

An exploratory study on avoidance of mobile video ad: role of perceived ad value, ad intrusiveness and motivations to view mobile video

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Abstract

As watching video on mobile devices is becoming an everyday phenomenon, mobile video market is rapidly growing. For a consistent growth, however, viable business models are a must. Advertising has been an integral part of BMs for the traditional media industries, and is expected to become even more crucial in the mobile era. Since mobile video viewing is a rather recent phenomenon, however, little research has been done regarding mobile video ad, and more specifically, mobile video ad avoidance. Accordingly, this study was set out to identify the potential factors that may affect ad avoidance in the context of mobile video viewing. A hierarchical regression analysis using a nationwide survey data was conducted to examine whether demographic variables, dimensions of perceived ad value (i.e., informativeness, entertainment), perceived ad intrusiveness, motivations for mobile video viewing, and innovativeness predict ad avoidance. The results indicate that age, education, perceived ad informativeness, perceived ad intrusiveness, and convenient entertainment motivation significantly predicted ad avoidance, with perceived ad informativeness, being the most influential factor to influence the user's ad avoidance level. Results of this study expand the horizon of research tradition on ad avoidance and suggest some practical implications to content providers and advertisers.

Keywords: mobile video ad, ad avoidance, motivations to use mobile video, perceived ad value, perceived ad intrusiveness

1. Introduction

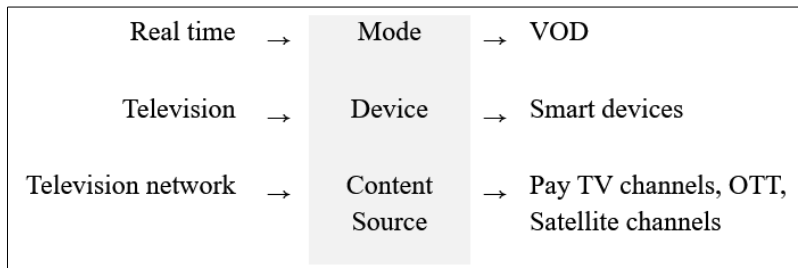
With the proliferation of smartphones and smart tablets, and thanks to the advances in broadband internet network and mobile technology, consumers are rapidly migrating to the mobile world. High-speed 4G mobile network and digital technologies that reduce latency while making online mobile videos more quickly and easily accessible are the main impulse behind this move. Supporting this trend, Cisco, a multinational technology conglomerate, reported that global mobile data traffic will increase eightfold from 2015 to 2020, and 82% of the traffic will be video (Cisco, 2016).

Today we are witnessing the paradigm shift in video consumption occurring at all three phases of video viewing: the device, the mode of consumption, and the major source of video content (Yang, 2015). Digital natives who were born in the late 1980s are accustomed to watching video content on their mobile devices, and

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more than 60% of this generation is watching video on demand. The video content they watch comes not only from the traditional mass media, but also from different types of content sources, including individual content creators.

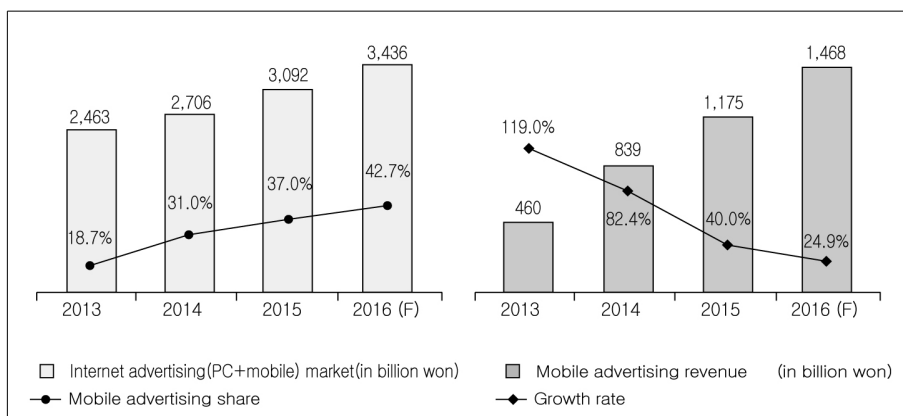
Figure 1. Paradigm shift in video consumption



*Source: Yang(2015)

The rapid growth of mobile video industry is followed by the increase of mobile advertising as it is one of the major revenue sources for any content industry. In essence, video viewing on mobile devices is similar to traditional television viewing, except that the video is played on a small sized screen and there is no temporal and spatial restriction for viewing. Therefore, just like in traditional media industry, advertising has been deemed as one of the major revenue sources for mobile video industry. As a result, along with the increase of mobile video consumption, mobile advertising market is also growing. Internet advertising market, which comprises both PC and mobile advertising markets, is expected to grow to 3 trillion 436 billion KRW by the end of 2016, a jump of 11.1% over the previous year thanks to mobile advertising. Mobile advertising is the one leading the growth and expected to increase its share to 43% by the end of year 2017 (Kim, 2016).

