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## Age matters: Short Message Service advertising reading behaviours

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**Abstract:** The current study is an initial investigation of two reading behaviours related to Short Message Service (SMS) advertising (i.e., when an advertisement is read and how much of an advertisement is read) across different age groups. The results showed that for most age groups, expectation is the most influential predictor of when a message is read, whereas perceived relevance is the most influential predictor of how much of a message is read. Different age groups display similar reading behaviours, but the mechanisms underlying the reading behaviours differ across age groups. These findings suggest that customised marketing strategies for different age segments are necessary for successful SMS advertising campaigns.

**Keywords:** age; SMS; short message service; advertising; reading behaviours; expectation; perceived relevance; mobile communication; mobile advertising.

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### 1 Introduction

Spending on mobile advertising in the USA increased at a rate of 48% in 2011, reaching \$1.1 billion. Among all forms of mobile advertising, Short Message Service (SMS) advertising is the most prominent. Spending on SMS advertising in the USA reached \$327.3 million in 2010 (Reese, 2011). Knowing how to compel recipients to read SMS advertisements is crucial to prevent wasting advertising money. If SMS advertising messages are not read, the desired communication effects, such as attitudes towards the brand, purchase intention and actual purchase behaviour, cannot be discerned.

Nonetheless, our understanding regarding SMS advertising reading behaviour is insufficient. Large discrepancies exist in previous findings. For example, many marketers claim that over 90% of SMS advertisements are read (Teximpact, 2012) within 90 seconds (StrikeIron, 2011) or 3 minutes (Tapia, 2010) after the advertisement reaches the recipient, whereas others find that only 15.7% of SMS advertisements are carefully read by recipients (FIND, 2010a).

Besides, only two academic studies related to SMS advertising reading behaviour are currently available (Suher and Ispir, 2011; Tsang et al., 2004), and they focused on limited age groups and predictors of reading behaviours. For example, 85% of the respondents in the study by Tsang et al. (2004) were under 30 years old, and all of the respondents in Suher and Ispir's (2011) study were between 16 and 30 years old. Although mobile phones are essential to the lifestyle of youths (Grant and O'Donohoe, 2007), a recent survey by Pew Internet suggests that older generations are also promising segments for mobile advertising (Zickuhr, 2011). According to the survey, 86% of younger boomers (aged 47–56), 84% of older boomers (aged 57–65) and 68% of the silent generation (aged 66–74) have cell phones. Like younger generations, older generations also use cell phones to send or receive text messages (younger boomers: 68%; older boomers: 49% and the silent generation: 27%). Studies related to traditional media have consistently shown that age significantly influences advertising reading behaviour. For example, younger people are more likely to avoid television and radio advertisements (Danaher, 1995; Heeter and Greenberg, 1985; Heeter and Cohen, 1988; Krugman et al., 1995; Speck and Elliott, 1997; Zufreyden et al., 1993), whereas older people are more likely to avoid magazine advertisements (Magazine Publishers of America, 1979). Therefore, people of different age groups are likely to display different SMS advertising reading behaviour. These differences, however, have been ignored by previous studies.

In addition, the two current SMS advertising reading behaviour studies identified few significant predictors. Both Tsang et al. (2004) and Suher and Ispir (2011) identified only three significant predictors of SMS advertising reading behaviour: entertainment, credibility and permission. Other relevant studies, however, have suggested that other predictors influence SMS advertising reading behaviour (Drossos et al., 2007; Muk, 2007a, 2007b; Tsang et al., 2004; Zhang and Mao, 2008). Although those studies were not directly related to reading behaviour in relation to SMS advertising, it is worthwhile to validate the influence of those predictors and compile a more comprehensive list of predictors of SMS advertising reading behaviour. The endeavour will help to develop a more complete understanding of the fundamental mechanisms underlying SMS advertising reading behaviour across different age groups.

Therefore, the objectives of this study are twofold. First, this study aims to investigate whether different age groups display different SMS advertising reading behaviours. The findings will help us determine the relative effectiveness of SMS advertising for different age groups in terms of reading behaviours. Second, this study aims to investigate whether different predictors have different influences on SMS advertising reading behaviour among different age groups. This aspect of the study will provide information that will allow marketers tailor SMS advertising messages across age groups to produce desired behavioural responses and prevent wasting advertising money.

To achieve these purposes, a brief overview of the literature on SMS advertising reading behaviours is provided in the following section. A more complete list of individual and message predictors of SMS advertising reading behaviours is then

identified on the basis of related literature. Finally, the relationship between age and SMS advertising reading behaviours is discussed, from which two research questions are generated. A national telephone survey was employed to test the research questions. The end of the article discusses how the findings are pertinent to the existing literature and how they can be used by marketers, along with a declaration of research limitations and suggestions for future research.

