presentation, will this new medium have the same effect as other media? What do consumers think about SMS-based advertisements? What mechanisms would be more effective for advertising? A better understanding of these issues is critical to the effective use of mobile advertising. It is especially important to know how consumers feel about the ads delivered to their mobile phones.

Public attitudes toward advertising have been a focus of attention for a long time. Although some earlier literature reported positive attitudes toward advertising, most of the more recent researchers have found that consumers generally have negative attitudes toward ads [31, 32]. At the same time, however, Internet advertising seems to generate positive consumer attitudes [27]. This is because Internet advertising is often thought to be informative and entertaining. Given the difference between consumer responses to general advertising and to advertising over the Internet, it is unclear how consumers feel about advertising messages on their mobile phones and how their attitudes affect their behavior. The research summarized in this paper investigated consumer attitudes and usage behavior in respect to mobile advertising.

## **Literature Review**

Attitude is an important concept in research on marketing and information systems. Fishbein defined an attitude as “a learned predisposition of human beings” [14]. Based on this predisposition, “an individual would respond to an object (or an idea) or a number of things (or opinions).” Kotler stated that “an attitude is a person’s enduring favorable or unfavorable evaluations, emotional feelings, and action tendencies toward some object or idea” [21]. Since researchers have been studying the subject for a very long time, there is a large body of literature dealing with consumer attitudes toward advertising in general and toward advertising on the Internet.

Attitude is also an important construct for information systems research. For example, the technology acceptance model that predicts the use of information systems consists of five major constructs: perceived usefulness, perceived ease of use, attitude, intention, and use [9, 10]. The relationships between attitude, intention, and behavior have been studied and confirmed in numerous studies.

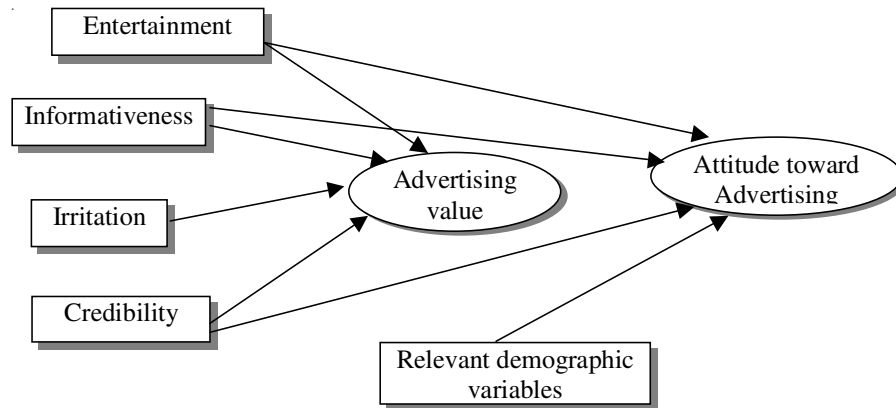
### ***Attitudes Toward Advertising in General***

Consumer attitudes toward advertising in general have long been found to be negative. Zanot, for instance, found that attitudes toward advertising became increasingly negative after the 1970s [31, 32]. Early surveys of consumer attitudes revealed somewhat positive results. Gallup found that a majority of respondents liked advertising and found it to be informative [17]. Bauer and Greyser reported that more people held favorable attitudes toward advertising than unfavorable attitudes [4]. The trend changed after 1970. Harris and Associates, for example, found that a majority of respondents considered TV advertising to be seriously misleading [27]. Later studies have provided more evidence of the unfavorable public attitude toward advertising [2, 25].

More recent studies have focused on attitude structures. Elliot and Speck investigated six major media (TV, broadcasting, magazines, newspapers, Yellow Pages, and direct mail) and found that television and magazines exhibited the highest level of ad-related communication problems (hindered search and disruption) [13]. Perceived clutter, hindered search, and disruption were related to less favorable attitudes and greater ad avoidance. These effect varied in different media [13]. The differences in the way different media affects consumer attitudes were also reported by Bogart [5]. Television ads often have a higher degree of irritation than radio ads, which are less irritating because radio programs usually serve as background music.