Figure 2. Internet (PC+Mobile) advertising market

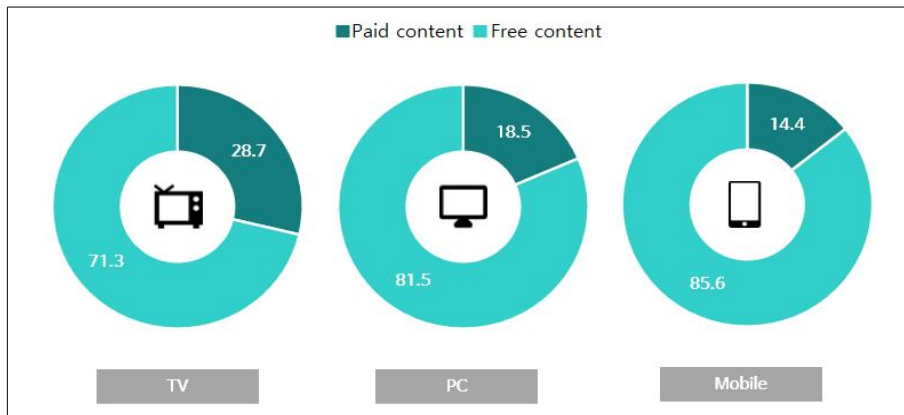


*Source: Kim (2016)

For mobile video content providers, advertising as a viable business model (BM) receives more weight as people are less willing to pay for what they watch on mobile devices. Prior research showed that while 89% of users subscribed to pay services available on their traditional television sets, only 8.3% of users were paying for

video services on their mobile devices, implying that subscription based BMs may be hard to succeed (Ryu and Lee, 2013). In terms of individual content per se, 28.7% of television users answered that they watch paid video contents whereas only 14.4% of mobile users replied so (DMC Media, 2016).

Figure 3. Proportion of paid vs. free video content viewing



* Source: DMC Media (2016)

Under the circumstances, the biggest challenge for content providers and marketers appears to find the ways to convey advertising messages to the audiences effectively, efficiently and appropriately. For most people, however, the main purpose of watching video is to enjoy the content itself, rather than the advertisement attached to it. Therefore, audiences' propensity to avoid advertising is always present regardless of the type of medium. The issue here is users' advertising avoidance will reduce the chance of potential consumers' exposure to advertising message, thereby lowering the effectiveness of the advertisement (Heeter and Greenberg, 1985; Greene, 1988). Moreover, this may lead to the devaluation of the medium as an effective advertising vehicle (Choi and Doh, 2011), which, in return, will reduce the revenue of content or service providers. With this connection in mind, researchers have studied on ad avoidance ever since TV commercials were first introduced to the public in the 1950s. In the research tradition of ad avoidance, scholars have focused on the level of ad avoidance and influencing factors in each medium. The scope of research has expanded over time with the introduction of new media, such as cable television, IPTV, satellite TV, Internet and even mobile video. Since advancement in mobile technology and broadband internet enabling fast downloading or streaming of video is a rather recent phenomenon, earlier studies on mobile advertising have limited applicability as they have mostly focused on text based ad messages.

Against this backdrop, the main purpose of this study is to examine the potential factors that contribute to the avoidance of mobile video ad.

2. Theoretical development

2.1 Advertising avoidance

Advertising avoidance (hereafter, ad avoidance) is of considerable concern to researchers as well as marketers and content providers who have to rely on advertising revenue (Zufryden et al, 1993). Some studies on television

reported that ad avoidance is common among viewers. For instance, Van Meurs (1998) found that more than 28% of advertising was affected by zapping, the act of switching channels quickly. Stafford and Stafford (1996) observed that up to 36% of the audience changed channels during advertising breaks. Speck and Elliot (1997) compared ad avoidance among different media and reported that ad avoidance is higher for television than for other media types. Later, Tse and Lee (2001) found that more than 80% of viewers use various means to avoid advertisements.

Over the years, researchers have identified several different types of ad avoidance behaviors in TV watching and applied labels to distinguish and categorize them: mechanical avoidance; cognitive avoidance; behavioral avoidance. Among these, mechanical avoidance is defined as the act of ad avoidance using technological means, such as a remote control device for TV. So the examples of mechanical ad avoidance include zapping in traditional TV viewing or zipping, which means fast forwarding or skipping ads (Siddarth and Chattopadhyay, 1998). Cognitive avoidance involves the activation of psychological defense mechanism to avoid annoying mental or emotional content, by turning one's attention away from the TV as soon as the commercial break starts. Behavioral avoidance occurs when a TV viewer engages in other activities, such as talking to someone else or leaving the room when commercial break starts (Li, Edwards and Lee, 2002).

Among the three types of ad avoidance behavior, this study focuses on mechanical ad avoidance given the high level of engagement a mobile device provides for the users and their tendency to keep the devices nearby. Also the ease of technological avoidance measures such as skip button or page change at the users' fingertip will project mechanical/technical avoidance more relevant to mobile video viewing.