## **2 Literature review**

### *2.1 Predictors of SMS advertising reading behaviours*

As previously mentioned, only two studies related to SMS advertising reading behaviours are currently exist. Tsang et al. (2004) examined when an SMS advertising message is read and how much of a message is read. They found that reading behaviours can be affected by the entertainment value and the credibility of the advertising messages, whose influence is mediated by customers' attitudes towards SMS advertising and their intention to receive SMS advertising. Suher and Ispir (2011), however, observed advertising avoidance. Advertising avoidance refers to the conscious behavioural effort of consumers to stay away from SMS advertising. A higher level of advertising avoidance results in a smaller amount of content read by an SMS advertising recipient (Speck and Elliott, 1997). Therefore, advertising avoidance is related to the extent to which an advertising message is read. Suher and Ispir (2011) found that explicit permission granted by recipients has a direct negative relationship with SMS advertising avoidance.

Therefore, two types of SMS advertising reading behaviours were observed, namely, when an advertisement is read and how much of an advertisement is read. Tsang et al. (2004) defined "when an advertising message is read" as the timing of when an SMS advertising message is read after receiving it and "how much of an advertisement is read" as the extent to which an SMS advertisement is read. Altogether, three predictors were identified for the two types of SMS advertising reading behaviours: entertainment, credibility and permission. Both SMS advertising behaviours are influenced by the entertainment value and credibility of an advertising message, as mediated by attitudes towards SMS advertising and consumers' intentions to receive it. Permission only influences how much a recipient reads an SMS advertising message.

Because attitude and behavioural intention are effective mediators of SMS advertising reading behaviours (Tsang et al., 2004), studies related to attitudes and behavioural intentions are discussed in the following section, in which a more comprehensive list of predictors of SMS advertising reading behaviours is identified.

### *2.2 Studies related to attitudes and behavioural intentions of SMS advertising*

Attitudes and behavioural intentions have been the two most studied effects in the SMS advertising literature. These two effects have sometimes been investigated independently (Drossos et al., 2007; Muk, 2007a, 2007b; Tsang et al., 2004; Zhang and Mao, 2008), but they are usually combined. The combined effect is called 'advertising acceptance' (Bauer et al., 2005; Carroll et al., 2007; Merisavo et al., 2007; Rettie et al., 2005).

Rettie et al. (2005) found that SMS advertising acceptance significantly and positively correlates with campaign interest, campaign relevance and monetary incentives. Bauer et al. (2005) identified entertainment and information values of SMS advertising messages as the strongest drivers of mobile advertising acceptance. Drossos et al. (2007) found that product involvement (i.e., perceived product importance and relevance), incentive, interactivity, appeal and attitude towards SMS advertising in general directly influence attitude towards the advertisement, attitude towards the brand and purchase intention.

Carroll et al. (2007) identified four factors that have a significant impact on mobile advertising acceptance, including Wireless Service Provider (WSP) control, permission, content and delivery of the message. WSP control refers to consumers' trust of their WSP to monitor and control mobile communications. Permission pertains to obtaining customer consent to receive information from a company. Content involves information privacy control (i.e., control over information disclosure, information dissemination in the consumer's environment, and the input, use and control of information by data users) and physical privacy control (i.e., control over unwanted physical intrusions into the consumer's environment, such as the presence of others or unwanted telephone, mail or personal intrusions into the consumer's environment). Finally, delivery refers to the frequency of SMS advertising reception. Consumers wish to receive a limited number of mobile advertising messages.

Merisavo et al. (2007) found that utility and context are the strongest positive drivers of consumer acceptance of SMS advertising, whereas sacrifice is the only significant negative driver. According to Merisavo et al. (2007), utility refers to relevance, perceived usefulness, monetary incentives, and entertainment and information values. Context, on the other hand, refers to consumers' perceived value in relation to the utilisation of time and place. Finally, sacrifice refers to perceived risks, such as privacy, unsuitable content or irritated feelings when receiving the advertisement.

Muk (2007a) examined young consumers' intentions to opt into SMS advertising across the USA and Korea. He found that attitude towards accepting SMS advertising has a significant and positive influence on behavioural intention. The relationship is stronger for young Korean consumers than for young US consumers. Zhang and Mao (2008) found that trust, subjective norms, perceived usefulness and perceived ease of use are the four significant and positive predictors of intention to use SMS advertising. Phau and Teah (2009) found that social involvement, one out of the seven motives for using SMS services, has a significant positive influence on attitudes towards SMS advertising.