### ***Attitude Toward Internet Advertising***

The emergence of the Internet as a new medium for communication and advertising has motivated a substantial amount of research that focuses on the Internet [12, 22, 26]. It has also driven studies on attitudes toward Internet



**Figure 1. Model of Attitudes Toward Web Advertising**

advertising in the Web-based environment. Because of the interactive nature of the Internet, some surveys report that respondents viewed Internet advertising as more informative and trustworthy than a demographically similar sample found in general advertising [27].

The content (informativeness) and form (entertainment) of ads are important predictors of their value and are crucial to the effectiveness of Web advertising [1, 11]. Along with entertainment and informativeness, irritation caused by advertisements also influences people's attitude toward them [11]. This is consistent with earlier research findings that interesting and pleasing ads have a positive impact on consumers' attitudes toward a brand [24, 29]. Schlosser and colleagues reported that attitudes toward Internet advertising are affected by enjoyment, informativeness, and the ad's utility for making behavioral (purchasing) decisions [27].

In order to study how the above factors affect consumer attitudes toward Internet advertising, Bracket and Carr modified several attitude models of Internet advertising [11, 23, 28] and developed an integrated Web advertising attitude model [6]. This new model, as shown in Figure 1, is based on the premise that the perceived entertainment, informativeness, irritation, and credibility of an advertisement affect the way consumers evaluate it. Besides these four variables, the model also includes relevant demographic variables.

### **Mobile Marketing and Advertising**

As an extension of the Internet environment, the high penetration of mobile phones in recent years has created a good opportunity for wireless Internet applications, including wireless marketing and advertising. Wireless Internet services allow interactive access to Internet-based applications and contents using wireless devices such as mobile phones and personal digital assistants (PDAs).

The Wireless Advertising Association (WAA) defines wireless marketing as sending advertising messages to mobile devices such as mobile phones or PDAs through the wireless network. Wireless Internet service can be offered by a range of different service providers, including cellular operators, fixed and wireless portals, wireless application service providers, device vendors, consumer brands, and mobile virtual network operators [33]. Empowered by the Web's interactive and quick-response capabilities, wireless marketing is a very promising direct-marketing channel. Many direct-response advertisements and some brand-building ones have been used for time-sensitive communication [3].

Mobile advertising and Internet advertising have many features in common—both are emerging media used to deliver digital texts, images, and voices with interactive, immediate, personalized, and responsive capabilities [30]. Internet advertising allows individual customers to be identified and their behavior to be analyzed. Mobile advertising relaxes the mobility constraint associated with fixed-line Internet access. One may expect mobile advertising to be more favorable to consumers for location-sensitive and time-critical events.

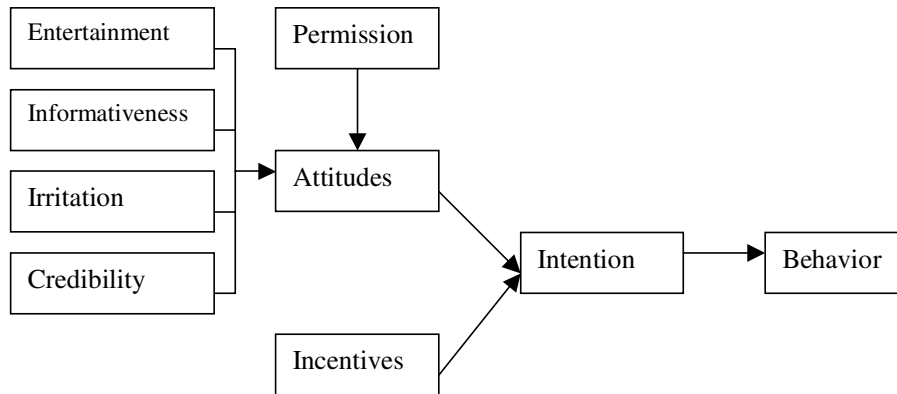
Since the mobile phone is a very personal device that allows an individual to be accessed virtually any time and anywhere, mobile advertising must be more personalized and may take different forms. Based on different strategic applications, wireless marketing can be either permission-based, incentive-based, or location-based [33]. *Permission-based advertising* differs from traditional irritative advertising in that messages about specific products, services, or content are sent only to individuals who have explicitly indicated their willingness to receive the message. Consumers often impatiently ignore the message when interrupted by an advertisement. By relying on the permission of the target audience, permission-based advertising focuses on reducing the irritation.