2.2 Demographic variables and ad avoidance

2.2.1 Gender

Among different variables that may affect users' ad avoidance, previous studies indicated that the ad avoidance level appears to vary with traditional structural variables such as age, gender, and education. However, findings related to the effects of demographic variables on ad avoidance are not consistent (Speck and Elliot, 1997). For instance, Manrai and Manrai (1995) pointed that women tend to be more polychromic than men, engaging in other activities during commercial breaks than staring at TV screen when ads are on. Shavitt et al. (1998) reported that men have more positive attitudes toward advertising than women. On the other hand, Bush et al. (1999) found that women scored more positively than men toward advertising. In a more recent study where gender variable was found to be the strongest predictor of attitude toward the regulation of advertising, women showed more negative attitudes toward advertising (Dutta-Bergman, 2006).

2.2.2 Age

Prior research indicated that younger respondents are more likely to have a positive attitude toward advertising and less offended by it (Alwitt and Prabhaker, 1994; Shavitt et al., 1998). However, Bush et al. (1999) found no significant correlation between attitude toward advertising and age. To the contrary, in a more recent study, Dutta-Bergman (2006) reported that older generation tends to rely more on advertising for consumption decisions, showing a higher level of ad tolerance. In the context of mobile video viewing, younger generations who grew up with digital devices and smartphones may be accustomed to mechanical avoidance measures such as ad-blocking apps and software, thereby avoiding mobile video ads more easily. But the other side of coin is that younger generations may be more familiarized with the ads attached to the video content, thus feel less irritated by them.

2.2.3 Education

In television, one of the most frequently observed mechanical avoidance behavior is channel zapping. Zufryden et al. (1993) found as early as in 1993 that zapping increased in households with college graduates. A year later Clancey (1994) also reported that behavioral avoidance such as taking one's eyes off the screen also increases with education. In a similar vein, Savitt et al.'s (1988) study observed that less educated respondents are more likely to rely on advertising as compared to more educated ones. However, there are other studies showing no relationship between education levels and zapping behaviors (Heeter and Grenberg, 1985; Zufryden et al., 1993).

Given the inconsistencies reported in prior studies regarding the effect of demographic variables on ad avoidance, this study formulates the following research question.

RQ1: Do users' demographic characteristics (gender, age, education, income) predict their ad avoidance?

2.3 Perceived ad value and ad avoidance

While interrupting the flow of content may be an inevitable part of ad since the first objective of ad is to get noticed, there are some aspects of ads that may moderate the perception of this intrusiveness. Specifically, research on the effects of forced exposure-type online ads (e.g., pop-ups and interstitials) reported that perceived intrusiveness may be weakened for the ads that are deemed of high value (Edwards et al., 2002; Ying et al., 2009). Ad value, defined as an overall representation of the relative worth of advertising to consumers (Ducoffe, 1995), has been shown to be positively correlated with the informativeness and entertainment value of ad (Ducoffe, 1995; 1996). Ads can help consumers make an informed choice by providing information on product alternatives, and/or can fulfill audience needs for escapism, diversion, aesthetic enjoyment, or even emotional release (Ducoffe, 1995, 1996; McQuail, 1994). What matters in the context of the current study is the finding that the perception of intrusiveness can be significantly reduced when an ad offers the users either utilitarian (i.e. productive, functional, and informational) or hedonic value, or both (Edwards et al., 2002; Ying et al., 2009).

Based on the prior research, it can be assumed that to the extent that ads are perceived as informative [utilitarian value] and entertaining [hedonic value], they provide value to the user. Further, when the ads are deemed valuable to users, they would not avoid the ads as much as they would for those with less perceived value. Similar effects are expected in the context of mobile video ad. Based on the above discussion, the following set of hypotheses is formulated.

H1: Perceived value of mobile video ad will be related to users' ad avoidance.

H1-a: Perceived informativeness will be negatively related to users' ad avoidance.

H1-b: Perceived entertainment will be negatively related to users' ad avoidance.

2.4 Perceived ad intrusiveness and ad avoidance

Perceived ad intrusiveness has been suggested as the underlying mechanism by which advertising avoidance occurs (Baek and Morimoto, 2012; Edwards et al., 2002). Ad intrusiveness is defined as 'the degree to which advertisements in a media vehicle interrupt the flow of an editorial unit' (Ha, 1996, p. 77). Drawing on the theory of psychological reactance, Edwards et al. (2002) extended the definition of ad intrusiveness as a psychological reactance to advertisements that interferes with an individual's ongoing cognitive process. The theory of

psychological reactance (Brehm and Brehm, 1981) assumes that when faced with a loss of freedom, people are likely to experience reactance and are motivated to change their attitudes and behavior to restore their freedom and autonomy. If this theory is applied to mobile video ad, when advertisements interfere with a user's viewing of mobile video content, distracting the user from the editorial integrity of the content, he will try to reevaluate his goals to include the ads (acquiesce), or negative reactions may result in a retreat from the source of interference (i.e., ad avoidance) (Back and Morimoto, 2012; Edwards et al., 2002; Krugman, 1983).

