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## Article

# Does Perceived Advertising Value Alleviate Advertising Avoidance in Mobile Social Media? Exploring Its Moderated Mediation Effects

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**Abstract:** It is known that perceived intrusiveness and privacy concerns, mediated by irritation, indirectly affect advertising avoidance. This research attempts to verify the importance of perceived advertising value by investigating its moderated mediation effect on the links between those endogenous variables. The research model was empirically verified with data derived from 374 valid off-line responses. Analysis found that both perceived intrusiveness and privacy concerns increased irritation in using mobile social media. Irritation caused by perceived intrusiveness and privacy concerns had positive mediating effects on advertising avoidance. Ubiquity increased perceived intrusiveness and privacy concerns, whereas personalization reduced perceived intrusiveness. Customization increased perceived intrusiveness, whereas informativeness significantly reduced it. Social interaction increased privacy concerns, whereas social integration decreased them. The moderated mediation effect of perceived advertising value among women was negative. In the low-exposure group, a negative moderated mediation effect of perceived advertising value on the relationship between irritation and advertising avoidance was also found.

**Keywords:** perceived advertising value; advertising avoidance; perceived intrusiveness; privacy concerns; irritation; mobile social media



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## 1. Introduction

In the recent “untact” society that has emerged because of COVID-19 lockdowns and restrictions, consumers enjoy many types of user-created content in closed spaces. While consuming this content, they are easily exposed to unwanted advertising. If they perceive this unwanted advertising to have even a little value, then they may accept it and even enjoy it. To overcome customers’ advertising avoidance, companies are using creative storytelling and metaphors to improve the content and quality of advertisements to make them acceptable to their customers. Since COVID-19 lockdowns and restrictions have increased the breadth and depth of online interactions, both person-to-person and company-to-customer, most companies and advertising agencies have concentrated heavily on using interstitials between these interactions and have used commercial methods and incentives that eventually lead to purchases. Substantial research has been conducted to enhance advertising acceptance, effectiveness, and forwarding [1–20].

Unlike advertising in traditional mass media (e.g., magazines, TV, radio, and news) and general internet advertising, there have been few studies examining advertising avoidance in a mobile social media. Along with the advantages of mobile social media, mobility and socialization increase the opportunities to access advertising information and facilitate a viral e-WOM effect [21]. The challenges of perceived advertising intrusiveness on the Internet [1,20] and privacy concerns in social networking related to advertising [12,22,23] cannot be treated less seriously in mobile social media.

According to information processing theory, users prefer executive functioning and acquire information using a top-down method when accessing the Internet [24]. If advertising impedes the main goal, such as by popping up at irregular intervals in mobile social media, it will be an interruption, which can easily lead to negative attitudes such as irritation, ultimately resulting in advertising avoidance [7]. Privacy concerns are another recent issue related to behavioral targeting or tailored advertising in social networking [12,25,26]. Privacy concerns have been examined as a determinant of attitudes toward advertising, advertising acceptance, and advertising effectiveness in both traditional and Internet-based advertising [1,15,16,22,27–29]. Investigating the roles of perceived intrusiveness and privacy concerns and their influence on advertising avoidance in mobile social media has emerged as an important topic in advertising research.

Advertising value is a measure of advertising effectiveness. In prior studies, advertising value was perceived as a predictor of attitudes toward advertising [12,14,30]. Edwards et al. [31] stated that when advertisements provide value, they become less interruptive and less irritating. Certain demographic characteristics, such as gender [15,16,32–34], frequency of exposure to advertising [35–37], and media usage time [1], affect the receptivity to, effectiveness of, and attitudes toward advertising. Demographic characteristics have been used to assess the moderating effects of perceived advertising value on perceived intrusiveness and irritation, which influence advertising avoidance [38]. Elucidating how perceived advertising value affects advertising avoidance in terms of demographic characteristics would provide important information to help mitigate advertising avoidance.