*Incentive-based advertising* provides specific financial rewards to individuals who agree to receive promotions and campaigns. For example, mobile phone companies may reward customers with free connection time for listening to voice advertisements. Both permission-based and incentive-based advertising mechanisms are feasible for mobile advertising because the wireless technology makes it possible to identify individual users.

In addition to individual identification, mobile technology also makes it possible to locate a particular consumer. *Location-based advertising* takes advantage of this feature to target people in a certain location. Advertisements are sent based on where the user is or where the user is going [33].

## Research Framework

Based on the existing literature about attitudes toward advertising and consumer behavior models, a research framework is constructed to illustrate the factors affecting consumer attitudes toward SMS-based advertisements and the relationships among attitudes, intention to view mobile ads, and users' actual behavior. Attitude, intention, and behavior are three major constructs in the theory of reasoned action (TRA) proposed by Fishbein and Ajzen in



**Figure 2. Research Framework**

the early 1970s (later extended to become the technology acceptance model in management information systems research). The model links individual beliefs, attitudes, intentions, and behavior to describe the psychological process that mediates the observed relations between attitudes and behavior [15, 16]. Among the three types of mobile advertising, permission is usually considered to be a major factor that may affect attitudes [3, 19]. Incentives (e.g., free connection time) are considered to have an impact on consumer intentions to receive mobile advertising under a given attitude. Intention then affects their actual advertisement receiving behavior. Figure 2 shows these relationships graphically.

Five sets of hypotheses can be developed from the above framework:

***Hypothesis 1:** The perceived entertainment, informativeness, irritation, and credibility of mobile ads affect the attitude toward mobile advertising.*

***Hypothesis 2:** Consumer attitudes are different for permission-based and general mobile advertising.*

***Hypothesis 3:** Attitudes toward mobile advertising affect consumer intentions to receive mobile ads.*

***Hypothesis 4:** Providing incentives for receiving mobile ads can affect consumer intentions to receive mobile ads.*

***Hypothesis 5:** Consumers' intentions to receive mobile ads affect their behavior after receiving mobile ads.*

## Empirical Study

A field survey was conducted in 2002 to test the hypotheses. The survey utilized a questionnaire designed to collect data regarding consumer attitudes, intention, and behavior (see Appendix A). The questionnaire had three major

parts. The first part, adapted from the instruments used by Ducoffe and Schlosser et al. to measure attitudes toward Internet advertising [11, 27], asked about the respondents' general attitudes toward mobile advertising as measured by four major attributes: entertainment, informativeness, irritation, and credibility. The second part included questions about familiarity with the use of mobile phones, intention to receive mobile ads, and behavior after receiving mobile ads (e.g., the amount of time between receiving and reading, whether reading ads led to savings, and whether the respondent read the full content). The third part collected the respondent's demographic data, such as gender, age, income, and vocation.

The questionnaire was pretested on 30 individuals on April 20–30, 2002, and was revised on the basis of their feedback. It was then distributed in person at three train stations in Taiwan between May 8 and May 19, 2002.

A total of 430 questionnaires was distributed, and 380 of them were returned. The respondents included 181 males and 199 females. Eighty-five percent of them were under 30 years of age, 76 percent had at least a college degree, and 60 percent were students, which indicates that the respondents were primarily young and well educated. Since most of them were heavy users of SMS, they formed a good target group for mobile advertising. More than half of the respondents sent at least one SMS message per day. Eighteen percent of them used SMS for sending quick notices, 15 percent for chatting, and 12.6 percent for intimate messages. More than two-thirds of the respondents had more than two years of experience using mobile phones.