Since mobile video ads are typically attached to or inserted within programming, users are forced to watch the ad in their entirety, or at least partially (when a skip button is enabled after a few seconds of viewing). Consequently, mobile video ads tend to be perceived as coercive and unwelcome, in other words, intrusive. Furthermore, when people are more goal- and task-oriented as in Internet use, ads are generally perceived to be more intrusive (Edwards et al., 2002). Similarly, mobile video ads will be considered intrusive to the extent that they are perceived as depriving users of their freedom to enjoy the mobile video contents. Then in an attempt to regain control, the users are more likely to engage in ad avoidance behavior. This discussion leads to the following hypothesis.

H2: Perceived intrusiveness of mobile video ad will be positively related to users' ad avoidance.

2.5 Motivation and ad avoidance

Uses and Gratifications theory focuses on how and why people use media (Klapper, 1963). This theory assumes that multiple factors working in concert influence the user's media uses and effects. It asserts that such factors as one's social environment and psychological circumstances, needs, motives, and expectations about mediated communication are the major factors to affect people's media use and effects (e.g., Katz, Blumler and Gurevitch, 1974; Rosengren, 1974). Moreover, the theory assumes that media behavior is goal-directed and purposive, making motivation a central concept. Literature of this research tradition suggests that motivation influences communication behavior such as the selection, use, interpretation, and sharing of media fare (Haridakis and Rubin, 2005; Levy and Windahl, 1984).

Prior researchers identified several media-related motives such as entertainment (Ebersole, 2000; Kaye and Johnson, 2002; Papacharissi and Rubin, 2000; Wolfradt and Doll, 2001), information seeking (Ebersole, 2000; Papacharissi and Rubin, 2000; Sjoberg 1999; Wolfradt and Doll, 2001), and passing time or alleviating boredom (Ebersole, 2000; Papacharissi and Rubin, 2000). To the extent that the user is motivated to achieve certain goals from their media use, he would feel more irritated or interrupted by the advertising message that is not consistent with the goal. For instance, if the user uses mobile video to utilize his short breaks at work, ads may be perceived as more interrupting his media use goal and he would try to avoid them. On the other hand, if the user watches mobile video for leisure entertainment to pass time, he would feel less urged to avoid ads. Therefore, in the context of mobile video, one can ask whether those motives, which are major reasons for viewing certain mobile video content, influence the user's mobile video ad avoidance. Based on the discussion, the following research questions can be proposed.

RQ2: What motivations do users have for their mobile video viewing?

RQ3: Do those motivations predict the users' ad avoidance behavior?

2.6 Innovativeness

Innovativeness, which is defined as the propensity to speculate, adopt, and use new products and services,

has always been essential to the diffusion of new media. In the line of the uses and gratifications theory, prior research has related innovativeness to a person's level of Internet use (Busselle, Reagan, Pinkleton and Jackson, 1999) and the adoption of new technologies, such as computer (Lin, 1998) and webcasting (Lin, 2004). Recently, researchers have found innovativeness to be a predictor of online social activities such as forwarding content and chatting with others (Sun, Young, Wu and Kuntaraporn, 2006). Since mobile video viewing requires at least a minimum level of mobile device use skills, and the proliferation of mobile video is rather a new phenomenon, one can posit that innovativeness also could be an important user characteristic to consider. At this point, however, we cannot pinpoint the direction of the relationship between the user's innovativeness and ad avoidance behavior considering that both mobile video ads and ad avoidance measures on mobile devices may deem innovations. Therefore, the following research question is suggested.

RQ4: Does the level of user's innovativeness predict the user's ad avoidance?

3. Research methods

3.1 Research procedure and participants

In order to answer the aforementioned research questions and hypotheses, a nationwide online survey was conducted on respondents aged 14 or older in South Korea from October 17 to November 4, 2016. The survey respondents were sampled from an online panel directory of a major research firm in South Korea, which keeps the panel directory of approximately 1,150,000 people.

The survey questionnaire was developed to assess motivations of mobile video viewing, dimensions of perceived ad value, perceived ad intrusiveness, respondent's personality trait, and the demographics of the participants. Except for demographic variables, all items were answered using a 5-point Likert scale with response categories from *strongly disagree* to *strongly agree*, or from *never* to *very likely*. All measures were drawn from existing scales and, if needed, modified to better fit the context of the present study.

An email invitation was sent to 1,500 potential respondents aged 14 or older, and 1,208 people completed the survey with a complete response rate of 80.5%. Given that the current study considers advertising as one of the major sources of revenue, the mobile video content in this study is defined as video content on mobile devices that is intended for mass distribution, not for personal communication. This includes video contents originally produced for television broadcasting but processed to be available for mobile distribution, web dramas, web documentaries, and video content produced by digital content creators that can be accessed via mobile devices.

After the data were collected, an exploratory factor analysis was conducted to identify the dimensions of motivations for mobile video viewing. The resulting factor loadings were used to construct the scale, eliminating those items that loaded on more than one factor and whose factor loading was below .60 (Churchill, 1979). This process reduced the motivation scale to 14 items representing four distinguishable factors. Each factor was composed of 2-6 items as depicted in Table 2. Then a hierarchical regression analysis was conducted to examine the relationship between the aforementioned variables of interest and mobile video ad avoidance.