In addition, Moynihan et al. (2010) found that attitude towards SMS messaging and e-mail advertising, perceived utility and consumers' existing knowledge and self-efficacy have a positive influence on attitude towards SMS advertising, which positively predicts intention to accept SMS advertising in both the USA and Turkey. Finally, Rau et al. (2011) found that content relevance has a significant positive relationship with attitude towards SMS advertising and purchase intention. Delivery time also affects attitude towards SMS advertising and purchase intention, with Monday and weekend, afternoon and evening yielding the best effects.

As seen above, previous literature has considered different predictors of the same consequences. They have also named or categorised the same predictors differently, which makes it more difficult to synthesise the existing literature. For example, Merisavo et al. (2007) viewed perceived relevance as a facet of utility, whereas Drossos et al. (2007) considered the predictor to be a facet of product involvement. To overcome this

problem, this study first categorises these significant variables into two types: individual and message predictors (see Table 1). The following section identifies the most frequent and important predictors considered in this study.

**Table 1** Significant predictors of SMS advertising

<i>Source</i>	<i>Individual predictor</i>	<i>Message predictor</i>	<i>Attitude and behavioural intention</i>	<i>Reading behaviour</i>
<i>A. Studies related to SMS advertising reading behaviour</i>				
Tsang et al. (2004)		Entertainment*	Attitude towards the ad	When messages are read
		Credibility	Intention to receive SMS advertising	How much of a message is read
Suher and Ispir (2011)		Permission (-)*		Advertising avoidance
<i>B. Studies related to attitude and behavioural intention of SMS advertising</i>				
Rettie et al. (2005)	Campaign interest Campaign relevance*	Monetary incentives	Advertising acceptance	
Bauer et al. (2005)		Entertainment* Information*	Advertising acceptance	
Drossos et al. (2007)	Product involvement (product importance and relevance)*	Incentive	Attitude towards the ad	
		Interactivity	Attitude towards the brand	
Carroll et al. (2007)	Wireless Service Provider (WSP) control	Appeal	Purchase intention	
		Permission* Content Delivery (frequency) (-)*	Advertising acceptance	
Merisavo et al. (2007)	Utility (relevance)*	Utility (perceived usefulness, monetary incentives, entertainment, and information)*	Advertising acceptance	
	Sacrifice (privacy, unsuitable content, or irritated feeling) (-)*	Context		
Muk (2007a)			Attitude towards accepting SMS ads Intention to opt-in to SMS ads	

**Table 1** Significant predictors of SMS advertising (continued)

<i>Source</i>	<i>Individual predictor</i>	<i>Message predictor</i>	<i>Attitude and behavioural intention</i>	<i>Reading behaviour</i>
Zhang and Mao (2008)	Trust Subjective norms	Perceived usefulness Perceived ease of use	Intention to use SMS advertising	
Phau and Teah (2009)	Social involvement		Attitude towards the ad	
Moynihan et al. (2010)	Attitude toward SMS messaging Attitude toward e-mail advertising Perceived utility Existing knowledge Self-efficacy		Attitude toward SMS advertising Intention to accept SMS advertising	
Rau et al. (2011)	Content relevance Delivery time		Attitude towards the ad Purchase intention	

(-) denotes significant negative influence.

\* denotes variables considered in the study.

### 2.3 Individual and message predictors

Individual predictors are variables concerning the state of mind of an SMS advertising receiver. Individual predictors involve perceived relevance, privacy concern, irritation and expectation. The most frequently identified individual predictor is perceived relevance (Drossos et al., 2007; Merisavo et al., 2007; Rettie et al., 2005; Rau et al., 2011). Perceived relevance reflects the degree of perceived personal relevance elicited from functional and emotional appeals of an SMS advertisement (Zaichkowsky, 1994).

Privacy concern pertains to an SMS advertising receiver's concern over the ways in which data are collected and used by advertisers and mobile service providers (Wei et al., 2010). Irritation refers to negative feelings elicited from advertising content, execution or placement (Edwards et al., 2002). Although privacy concern and irritation have been found by only Merisavo et al. (2007), they were often mentioned in other SMS advertising studies (e.g., Wei et al., 2010).

Expectation is a predictor that is mentioned in the SMS advertising intrusiveness literature but that has not been tested in any of the previously mentioned studies. Expectation refers to SMS advertising receivers' perception that the text message is from their acquaintances when the mobile phone vibrates or beeps. The reception of the SMS advertising message does not occur at the same time as exposure to the message (Wehmeyer, 2007). Recipients may get excited when the mobile phone beeps because they believe that their friends texted them (Grant and O'Donohoe, 2007; Igarashi et al., 2005). If expectation is high, then recipients will likely read the text message immediately. Therefore, expectation should have a positive influence on when an SMS advertising message is read.