## **Data Analysis and Findings**

### ***Data Reliability***

The attitude data were first tested for reliability using Cronbach's alpha to assess data reliability. The results are shown in Table 1. As most research method guides treat a value higher than 0.7 as acceptable [18], the values in the table indicate that the data collected from the survey are reliable and suitable for further analysis.

### ***Factors Affecting Attitudes***

The average respondent score on overall attitude was 2.76 on a five-point Likert scale, with 1 the least favorable and 5 the most favorable. This is below the neutral score of 3 ( $t = 6.8, p < 0.001$ ), which implies that respondent attitudes toward mobile advertising were negative. As to the question of whether permission has any effect, the data in Table 2 indicate that permission-based advertising results in a positive attitude, whereas unauthorized spamming generates a negative attitude. The difference between permission-based advertising and unauthorized spamming is statistically significantly ( $t = 19.5, p < 0.001$ ).

A correlation analysis indicates that all four attributes of mobile ads are

Constructs	Overall attitude	Unauthorized	Permission
Entertainment	0.8209	0.9220	0.8946
Informativeness	0.7176	0.7957	0.8944
Irritation	0.7599	0.8040	0.7637
Credibility	0.7019	0.7052	0.7106
Overall	0.8757	0.8958	0.8836

**Table 1. Reliability of Data.**

	N	M	SD
Overall attitude	380	2.76	0.69
Unauthorized	380	2.41	0.69
Permission-based	380	3.27	0.64

**Table 2. Statistics on Consumer Attitudes.**

significantly related to the overall attitude toward mobile advertising (*see Table 3*). Entertainment, informativeness, and credibility are positively correlated to the overall attitude, whereas irritation is negatively correlated to the overall attitude. This is consistent with previous findings.

Since the attributes are themselves significantly correlated, a stepwise regression analysis is used to differentiate their individual contributions. The results indicate that entertainment is the major factor that affects the overall attitude, with a marginal contribution of 45.5 percent of the variance. Credibility is the second important attribute, but its marginal contribution to explain the variance is only 8.7 percent, which is substantially lower than that of entertainment. Irritation and informativeness have marginal contributions of 1.9 percent and 0.6 percent, respectively. Table 4 shows the result.

In summary, the results indicate that (1) consumer attitudes toward mobile advertising are generally negative, but are positive if permission is obtained, and (2) entertainment is the most important attribute affecting consumer attitudes toward mobile advertising. Therefore, Hypotheses 1 and 2 are supported.

### **Relationship Between Attitudes and Intention**

When the respondents were asked about their willingness to receive mobile advertising, 129 of them responded with "yes," and 207 responded with "no" (*see Table 5*). A multivariate analysis indicates that overall attitude is significantly correlated to intention ( $t = 11.3, p < 0.001$ ). When the respondents were asked about their willingness to receive mobile advertising if certain rewards, such as free telephone time, were provided, the answers were 188 "yes" and 148 "no." A chi-square test between general intention and incentive-based intention shows that the effect of providing incentives is statistically significant at  $p < 0.001$ . Hence, H3 and H4 are supported. Providing incentives can increase the intention to receive SMS-based mobile advertisements.

	Entertainment	Informative	Irritation	Credibility
Informative	0.659**	-	-	
Irritation	-0.480**	-0.444**	-	
Credibility	0.590**	0.604**	-0.438**	-
Overall attitude	0.675**	0.592**	-0.500**	0.636**

**Table 3. Results of Correlation Analysis.**

\*\*Correlation is significant at the 0.01 level (two-tailed).

Factor	$\beta$	R <sup>2</sup>	$\Delta R^2$	t	p
Entertainment	0.675	0.455	0.455	17.76	0.000***
Credibility	0.365	0.542	0.087	8.46	0.000***
Irritation	-0.163	0.561	0.019	-4.08	0.000***
Informativeness	0.115	0.568	0.006	2.36	0.019*

**Table 4. Results of Stepwise Regression.**

\* $p < 0.05$ , \*\*\* $p < 0.001$

	Yes	No	Total
General	129	207	336
With incentives	188	148	336

**Table 5. Intention to Receive Mobile Advertisements.**

$\chi^2 = 43.8, p < 0.001$

Intention	Extent of message reading					Total
	None	About 1/4	About 1/2	About 3/4	Full	
No	47	67	36	8	49	207
Yes	4	16	22	8	79	129
Total	51	83	58	16	128	336