3.2 Measures

3.2.1 Demographic variables

For demographic variables, age, gender, education and income level were used for the analysis. Age was measured by a question with six ranges from *19 or younger* to *60 or older*. Education was measured in six groups ranging from 1 = *middle school graduate or less* to 5 = *Master's degree or higher*. Monthly household income was measured in nine groups from 1 = *1 million or less KRW* to 9 = *10 million or more KRW*. Table 1 provides a summary of the descriptive statistics of these variables.

Table 1. Descriptive statistics for demographic variables

		Frequency	%
Gender	Male	721	59.7%
	Female	487	40.3%
Age	14-19	77	6.4%
	20-29	476	39.4%
	30-39	458	37.9%
	40-49	142	11.8%
	50-59	43	3.6%
	60 or older	12	1.0%
Education	Middle school graduate or less	34	2.8%
	High school graduate	139	11.5%
	University/college student	214	17.7%
	University/college graduate	688	57.0%
	Graduate student	36	3.0%
	Master's degree or higher	97	8.0%
Monthly Household Income (KRW)	< 1 million or less	34	2.8%
	1-2 million	109	11.8%
	2-3 million	211	29.3%
	3-4 million	220	47.5%
	4-5 million	235	67.0%
	5-6 million	131	77.8%
	6-7 million	81	6.7%
	7-10 million	116	9.6%
	10 million or more	71	5.9%

Note: Monthly household income was asked in Korean won (KRW). 1 million KRW is equivalent US\$ 850; N = 1,208.

3.2.2 Ad avoidance

Among the different types of ad avoidance behavior, the present study focused on mechanical ad avoidance, considering the unique feature of mobile device use, which is usually very personal and highly engaging. Respondents were asked to indicate how often they (1) select skip button to avoid mobile video ads and (2) install ad block software/app, if available. The adoption level for each avoidance behavior was measured with a 5 point Likert scale ranging from 1 = *Never* to 5 = *Very often*. Scores for each of mechanical avoidance behavior were summed up to represent ad avoidance variable. So, for example, if the respondent never adopts any of the two mechanical avoidance behavior, he receives the lowest score of 2; if the user very frequently uses both mechanical ad avoidance behaviors by answering “very often,” he receives the maximum score of 10.

3.2.3 Perceived ad value

Perceived ad value in this study is represented with two dimensions: perceived informativeness [AI] and perceived entertainment value [AE] of the mobile video ad. Items used in the works of Ducoffe (1995; 1996) and Edwards et al. (2002) were adopted and modified for this study. Perceived informativeness of mobile video ad was measured using a three-item scale with the statements, “Mobile video ads make me more interested in the product or service,” “Mobile video ads help me get familiarized with the product or service,” and “Mobile video ads help me have a better understanding of the product or service” ($M = 2.74$, $SD = .87$, Cronbach’s $\alpha = .87$). Perceived entertainment value of mobile video ad was measured using a two-item scale with the statements, “Mobile video ads are enjoyable” and “Mobile video ads are fun to watch” ($M = 3.08$, $SD = .89$, Spearman-Brown coefficient = .90). For perceived entertainment value, Spearman-Brown statistic was used, following the suggestion of Eisinga, Gretenhuis and Pelzer (2013), to test the reliability of the scale as it was composed of only two items. Since the items in each scale were internally consistent, they were averaged to construct perceived ad informativeness and perceived ad entertainment value indices, respectively.

3.2.4 Perceived ad intrusiveness

The perceived intrusiveness of mobile video ad was measured using a three-item scale adapted from the work of Li et al. (2002). The items are “Mobile video ads are not distracting (reverse-coded),” “Mobile video ads are part of the editorial contents I watch (reverse-coded),” and “Mobile video ads are not obtrusive (reverse-coded).” The average of these items constructs a single index for perceived ad intrusiveness [AT] ($M = 3.33$, $SD = .82$, Cronbach’s $\alpha = .79$).

3.2.5 Motivations for mobile video viewing

To measure respondents’ motivations for mobile video viewing, the items used in Shim et al.’s (2015) study were adopted and modified for this study. As Table 2 shows, a total of 14 motives for engaging in mobile video viewing were selected for this study. Respondents were asked how much they agree with the statements describing different reasons for their mobile video viewing, such as “I watch mobile videos because there are a wide range of programs,” “I watch mobile videos because themes of mobile videos are rather unique,” and so on. The responses were scored on a five-point Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*.

3.2.6 Innovativeness

To measure innovativeness, Goldsmith, Flynn and Goldsmith’s (2003) innovativeness scale was adopted

and modified for this study. Respondents were asked to report their innovativeness trait by rating their level of agreement with the five statements, such as “I tend to adopt new ideas and measures for solving problems,” “In general, I am among the first in my circle of friends to try new ideas and measures,” “I like the challenge of trying something new,” and “I tend to accept new ideas and methods before others do.” These items were also scored on a 5-point Likert scale ranging from 1= *strongly disagree* to 5= *strongly agree*. The average of these five item scores forms innovativeness [INNO] index ($M = 3.14$, $SD = .66$, Cronbach’s $\alpha = .85$).