Message predictors are variables concerning the characteristics of an SMS advertising message. The most effective message predictors include informativeness (Bauer et al., 2005; Merisavo et al., 2007), entertainment (Bauer et al., 2005; Merisavo et al., 2007; Tsang et al., 2004), permission (Carroll et al., 2007; Suher and Ispir, 2011) and monetary incentives (Drossos et al., 2007; Merisavo et al., 2007; Rettie et al., 2005). The current study considers all of the above predictors except for monetary incentives. Marketers should strive to find effective message predictors that can lead to desired behavioural responses without monetary incentives. The study also considers frequency (Carroll et al., 2007) because it is pertinent to practical contexts.

Advertising informativeness or entertainment is the amount of information or entertainment offered by an SMS advertising message (Ducoffe, 1995, 1996). Permission refers to receivers' explicit consent to receive SMS advertising messages from a company (Carroll et al., 2007; Tsang et al., 2004). Frequency reflects the number of received SMS advertising messages within a specific period of time (Wei et al., 2010).

#### *2.4 Age and SMS advertising reading behaviours*

Studies related to SMS advertising have seldom examined a wide range of age groups. Even when they have, they have not focused on SMS advertising reading behaviour. For example, Bauer et al. (2005), who focused on people between the ages of 14 and 72 years, studied SMS advertising acceptance. Haghirian et al. (2005), who interviewed 815 mobile phone users with ages ranging between 15 and 50 years, focused on advertising recipients' perceived SMS advertising value. The current study thus investigates the following research question.

*RQ1: Do different age groups have different SMS advertising reading behaviours?*

Young people are heavy users of mobile phones (Grant and O'Donohoe, 2007). Thus, most of the above-mentioned SMS advertising studies have observed people under the age of 30 years (Carroll et al., 2007; Drossos et al., 2007; Suher and Ispir, 2011; Tsang et al., 2004). As for individual predictors, these studies have found that perceived relevance and expectation have significant positive relationships with SMS advertising attitudes, behavioural intentions and reading behaviour (Drossos et al., 2007; Merisavo et al., 2007; Rettie et al., 2005), whereas privacy concern and irritation have significant negative relationships with these variables (Merisavo et al., 2007). In contrast, message predictors such as informativeness, entertainment and permission have positive relationships with SMS advertising attitudes, behavioural intentions and reading behaviour, whereas frequency has a negative relationship (Bauer et al., 2005; Carroll et al., 2007; Merisavo et al., 2007; Suher and Ispir, 2011; Tsang et al., 2004). How well these findings are applicable to other age groups is unknown. The study thus investigates the following research question.

*RQ2: Which individual and message predictors most influence the SMS advertising reading behaviours of different age groups?*

### 3 Methodology

#### 3.1 Sampling

The mobile market in Taiwan had the highest penetration rate in the world by early 2002 (Muk, 2007b). The penetration rate of mobile phones in Taiwan was 121.4% in the first quarter of 2011 (FIND, 2011) compared with the penetration rate of 96% in the USA at the end of 2010 (CTIA, 2011). In all, 29% of children aged 8–12 years owned a personal mobile phone (Optimum Media Direction, 2010). On average, each mobile account sent 28.8 text messages per month (FIND, 2011).

Spending on Taiwanese mobile advertising increased from \$8.1 million in 2009 to \$10.4 million in 2010 (FIND, 2010c). Mobile advertising reached 83.7% of the Taiwanese population in year 2010 (FIND, 2010b), and mobile phone users received SMS advertising 95.5% of the time (FIND, 2009). Thus, studying SMS advertising reading behaviours in Taiwan should shed light on the countries in which mobile phones and the mobile advertising industries are also growing and in which consumers are subjected to SMS advertising.

To test the two research questions, a professional market research company in Taiwan was hired to conduct a national telephone survey from May 14 to June 18 of 2010. The market research company recruited survey respondents through a Computer-Assisted Telephone Interview (CATI) system. The population is defined as people between the ages of 10 and 69 years who have at least one mobile phone and have previously received at least one SMS advertisement. A stratified random sampling method with gender, age and location strata was employed. Each stratum was proportional to that of the total population.

A total of 1068 valid cases were obtained. Chi-square tests confirmed that the sample was representative of the general population in terms of gender ( $\chi^2 = 1.98$ ,  $p = 0.16$ ), age ( $\chi^2 = 2.45$ ,  $p = 0.78$ ) and location ( $\chi^2 = 0.005$ ,  $p = 1.00$ ) strata. The valid response rate was 74.9%. Gender was almost equally split, with slightly more females ( $n = 554$ , 51.9%) than males ( $n = 514$ , 48.1%). The 10–19 age group accounted for 16.8% of the sample ( $n = 179$ ), the 20–29 age group accounted for 19% ( $n = 203$ ), the 30–39 age group accounted for 20.1% ( $n = 215$ ), the 40–49 age group accounted for 19.8% ( $n = 211$ ), the 50–59 age group accounted for 16.9% ( $n = 180$ ) and the 60–69 age group accounted for 7.5% ( $n = 80$ ). More than half of the respondents (55.7%) had a college degree or higher.