**Table 6. Extent of Message Reading.**

$\chi^2 = 101.97, p < 0.001$

### **Relationship Between Intention and Behavior**

The analysis also looked at behavior after receiving a mobile advertisement. Behavior is measured by the extent to which an ad would be read (ranging from fully read to not read) and the timing for reading the message after receiving it (ranging from immediately reading it to ignoring it). Tables 6 and 7 show the results. Respondents who were willing to receive mobile ads tended to read the messages in full and tended to read them immediately, but those whose intention was not to receive mobile ads tended to ignore and not read the received messages. The correlation between the extent of message reading and intention is statistically significant ( $t = 8.77, p < 0.001$ ). The correlation



Intention	Timing of message reading				Total
	Ignore	Cumulate too many	Get time later	Immediately	
No	70	3	48	86	207
Yes	11	0	33	85	129
Total	81	3	81	171	336

**Table 7. Timing of Message Reading.**

$$\chi^2 = 57.43, p < 0.001$$

Fit Indices	Recommended value	Permission structural model	Unauthorized structural model	Overall structural model
$R^2$	N/A	108.859	121.884	159.293
df	N/A	54	54	54
$R^2/df$	$\leq 3.00$	2.016	2.257	2.95
Goodness-of-fit (GFI)	$\geq 0.90$	0.945	0.943	0.919
Adjusted goodness-of-fit (AGFI)	$\geq 0.80$	0.920	0.904	0.863
Normalized fit index (NFI)	$\geq 0.90$	0.945	0.944	0.912
Comparative fit index (CFI)	$\geq 0.90$	0.971	0.967	0.939
Root mean square error of approximation (RMSEA)	$\leq 0.08$	0.057	0.064	0.080

**Table 8. Fit Indices for Three Structural Models.**

N/A means "not applicable."

between timing of reading a received message and intention is also statistically significant ( $t = 5.86, p < 0.001$ ).

### Structural Equation Modeling

In order to examine the simultaneous effect of the constructs, their relationships were further estimated by structural equation modeling. The removal of outliers and records with missing values left 309 responses suitable for structural modeling. The fit of the structural model was estimated by various indices (as shown in Table 8), and the results demonstrated good fit. For models with good fit, most empirical analyses suggest that the ratio of chi-square normalized to degree of freedom ( $\chi^2/df$ ) should not exceed 3.0 [8]. In addition, the obtained goodness-of-fit (GFI) measures were 0.945, 0.943, and 0.919; and the adjusted goodness-of-fit (AGFI) measures were 0.920, 0.904, and 0.863, respectively, which are both higher than the suggested values. The other two indices of good fit—the normalized fit index (NFI) and the comparative fit index (CFI)—are recommended to exceed 0.9. The results also meet this requirement. Finally, the discrepancies between the proposed model and population covariance matrix, as measured by the root mean square error of approximation (RMSEA), are in line with the suggested cutoff value of 0.08 for good fit [7].

The resulting models, as shown in Tables 9, 10, and 11, indicate that

Independent construct	Dependent construct	Coefficient	Std. coefficient	SE	p
Entertainment	Attitude	1.261	1.220	0.480	0.009**
Informativeness	Attitude	-1.233	-1.195	0.807	0.103
Irritation	Attitude	-0.200	-0.198	0.127	0.116
Credibility	Attitude	0.844	0.934	0.387	0.029**
Attitude	Intention	0.312	0.561	0.073	0.000**
Intention	Behavior	2.162	1	0.448	0.000**

**Table 9. Parameter Estimates of General Model.**

\*\* indicates significance at 0.01 level.

Independent construct	Dependent construct	Coefficient	Std. coefficient	SE	p
Entertainment	Attitude	0.124	0.150	0.109	0.255
Informativeness	Attitude	-0.065	-0.079	0.209	0.756
Irritation	Attitude	0.022	0.025	0.103	0.830
Credibility	Attitude	0.942	1.006	0.324	0.004**
Attitude	Intention	0.280	0.488	0.065	0.000**
Intention	Behavior	2.406	1	0.493	0.000**

**Table 10. Parameter Estimates of Unauthorized Model.**

Note: \*\* indicates significance at 0.01 level.