4. Results and analysis

4.1 Overall mobile video viewing and ad avoidance

When asked how much they watch mobile videos per day, the most frequent answer among the respondents was 60 minutes per day, accounting for about 24% (281) of the respondents. Beyond 60 minutes, about 29% of the respondents stated that they watch mobile videos for 1~2 hours per day, whereas 20% answered more than 2 hours a day.

Previous survey and research report that most people are not willing to pay for what they watch online whether it is via mobile devices or not. Respondents in this study concur with the results with 74% of the respondents not subscribing to any monthly plans for mobile video service. The respondents of this study further expressed their reluctance for paid content, with more than 75% indicating that they would not pay for any service even if there is no ad at all. This result signifies the necessity and importance of advertising as a main revenue source for mobile content providers.

At the same time, however, respondents also showed a tendency to avoid ads whenever they are given a chance. For example, more than 70% of the respondents answered they would avoid watching ads if a skip button appears on the screen, while only 14% reported they would watch ads to the end. In a similar vein, about half of the respondents answered that they would install ad blocking app or software, if available.

4.2 Motivations for mobile video use

The results of a principal component analysis (PCA) distinguished major motivations for mobile video use (Table 2), answering the second research question. In this study, four distinctive motivational factors were identified. The Kaiser-Meyer-Olkin (KMO) statistic of sampling adequacy ($KMO = .887$) and Bartlett’s test of sphericity ($\chi^2 = 7342.42$, $p < .000$) indicated that the sample was adequate and that the correlations among the variables were suitable for analysis. The PCA produced four distinguishable motivational factors, which were evaluated using the Kaiser’s criterion of eigenvalue 1.0 and a factor loading of .60 or higher. The four factors accounted for 66.4% of the variance.

Considering the meaning of the common ground reflected by the items that belong to each factor, each factor was labeled as follows: convenient entertainment [CE] motivation was related to the ease of fulfilling entertainment motivations by mobile video viewing; passing time [PT] motivation was mostly about mobile video viewing being an efficient tool to spend alone time and get recharged; personal utility [PU] motivation represents the utilitarian motivation that people store or access mobile video for later entertainment use or to learn about common conversational topics to connect with others. The last factor captures people’s motivation to make the most of short break [SB] by watching mobile video during short breaks at work or on their commute.

As shown in Table 2, the four factors had a clear structure of underlying motivations associated with mobile video watching, and the reliability of these items was sufficiently high (CE: Cronbach’s $\alpha = .86$, PT: Cronbach’s

$\alpha = .83$, PU: Spearman-Brown coefficient = .74, SB: Spearman-Brown coefficient = .72) to warrant strong face-validity of the measurement items. Again, for the two factors, PU and SB, Spearman-Brown statistic was applied to test the reliability of two-item scale, following the suggestion of Eisinga, Gretenhuis and Pelzer (2013).

Table 2. Results of principal component analysis of motivations for mobile video viewing

"I watch mobile videos because..."	Components			
	Convenient Entertainment (CE)	Passing Alone Time (PT)	Personal Utility (PU)	Utilize Short Break (SB)
I can access videos easily	.82	.20	-.05	.16
I can quickly find the video I want to watch again	.81	.17	.02	.13
There are so many videos worth viewing	.71	.28	.22	.06
I can easily watch them whenever and wherever I want	.70	.12	-.05	.33
I can watch them at the time of my choice	.67	.07	-.19	.26
There are many free videos	.65	.24	.25	.04
I am alone	.19	.84	.07	.14
Watching mobile video is my habit	.12	.82	.18	.06
I need a break	.22	.76	.18	.07
I am bored	.34	.61	-.07	.29
I can relate with others talking about the program	.03	.09	.87	.06
I want to keep the videos for later viewing	.01	.18	.85	.04
I can watch a program on the go	.19	.12	.14	.85
I can watch a program during short break	.32	.22	-.02	.77
Eigenvalue	3.54	2.66	1.73	1.66
% Variance explained	25.25	19.00	12.35	11.86
Scale Reliability	.86	.83	.74	.72

Note: Principal Component Analysis with varimax rotation was used.

To test the research questions and hypotheses of the current study, a five stage hierarchical multiple regression analysis was conducted with mobile ad avoidance as the dependent variable. Demographic variables like age, gender, education and income were entered at stage one of the regression to answer the first research question and to control for the variance caused by these variables at later stages. The perceived ad value variables (entertainment and informativeness) were entered at stage two, perceived ad intrusiveness at stage three and the motivations to use mobile ad (CE, PT, PU, SB) at stage four. Then innovativeness was entered last. Intercorrelations between the regression variables were reported in Table 3 and the regression statistics in Table 4.

An examination of correlations presented in Table 3 revealed that no independent variables were highly

correlated, with the exception of SB and PU, and AT and AI. Although the correlation coefficients are very high among these variables, the multicollinearity assumption deemed to have been met as the collinearity statistics (i.e., Tolerance and VIF) were all within the acceptable limits, with all VIFs smaller than 5 and tolerance statistics greater than .20 (Coakes, 2005; Hair et al., 1998).