Recent advances in collaboration technology have greatly increased the quality of advertisements by applying ubiquity, personalization, customization, information richness, entertainment elements, social interaction, and social integration. Many studies have shown that these motivational factors are highly related to advertising effectiveness. In this study, we attempt to prove the direct effect of these motivating factors on perceived intrusiveness and privacy concerns as well as their indirect effects on irritation and advertising avoidance. We also try to verify the importance of perceived advertising value by investigating its moderated mediation effect on the links between those endogenous variables. Our key questions are as follows:

1. Do ubiquity, personalization, customization, information richness, entertainment, social interaction, and social integration affect perceived intrusiveness and privacy concerns?
2. How do perceived intrusiveness and privacy concerns mediated by irritation influence advertising avoidance in mobile social media?
3. Considering the effects of demographic characteristics, does perceived advertising value effectively alleviate advertising avoidance in mobile social media?

## 2. Literature Review

### 2.1. Advertising Avoidance in Mobile Social Media

Advertising avoidance refers to “all actions by media users that differently reduce their exposure to ad contents” [39]. Studies of advertising avoidance have focused on the context of traditional mass media, the Internet [10,31,40], mobile platforms [27,29], or SNS [22,41]. However, little research has focused on advertising avoidance in mobile social networks [42]. Research into advertising avoidance on the Internet indicates that avoidance involves a combination at the cognitive, mechanical, and behavioral levels [31]. In a keyword analysis of advertising, it is desirable to combine behavioral and mechanical avoidance into physical avoidance [10]. We believe that these three types of advertising avoidance are applicable to mobile social media as well: mechanical avoidance entails using “settings” to avoid receiving future messages, behavioral avoidance refers to deleting advertisements intentionally, and cognitive avoidance refers to paying no attention to ads or ignoring them.

One study of social network advertising (SNA) argued that advertising in social media can be conceptualized as existing in either explicit forms (e.g., banner ads or videos) that are merely adaptations of traditional media to the Internet or implicit forms (e.g., fan pages

or firm-related “tweets”) that are generated via interactions between consumers and advertisers [15]. Recently, there have been several studies focusing on specific advertising genres in social networks, such as posted information for eWOM advertising [43], brand loyalty in brand microblogs [44,45], and tailored versus invasive personalized advertising [22]. In this study, we focused on general types of advertising, such as brand applications [19], banner ads [7], message or text ads [17,18,46], or video ads [47], and we assumed that “interactivity” via advertising or mobile social media affects advertising avoidance.

Advertising in mobile social media can leverage the advantages of “mobile” [48] and “social” [49,50], but it also has limitations. One typical challenge associated with social media is the improper collection of personal information and search histories, which may lead to privacy concerns [12,22,23]. Further, unlike traditional advertising media, accessing mobile social media is highly goal-directed [24], wherein inconvenient advertising campaigns that users perceive as impediments may lead to negative attitudes, which most frequently lead to ad avoidance by Internet consumers [7]. We assume that in mobile social media, there is frequent and serious advertising avoidance. Among the primary determinants of advertising avoidance, we have investigated the topics that were examined in previous research, such as irritation [11,14,31,51,52], perceived intrusiveness [1,20,38], privacy concerns [8,15,16,28,37,53], “ad clutter” [54], and prior negative experience [27,53]. We selected perceived intrusiveness and privacy concerns as antecedents for advertising avoidance.

## 2.2. Advertising in Mobile Social Media

The psychological needs underlying the use of specific media as well as user motivation drive specific behavior that aims for gratification to fulfill intrinsic needs. Various types of gratification involved in the use of specific media have been examined, including traditional media [30], the Internet [1,6,15,55], mobile [5,11,14], and mobile social media [2,24]. A useful framework can explain audience motivations to adopt and use media, but the experiences and gratifications obtained from media also affect the response to an ad [30].

Researchers [24,56] have highlighted ubiquity as a unique feature of mobile devices, which provide service and access to information anytime and anywhere. Mobility is an opportunity for advertising [24,48]. Personalization and customization represent two distinct types of information tailoring in information system communication. Personalization emphasizes system-initiated tailoring, whereby the system automatically tracks personal information and delivers ad content that matches user preferences. Customization is user-initiated tailoring, which allows users to inform the system of their interests by means of “personal settings” [52,57]. These two types of information tailoring were compared in a study of location-based advertising (LBA) [6]. In our study, we propose that ubiquity and information tailoring are convenient features for users who are accessing advertising in mobile social media.