Independent construct	Dependent construct	Coefficient	Std. coefficient	SE	p
Entertainment	Attitude	0.211	0.270	0.105	0.045
Informativeness	Attitude	0.108	0.137	0.121	0.372
Irritation	Attitude	0.028	0.030	0.086	0.742
Credibility	Attitude	0.644	0.634	0.143	0.000**
Attitude	Intention	0.180	0.334	0.057	0.002**
Intention	Behavior	2.430	1	0.513	0.000**

**Table 11. Parameter Estimates of Permission-based Model.**

\*\* indicates significance at 0.01 level.

entertainment and credibility significantly affect attitudes regarding SMS-based advertisements for general and permission-based models. In the case of unauthorized advertising, credibility is the only significant factor affecting consumer attitudes. Positive relationships exist between attitude, intention, and behavior. These findings are consistent with the previous analysis.

## Conclusion

The study discussed in this paper investigated consumer attitudes about receiving SMS-based mobile advertisements and the relationships among atti-

tude, intention, and behavior. As the empirical data show, the respondents held negative attitudes about receiving mobile ads. This may have been because they found mobile ads irritating, given the personal, intimate nature of mobile phones. Their attitudes were favorable if advertisements were sent with permission. This implies that permission-based advertising may become a major mechanism in the mobile environment in the future.

Entertainment was the most significant of the factors affecting respondents' attitudes, followed by credibility and irritation. Attitude is positively related to the intention to receive mobile ads. Intention is affected by the incentive associated with the ad. The respondents were more willing to accept incentive-based mobile advertising. Finally, intention significantly affected how and when the respondents read the message. This is consistent with the TRA model and the literature on the subject.

Although based on real-world data, the study has certain limitations. First, the data were collected in a convenience sampling at train stations, which may have resulted in sampling biases. A substantial portion of the respondents were young people, perhaps because high-income and older people do not take trains as often as young ones. Second, the instrument for measuring attitudes toward mobile advertising was adapted from previous research on Internet advertising. Despite pre-testing and proper evaluation to ensure reliability, there may have been semantic and linguistic biases in the translation from English to Chinese.

Overall, it is clear that mobile advertising is going to be the future trend. The present findings have implications for both researchers and practitioners. Researchers may find that the TRA model is a very good predictor of consumer behavior. It would be interesting to know what factors really contribute to negative attitudes toward mobile advertising and how attitudes can be changed. Practitioners may use the findings to design marketing programs with mobile ads that create positive attitudes and avoid possible negative effects.

## NOTE

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## **Appendix A: Questionnaire**

The following are the questions used to collect data in the study:

### **Entertainment**

ENT1 I feel that receiving mobile advertisements is enjoyable and entertaining.

ENT2 I feel that receiving mobile advertisements is pleasant.

### **Informativeness**

IF01 I feel that mobile advertising is a good source for timely information.

IF02 Mobile advertisements provide the information I need.

### **Irritation**

IRT1 I feel that mobile advertising is irritating.

IRT2 I feel that mobile advertisements are almost everywhere.

IRT3 Contents in mobile advertisements are often annoying.

### **Credibility**

CRD1 I use mobile advertising as a reference for purchasing.

CRD2 I trust mobile advertisements.

### **Attitude**

ATT1 Overall, I like mobile advertising.

### **Intention**

INT1 I am willing to receive mobile advertisements:

1. less than one message a day
2. two messages a day
3. three messages a day
4. over four messages a day

### **Behavior**

BHV1 What do you do when you receive a mobile advertising message?

1. Ignore it completely
2. Read it occasionally
3. Read it after accumulating too many of them
4. Read it when I get time
5. Read it right away

BHV2 How much do you read the mobile advertising messages you receive?

1. Not at all
2. Read about a quarter of a message
3. Read about half of a message
4. Read about three-quarters of a message
5. Read the whole message

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