The results of hierarchical regression analysis exploring the hypotheses and research questions are presented in Table 4. The first research question of the present study asked whether demographic variables would be related to ad avoidance in mobile video viewing. As shown at stage one in Table 4, demographic variables block contributed significantly to the regression model, accounting for about 1% of the total variance ($F(4, 1186) = 3.21, p < 0.05$). Among the four demographic variables, age and education level were significantly related to ad avoidance. The negative coefficient for age variable indicates that younger users are more likely to avoid ads. On the other hand, education level was positively related to the level of ad avoidance suggesting that the person with a higher level of education tends to avoid watching mobile video ads more. This result suggests that the user's age and education level do matter in adopting ad avoidance measures, providing an answer to the first research question.

The second stage introduced perceived ad value such as ad entertainment (AE) and ad informativeness (AI). When entered into the equation, these variables significantly increased the explanatory power of the model by almost 9%, and the corresponding change in R^2 was significant ($F(2, 1184) = 62.05, p < 0.001$). Between these two indices, AI turned out to be a significant predictor of ad avoidance behavior. The negative coefficient for AI suggests the more the respondent perceives mobile video ads as providing useful information, the less they are likely to adopt ad avoidance measures like pressing a skip button or installing ad blocking measures (AI: $b = -.54, \beta = -.28, SE = .07, p < .001$). Thus, H1 is partially supported as H1-b positing that AE is negatively related to mobile video ad avoidance was not supported.

The third stage introduced perceived ad intrusiveness (AT) concerning the second hypothesis predicting that AT would be positively related to the adoption of ad avoidance measures. As Table 4 shows, the corresponding change in R^2 after entering AT was small, but significant ($\Delta R^2 = 0.003, F(1, 1183) = 4.13, p < 0.05$). The coefficient suggests that the more people perceive mobile video ads as being obtrusive or interrupting the editorial integrity, the more likely they are to avoid the ads, supporting the second hypothesis ($b = .21, \beta = .10, SE = .10, p < .05$).

The fourth stage adds into the equation the variables representing different motivations for mobile video viewing. Regarding this block, the third research question asked whether different motivations lead to the different level of ad avoidance. Among the four distinguishable motivations for mobile video viewing, only one motivation, convenient entertainment (CE) significantly predicted the respondents' ad avoidance ($b = .16, \beta = .08, SE = .10, p < .05$). The positive coefficient for CE indicates that to the extent that people consume mobile videos for convenient entertainment purpose, they are more likely to adopt ad avoidance. The inclusion of these motivation variables explained additional 0.8% of the variance in ad avoidance. Although the volume of R^2 change deemed rather small, it was statistically significant ($\Delta R^2 = 0.008, p < 0.05$).

Innovativeness was entered last at stage five to explore the fourth research question relating this variable to ad avoidance. However adding this variable into the model did not significantly increase R^2 , suggesting that when other variables are accounted for, innovativeness itself does not predict the level of ad avoidance.

The final regression model was significantly predictive ($R^2 = .116, F(12, 1178) = 12.87, p < .001$), accounting for about 12% of the variance in mobile video ad avoidance, and the most important predictor was ad informativeness.

Table 3. Zero-order correlation matrix of variables

Variables	Gender	Age	Education	Income	AE	AI	AT	CE	PT	PU	SB
Gender	.										
Age	-.06*	.									
Education	-.04	.25***	.								
Income	.12***	.06*	.13***	.							
AE	-.02	-.01	.01	-.01	.						
AI	-.07**	.03	.01	.03	.63***	.					
AT	.09***	-.02	.00	-.01	-.62***	-.83***	.				
CE	-.01	-.04	-.01	.08**	.18***	.15***	-.13***	.			
PT	-.02	-.19***	-.08**	.03	.22***	.26***	-.26***	.40***	.		
PU	-.06*	-.08**	-.01	.02	.21***	.47***	-.50***	.13***	.28***	.	
SB	-.07**	-.07***	-.01	.03	.24***	.49***	-.54***	.21***	.32***	.93***	.
INNO	-.10***	.01	.07**	.10***	.18***	.20***	-.22***	.24***	.23***	.21***	.26***

Note: AE: perceived ad entertainment; AI: perceived ad informativeness; AT: perceived ad intrusiveness; CE: convenient entertainment; PT: passing time; PU: personal utility; SB: short break; INNO: innovativeness

* $p < .05$, ** $p < .01$, *** $p < .001$ N = 1,208

Table 4. Results of hierarchical regressions on ad avoidance

	on Ad avoidance				
	B	SE	Beta	t	p
Step 1. Sociodemographic variables					
(Intercept)	7.20	.22		32.48	<.000
Gender (1=Female)	-.14	.10	-.04	-1.44	
Age	-.14	.05	-.08	-2.69	<.01
Education	.10	.05	.07	2.18	<.05
Income	.03	.02	.03	1.12	
$R^2 = .011^*$ $F(4,1186) = 3.206$					
Step 2. Perceived ad values					
AE	-.07	.07	-.04	-1.03	
AI	-.54	.07	-.28	-7.94	<.001
$R^2 = .105^{***}$ $F(6,1184) = 23.040$					
$\Delta R^2 = .094^{***}$					