#### 3.2 Measures

The questionnaire involved four individual predictors (i.e., perceived relevance, privacy concern, irritation and expectation), four message predictors (i.e., informativeness, entertainment, permission and frequency), two reading behaviours and age. All measures for the individual and message predictors used 7-point scales, with '1' indicating strongly disagree and '7' indicating strongly agree. Seven-point scales were used because they are frequently used in Taiwan and other SMS advertising studies (Moynihan et al., 2010; Rau et al., 2011). The indicators, descriptive statistics, reliabilities and sources of individual and message predictors are listed in Appendix 1.

The measures of when an advertising message is read and how much of a message is read were revised from Tsang et al. (2004) and Edwards et al. (2002). Respondents were asked to indicate their likelihood of reading SMS advertising immediately after receiving



it, ranging from 0% to 100%, with '0%' indicating never, '50%' indicating half of the time and '100%' indicating always ( $M = 52.43$ ,  $SD = 32.11$ ). Respondents were also asked to rate the extent to which they read SMS advertising, ranging from 0% to 100%, with '0%' indicating none, '50%' indicating half of the message and '100%' indicating the entire message ( $M = 49.13$ ,  $SD = 31.13$ ).

Different SMS advertising studies have investigated different age ranges. Phau and Teah (2009) considered young Australian consumers between the ages of 18 and 35 years. Muk (2007a) studied US and Korean university students under 35 years. Carroll et al. (2007) studied those aged 20–28 years because they represented the major target groups for SMS advertising in New Zealand. Finally, Zhang and Mao (2008) studied those between 21 and 35 years in China. To make the results more applicable across countries, this study divided respondents into six age groups: 10–19, 20–29, 30–39, 40–49, 50–59 and 60–69 years old.

#### 4 Data analysis and results

Research question one (RQ1) examined whether different age groups had different SMS advertising reading behaviours, including when an SMS advertising message was read and how much of an advertisement was read. Regarding when a message was read, the results of Levene's test showed that the variances among age groups were equal,  $F(5, 1062) = 1.30$ ,  $p > 0.05$ . A one-way ANOVA test showed that the percentage of respondents who read SMS advertising immediately after the mobile phone beeped did not differ across age groups,  $F(5, 1062) = 1.70$ ,  $p > 0.05$ . The respondents read SMS advertising immediately approximately half of the time.

The second reading behaviour, which concerns how much SMS advertising messages are read, yielded similar results. Levene's test showed that the variances among age groups were equal,  $F(5, 1062) = 1.25$ ,  $p > 0.05$ . Although the one-way ANOVA test showed that people in different age groups significantly differed regarding the extent to which they read the SMS advertising messages,  $F(5, 1062) = 2.57$ ,  $p < 0.05$ , Scheffé's test did not show significant differences for any of the pair-wise comparisons. Similarly, people read approximately half of the messages regardless of age (see Table 2).

**Table 2** SMS advertising reading behaviours for different age groups

Variable	10–19	20–29	30–39	40–49	50–59	60–69	F	Partial $\eta^2$
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)		
When an ad is read	57.82 (31.92)	52.26 (33.52)	49.09 (30.26)	53.02 (32.03)	50.10 (32.31)	53.53 (32.71)	1.70	0.008
How much of an ad is read	53.05 (31.47)	44.00 (32.86)	48.88 (30.34)	52.03 (29.94)	46.29 (29.85)	52.76 (32.36)	2.57*	0.012

\* $p \leq 0.05$ .

Research question two (RQ2) asked which individual and message predictors most influenced SMS advertising reading behaviours for different age groups. Simultaneous multiple regression was thus used in the following analyses because it compares the

unique contribution of each predictor to the behavioural consequences (Tabachnick and Fidell, 2007). The results showed no multicollinearity problem for any of the analyses.

Simultaneous multiple regression analysis showed that expectation ( $\beta = 0.21$ ,  $p < 0.01$ ) had the highest significant positive influence on when an SMS advertising message was read for the group aged 10–19 years, followed by perceived relevance ( $\beta = 0.20$ ,  $p < 0.05$ ). Irritation, on the other hand, had a significant negative influence on the behaviour ( $\beta = -0.17$ ,  $p < 0.05$ ). For the group aged 20–29 years, expectation was still the most influential positive predictor of when an SMS advertising message would be read ( $\beta = 0.31$ ,  $p < 0.001$ ), followed by frequency ( $\beta = 0.21$ ,  $p < 0.01$ ). Expectation ( $\beta = 0.19$ ,  $p < 0.01$ ) was the only significant and positive predictor for the group aged 40–49 years. Finally, entertainment ( $\beta = -0.21$ ,  $p < 0.01$ ) was the only significant and negative predictor for the group aged 50–59 years. None of the variables could effectively predict when an SMS advertising message would be read for the 30–39 and 60–69 age groups (see Table 3).

**Table 3** Predictors of when an SMS advertising message is read

Predictor	10–19 $\beta$	20–29 $\beta$	30–39 $\beta$	40–49 $\beta$	50–59 $\beta$	60–69 $\beta$
<i>A. Individual predictors</i>						
Perceived relevance	0.20*	0.10	0.04	0.11	0.09	0.12
Privacy concern	-0.11	-0.07	0.01	0.15	0.05	0.15
Expectation	0.21**	0.31***	0.14	0.19**	0.02	-0.01
Irritation	-0.17*	0.10	0.03	-0.01	0.04	-0.04
<i>B. Message predictors</i>						
Informativeness	-0.06	-0.04	-0.05	0.06	0.15	0.05
Entertainment	0.03	0.07	0.04	-0.10	-0.21*	0.02
Permission	-0.07	0.14	-0.01	0.01	-0.03	-0.14
Frequency	0.03	0.21**	0.01	-0.02	-0.06	-0.02
<i>F</i>	3.41***	3.35***	0.58	1.59	0.75	0.55
<i>R</i> <sup>2</sup>	0.14	0.12	0.02	0.06	0.03	0.06

\* $p \leq 0.05$ , \*\* $p \leq 0.01$ , \*\*\* $p \leq 0.001$ .

Regarding how much of an SMS advertising message was read, the results showed that entertainment was the most influential positive predictor ( $\beta = 0.24$ ,  $p < 0.05$ ), followed by perceived relevance ( $\beta = 0.21$ ,  $p < 0.05$ ) for the group aged 10–19 years. Permission ( $\beta = -0.18$ ,  $p < 0.05$ ) and irritation ( $\beta = -0.16$ ,  $p < 0.05$ ), on the other hand, were the two most influential negative predictors. Perceived relevance was the only significant and positive predictor for the groups aged 30–39 years ( $\beta = 0.35$ ,  $p < 0.001$ ) and 50–59 years ( $\beta = 0.29$ ,  $p < 0.01$ ). Finally, perceived relevance ( $\beta = 0.18$ ,  $p < 0.05$ ) was a significant positive predictor, whereas irritation ( $\beta = -0.18$ ,  $p < 0.05$ ) was a significant negative predictor for the group aged 40–49 years. No variable could significantly predict how much of an SMS advertising message would be read among the 20–29 and 60–69 age groups (see Table 4).

**Table 4** Predictors of how much of an SMS advertising message is read

Predictor	10–19 $\beta$	20–29 $\beta$	30–39 $\beta$	40–49 $\beta$	50–59 $\beta$	60–69 $\beta$
<i>A. Individual predictors</i>						
Perceived relevance	0.21*	0.15	0.35***	0.18*	0.29**	0.16
Privacy concern	–0.13	–0.05	–0.00	0.11	–0.13	–0.04
Expectation	0.05	0.04	0.04	0.00	0.03	0.12
Irritation	–0.16*	–0.02	–0.06	–0.18*	–0.11	–0.11
<i>B. Message predictors</i>						
Informativeness	–0.13	0.10	0.02	0.08	0.19	0.12
Entertainment	0.24*	0.08	–0.07	0.01	–0.16	0.20
Permission	–0.18*	0.05	0.07	0.05	0.01	0.00
Frequency	–0.10	–0.07	–0.04	0.03	–0.02	–0.13
<i>F</i>	5.49***	3.23**	4.13***	3.10**	6.60***	3.03**
<i>R</i> <sup>2</sup>	0.21	0.12	0.14	0.11	0.24	0.26

\* $p \leq 0.05$ , \*\* $p \leq 0.01$ , \*\*\* $p \leq 0.001$ .

## 5 Discussion and implications

One of the objectives of this study is to investigate whether different age groups have different SMS reading behaviours. In addition, this study also examined which individual and message predictors were more influential to SMS advertising reading behaviours for different age groups. A national telephone survey with stratified random sampling was employed to fulfil these two objectives. The gender, age and location strata were made to be proportional to the total population, which was later confirmed by Chi-square tests. The results of the study are thus generalisable to Taiwan as a whole and may be generalisable to other countries with similar population compositions.