	on Ad avoidance				
	B	SE	Beta	t	p
Step 3. Perceived ad intrusiveness					
AT	.21	.10	.10	2.03	<.05
$R^2 = .108^{***}$ $F(7,1183) = 20.391$					
$\Delta R^2 = .003^*$					
Step 4. Motivations for mobile video use					
CE	.16	.07	.08	2.44	<.05
TP	-.02	.07	-.01	-.20	.84
PU	-.19	.14	-.10	-1.31	.19
SB	.10	.17	.05	.59	.55
$R^2 = .116^{***}$ $F(11,1179) = 14.019$					
$\Delta R^2 = .008^*$					
Step 5. Personality trait					
INNO	-.04	.07	-.02	-.57	.57
$R^2 = .116^{***}$ $F(12,1178) = 12.871$					
$\Delta R^2 = .0002$					

Note: AE: perceived ad entertainment; AI: perceived ad informativeness; AT: perceived ad intrusiveness; CE: convenient entertainment; PT: passing time; PU: personal utility; SB: utilizing short break; INNO: innovativeness

* $p < .05$, ** $p < .01$, *** $p < .001$. $N = 1,191$; $N = 1,191$

5. Discussion and conclusion

Top line numbers these days show that mobile video industry is growing fast as more people watch videos on their mobile device. For a consistent growth of this industry, however, viable business models are a must. Given the people's unwillingness to pay for the video content they watch on their mobile device, the importance of ad based BM cannot be overstated. At the same time, finding the ways to reduce users' ad avoidance in mobile video viewing will be a critical issue in the successful implementation of ad based BM.

Keeping this situation in mind, this exploratory study examined the relationship between mobile video ad avoidance and potential influencing factors. Since mobile videos may be considered as an extension of Internet videos in many ways, prior research on Internet video and online ad provided useful clues for the variables of the present study.

In short, four variable blocks, demographic variables, dimensions of perceived ad value, perceived ad intrusiveness, and motivations for mobile video viewing, significantly predicted ad avoidance. Furthermore, among the variables examined, perceived ad informativeness turned out to be the most influential factor. Summarizing the results, we can conclude that although mobile video viewing provides a highly engaging and personal viewing experience, the users are likely to adopt ad avoidance measures when they perceive the ads

attached to the content is out of context, intrusive and does not provide useful information. And this is more conspicuous among younger generations and those with a higher level of education, and when the users watch the mobile video for entertainment purpose.

The results suggest that content providers and marketers need to sophisticate their advertising strategy so that ads are deemed less distracting and perceived as part of the editorial content, avoiding forced exposure-type ads, especially when the content is intended for younger generation or highly educated people. This also resonates with a survey finding that mobile video ads need to be more tailored to the viewer's characteristics (eMarketer, 2016).

The proportion of total variance explained in the final research model may seem rather small, ($R^2=.116$) but the R^2 value reported in this study is actually comparable to that of Rojas-Méndez et al.'s study (2009), which employed a combined measure of mechanical avoidance to compare ad avoidance among different countries.

As one of the theoretical contributions, the current investigation extends prior research tradition by demonstrating that demographic variables are related to ad avoidance also in mobile video viewing. Age was negatively related to the ad avoidance, suggesting younger users are more likely to avoid ads. This may be contributed to the fact that younger users are more dexterous in handling mobile devices and have a better understanding of the ways to avoid ads. Meanwhile, people with a higher level of education tend to adopt ad avoiding measures more often, probably because they are well aware of how advertising works in the media industry and perceive ads as smearing the integrity of editorial content.

Unlike prior studies on ad avoidance, gender was not a significant predictor of ad avoidance at Step 1. The fact that ad avoidance of this study was operationalized to represent mechanical ad avoidance like the use of skip buttons or ad blockers, may be part of the reason why the coefficient of gender variable was not statistically significant. Gender was often found to be significantly related to ad avoidance in traditional television viewing, where men have control of remote control device and engage in channel zapping or zipping. Considering that mobile devices are very personal medium, use of which is decided by each person, gender difference reflecting the characteristics of family viewing may not be a significant predictor of ad avoidance. An interesting finding is that the coefficient of gender variable became statistically significant from stage two, indicating a possible interaction effect between gender and the variables in the later blocks. A future study shall also examine more closely on this issue, by incorporating interaction terms into the research model.

This study identified four distinguishable motivations for mobile video use. To some extent, however, all four motivations are related to overall entertainment purpose, potentially limiting the explanatory power of each factor. This may have contributed to the result that among the four constructs for motivations for mobile video viewing herein, convenient entertainment was the only variable that was significantly related to ad avoidance. Therefore, another approach to try in the future may be to examine the general motivations to use mobile devices and how they are related to ad avoidance.

Although the current study attempted to outline major variables that are logically and theoretically influencing ad avoidance, the close examination and interpretation of the results reveal other potentially important variables were not included in the model. Notable among these are user's general perception toward ads, and familiarity/tolerance with ads in general. Additionally, attitude toward ads, as was indicated in Ducoffe's (1996) online advertising study, may also be an important predictor for mobile video ad avoidance. This can only be answered empirically in the future with a richer model.

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