The results showed that different age groups do not differ in the two types of reading behaviours. People read SMS advertising immediately half of the time and read approximately half of the message each time, regardless of age. These findings differ from previous studies related to traditional media, which have shown that age influences behaviour regarding respondents' attention to television, radio, newspaper and magazines (Danaher, 1995; Heeter and Greenberg, 1985; Heeter and Cohen, 1988; Krugman et al., 1995; Magazine Publishers of America, 1979; Newspaper Advertising Bureau, 1973; Speck and Elliott, 1997; Zufreyden et al., 1993). Nevertheless, the variables that predict the two reading behaviours differ widely across age groups. Therefore, customised marketing strategies are required to achieve the two desired behavioural responses for different age groups.

More specifically, people aged 10–19 years are more likely to read SMS advertising immediately after the mobile phone beeps if they expect the text message to be from their acquaintances or if they consider SMS advertising to be relevant to them and not excessive irritating. Moreover, the more entertaining and relevant, unsolicited and irritating that the SMS advertising is, the greater extent to which people in this group will read a message. Marketers who target this group of people should send relevant and

less irritating SMS advertising. The young age group also prefer reading entertaining and unsolicited messages. Marketers who want this group of people to read more SMS advertising should develop messages that satisfy this group's thirst for fun. Although statistics show that 29% of Taiwanese children between 8 and 12 years old own personal mobile phones (Optimum Media Direction, 2010), people under 20 years of age cannot sign contracts without the approval of their guardians according to Article 79 of the Taiwanese Civic Code. In addition, SMS advertising from telephone service providers and other advertisers in Taiwan are opt-out in nature (Tsai, 2011). Therefore, SMS advertising is implicitly permitted by the guardians when signing a contract. It is thus reasonable to find that the less permitted (i.e., the less explicit the consent to receive the message), the more likely people aged 10–19 years will read them.

However, people between the ages of 20 and 29 years immediately read SMS advertising if they are expecting a message from their acquaintances or if they frequently receive SMS advertising. No variable was found to significantly predict how much of an SMS advertising message was read for this age group. EOLEmbrain (2009) found that 73% of Taiwanese people aged 25–29 years send or receive text messages often. The reception of SMS advertising has become a normal part of life for this age group. Therefore, the more SMS advertising that they have received, the more likely that they will immediately read a message. Marketers who target this age group should not worry about sending an excessive amount of SMS advertising messages, at least for now.

There are no known variables that can effectively predict when an SMS advertising message is read for the group aged 30–39 years. We currently know that relevant SMS advertising messages can increase the amount of content read among this group of people. According to a recent survey conducted by the Ministry of the Interior of Taiwan (2011), the average ages for grooms and brides are 33.9 and 30.5 years, respectively. In other words, this age group is usually busy doing work and family chores when the mobile phone beeps. The group is willing to spend time reading only relevant messages. Marketers targeting this group should thus send relevant messages to this group to achieve specific behavioural responses.

People aged 40–49 years immediately read SMS advertising only if they expect the message to be from family or friends. The more relevant and less irritating SMS advertising is, the greater the content that this group will read. The age group, who is also caught up in work and family, show annoyance with SMS advertising. Marketers targeting this group should avoid irritating them so that the message can be read more thoroughly.

People aged 50–59 years are more serious SMS advertising receivers. They do not like entertaining SMS advertising messages. The more entertaining the message is, the less likely that they will read the text message immediately. The more relevant the SMS advertising is, the greater the extent to which they will read the message. Therefore, marketers targeting this group of people should avoid sending entertaining but irrelevant messages to them. Finally, people aged 60–69 years react differently from other age groups. For this group, no variable can effectively predict when an SMS advertising message is read and how much of a message is read.

Overall, individual predictors are more influential than message predictors in estimating when an advertising message is read and how much of a message is read. Expectation is the most influential predictor of when a message is read, whereas perceived relevance is the most influential predictor of how much of a message is read

for most age groups. Nonetheless, different age groups are actually influenced by different predictors in terms of the two SMS advertising behaviours.

The three predictors of SMS advertising reading behaviours identified by Tsang et al. (2004) and Suher and Ispir (2011) were entertainment, credibility and permission. Nonetheless, for most of the age groups in this study, entertainment and permission are not significant predictors of when a message is read and how much of a message is read. Moreover, Suher and Ispir (2011) and Carroll et al. (2007) found that permission has a positive relationship with attitudes, behavioural intentions and reading behaviours of SMS advertising. Permission in this study, however, was negatively related to how much of a message was read among people aged 10–19 years.

The differences can result from the ages, countries and times being studied. The study observed people aged 10–69 years, divided into 10-year segments. Nonetheless, 85% of the respondents in Tsang et al.'s (2004) study and all of the respondents in the studies of Suher and Ispir (2011) and Carroll et al. (2007) were under 30 years old. In addition, the research of Tsang et al. (2004) was conducted in Taiwan, whereas that of Suher and Ispir (2011) was conducted in Turkey and that of Carroll et al. (2007) was conducted in New Zealand. Finally, the time gap between the study by Tsang et al. (2004) and this study is eight years, even though the location of both studies is Taiwan. The responses of Taiwanese mobile phone users may have substantially changed during those eight years.

## **6 Limitations and future research**

The similarities and differences in the findings suggest that some predictors are shared across ages and countries, whereas others are distinct. The influence of culture is evidenced in Muk (2007b). He found that US consumers' decisions in accepting SMS advertising via their mobile phones are based solely on attitudinal considerations, whereas Taiwanese consumers' intentions to act are influenced by both social norms and attitudinal factors. Therefore, future studies are encouraged to help further explore the similarities and differences between different age groups across cultures or countries.

Several questions remain unanswered and are beyond the scope of this study. For example, which factors can drive people aged 20–29 years to read more of an SMS advertising message? How can we motivate people aged 60–69 years to read SMS advertising quickly and extensively? What makes each age segment react similarly but for such different reasons? With the increasing popularity and investment in SMS advertising, these questions are encouraged for future consideration in order to understand the market more thoroughly.

These findings should not be generalised to other mobile advertising forms, such as mobile internet advertising, because consumers will not expect mobile internet advertising to be sent from acquaintances. Mobile devices are viewed as small and convenient versions of personal computers when an individual navigates the mobile internet. The mechanisms determining reading behaviours are expected to be different.

## **7 Conclusion**

The present study is the first to investigate two SMS advertising reading behaviours, namely, when an SMS advertising message is read and how much of a message is read,

across different age groups. Overall, the results showed that different age groups display similar behaviours, but the mechanisms underlying reading behaviour are very different across the groups. These findings add to our understanding of the relationship between age and SMS advertising reading behaviours. The findings also demonstrate that customised marketing strategies for different age segments are necessary. Ignoring age differences will lead to less effective SMS advertising campaigns and will waste advertising money.

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**Appendix 1: Measures for individual and message predictors**

<i>Variable</i>	<i>Indicator</i>	<i>Statistic<sup>†</sup></i>	<i>Source</i>
<i>A. Individual predictors</i>			
Perceived relevance	How do you feel about the products or services in the SMS advertisement?	$M = 2.54$ $SD = 1.10$	Zaichkowsky (1994)
	Important, boring*, relevant, exciting, meaningless*, appealing, fascinating, worthless*, involving, and needed.	$\alpha = 0.87$	
Privacy concern	I am not comfortable sharing my interests/preferences with mobile advertisers.	$M = 5.13$ $SD = 1.63$	Unni and Harmon (2007)
	I am very concerned that my cell phone number is known by mobile advertisers.	$\alpha = 0.77$	
	I do not like that my location is tracked.		
	I am very concerned that my cell phone service provider is tracking my location.		
Irritation	Please rate how you feel about SMS advertising.	$M = 3.81$	Li et al. (2002)
	Irritating, phony, ridiculous, stupid, and terrible.	$SD = 1.78$ $\alpha = 0.92$	
Expectation	I usually expect that the text message is from my friends when the mobile phone beeps or vibrates.	$M = 3.85$ $SD = 1.83$	Grant and O'Donohoe (2007) and Igarashi et al. (2007)
	I usually expect that the text message is from advertisers when the mobile phone beeps or vibrates.*	$r = 0.48$ , $p < 0.00$	
<i>B. Message predictors</i>			
Informativeness	Please rate how you feel SMS about advertising.	$M = 2.74$	Edwards et al. (2002)
	Helpful, important, informative, and useless*.	$SD = 1.25$ $\alpha = 0.81^a$	
Entertainment	Please rate how you feel about SMS advertising.	$M = 2.29$	Edwards et al. (2002)
	Attractive, enjoyable, entertaining, and fun to read	$SD = 1.37$ $\alpha = 0.90$	
Permission	Most of the SMS advertisements that I received were from advertisers to whom I had not given explicit consent.*	$M = 3.87$ $SD = 2.01$	Wei et al. (2010)
	Most of the SMS advertisements were from advertisers to whom I had never released personal information.*	$r = 0.54$ , $p < 0.00$	
Frequency	I often receive SMS advertisements.	$M = 4.47$ $SD = 2.07$	Wei et al. (2010)

<sup>†</sup>denotes a measure adapted to a 7-point scale with '1' indicating strongly disagree and '7' indicating strongly agree.

\*denotes reversed questions.

<sup>a</sup>After recoding 'useless', Cronbach's  $\alpha$  was 0.76. If 'useless' was deleted, the reliability increased to 0.81. Therefore, only three items remained in the final analysis.