Informativeness and entertainment are the two primary legitimate functions of advertising. Informativeness helps users make decisions, whereas entertainment is the ability to gratify basic needs, such as diversion, emotional release, and escapism [11,58]. Informativeness and entertainment have been used as the fundamental elements in investigating advertising value, which subsequently affects attitudes or behavior toward advertising [1,2,4,6,12,15,24,55].

Social interaction refers to people actively participating in customer discussions on a website or providing their own opinions on the sites [6]. In mobile social network services (SNS) (e.g., Facebook and Kakao Talk), “integrative gratifications” have been identified as strengthening individual trust, confidence, and connections with acquaintances. However, ‘social interactive’ gratifications have been identified as being derived from strong interpersonal communication exchange [24]. Consistent with how the two aspects of social networking use motivations based on the need for online social capital and psychological well-being [55], we define social gratifications in terms of social interaction and social integration.

### 3. Theoretical Background and Hypotheses

#### 3.1. Irritation and Advertising Avoidance

The theory of reasoned action (TRA), which “aims to explain the relationship between attitudes and behaviors within human actions,” asserts that individual actions or behavioral intention are initiated directly by attitude [59]. In Ducoffe’s web advertising model, irritation is the antecedent significantly associated with advertising value, which in turn influences attitudes toward advertising [38]. This study defines irritation as “the extent to which the advertising is messy and irritating to others.” Attitude toward an advertising campaign should capture its overall favorable or unfavorable evaluation [20]. People develop either positive or negative attitudes toward advertising [51,60]. In our study, we focus on the predictors that determine advertising avoidance. We select irritation as a negative attitude and propose that it directly affects advertising avoidance in mobile social media. Based on the above discussion, we propose the following hypothesis.

**Hypothesis 1 (H1).** *Irritation increases advertising avoidance in mobile social media.*

#### 3.2. Perceived Intrusiveness, Privacy Concerns, and Irritation

Psychological reactance theory states that “reactance is a motivational reaction to offers, rules, or regulations that threaten or eliminate specific behavioral freedoms” and “reactance occurs when a person feels that someone or something is taking away his or her choices or limiting the range of alternatives [61].” The perceived intrusiveness of advertising is a cognitive evaluation of the degree to which the advertisement interrupts individual goals [31]. Unlike traditional advertising media, mobile social media with Internet features lead to a more goal-directed situation [10]. According to executive functioning, users assume greater power to collect or tailor the exact information they are attempting to access [24]. The presence of advertising on a small mobile screen may impede the execution of main tasks, such as seeking information, entertainment, or social interaction, which may threaten both personal control and freedom. According to psychological reactance theory, this impediment and threat comes from advertising intrusiveness, which results in negative outcomes. Perceived intrusiveness accounts for many of the differences in the overall attitude toward mobile advertising campaigns [20]. Studies have confirmed that perceived intrusiveness is associated with negative emotions [31,62]. However, there have been few empirical studies investigating the relationship between perceived intrusiveness and irritation. We propose that in mobile social media, perceived intrusiveness results in a negative attitude of “irritation” toward advertising, which in turn induces advertising avoidance, as stated in the following hypothesis.

**Hypothesis 2 (H2).** *Perceived intrusiveness increases irritation in using mobile social media.*

#### 3.3. Privacy Concerns

Privacy concerns are defined as “SNS users’ apprehension about the loss or abuse of their private information” [1,28,43,53]. In a study of Internet information privacy, specifically based on “concern for information privacy” (CFIP), the dimensions of “Internet-user information privacy concern” (IUIPC) were developed as “collection, awareness, and control.” Collection refers to the degree to which a person is concerned about the volume of individual-specific data processed by others in terms of the benefits received, awareness relates to information transparency and the disclosure of specific information, and control indicates the freedom to either accept or reject the process or decision outcome [53]. A perception of an invasion of privacy by advertisements in mobile social media, which may result from the loss of benefits received from advertising, information transparency and the disclosure of specific information, and the control of personal information, leads to specific apprehensions. In other words, the invasiveness or intrusiveness of advertising may cause privacy concerns by users of mobile social media. Privacy concerns in the form of consumers’ apprehension about their information loss and abuse may lead to negative

outcomes. Prior studies focused on advertising have empirically confirmed that privacy concerns are significantly associated with attitudes towards advertising [1,15,16,41]. We propose that privacy concerns induced by advertising significantly increase irritation, a negative attitude toward advertising. Hence, we propose the following hypotheses:

**Hypothesis 3 (H3).** *Perceived intrusiveness increases privacy concerns by users of mobile social media.*

**Hypothesis 4 (H4).** *Privacy concerns increase irritation in users of mobile social media.*

### 3.4. Perceived Advertising Value

Advertising value is defined as “a subjective evaluation of the relative worth or utility of advertising to consumers” and a predictor of intentions and attitudes toward advertising [38]. In a study examining Internet advertising in the form of pop-up ads, “When ads provide value, either in the form of information or entertainment, they are perceived as less of an interruption, are less irritating [63].” Investigations into other types of advertising (e.g., social network advertising, in-game advertising, agent-based recommendation advertising, and keyword advertising) have shown that gender plays an important role in shaping advertising receptivity [15,16,33,34]. Advertising repetition significantly increases its effectiveness, as was empirically proven in a series of experimental designs [1,35–37] which suggested that consumer attitudes toward advertising develop depending on the time spent with social media or the frequency of social media visits. In our study, we investigate the moderating effects of perceived advertising value on the paths ranging from perceived intrusiveness to advertising avoidance as mediated by irritation, while considering the role of gender, perceived advertising exposure frequency, and the amount of time spent on mobile social media. We propose the following related hypotheses.

**Hypothesis 5 (H5).** *Perceived advertising value moderates the effects ranging from irritation to advertising avoidance.*

**Hypothesis 5a (H5a).** *The moderating effects of perceived advertising value differ between gender groups.*

**Hypothesis 5b (H5b).** *The moderating effects of perceived advertising value differ between high- and low-exposure groups.*

**Hypothesis 5c (H5c).** *The moderating effects of perceived advertising value differ between groups with high and low user times.*

### 3.5. Ubiquity, Personalization, and Customization

Compared to personal computers, ubiquity is the most important and distinctive asset of mobile devices [56]. The role of ubiquity in advertising was shown to be negative in some studies investigating mobile advertising, which was attributed to consumers being increasingly conscious of their privacy concerns, fearing the possibility of information leakage, or having a lack of control over unexpected intrusions [64]. Therefore, the role of ubiquity for advertising is negative for mobile social media, despite the convenience of mobile devices. Hence, we propose the following hypotheses.

**Hypothesis 6a (H6a).** *Ubiquity increases the perceived intrusiveness of mobile social media.*

**Hypothesis 6b (H6b).** *Ubiquity increases privacy concerns about mobile social media.*

For mobile SNS, consumers are active, goal-directed users who are conscious of their own motivations. Customization emphasizes user controllability in tailoring and information delivery [65]. Because a user’s cognitive load is limited and because mobile

devices have small screens on which to show advertisements, “personal settings” based on advertising may reduce the freedom of users to enjoy mobile social media, particularly when the main task of focus is not advertising. However, ensuring user control of personal information and the system largely guarantees user privacy.

Unlike customization, personalization emphasizes automatic relevance, wherein the system tracks personal information and delivers ad content that matches the users’ preferences [66]. During the delivery of matched ad content based on personal preferences, both individual demographics and geographic information, which are highly related, attenuate the perceived intrusiveness. However, the automated system tracking may lead to a loss of control, the abuse of a user’s information, and the compromising of personal information, all of which aggravate privacy concerns [67]. Given the above discussion, we propose the following hypotheses.

**Hypothesis 7a (H7a).** *Personalization decreases perceived intrusiveness in mobile social media.*

**Hypothesis 7b (H7b).** *Personalization increases privacy concerns in mobile social media.*

**Hypothesis 7c (H7c).** *Customization increases perceived intrusiveness in mobile social media.*

**Hypothesis 7d (H7d).** *Customization decreases privacy concerns in mobile social media.*

### 3.6. Informativeness and Entertainment

Informativeness and entertainment are the two primary legitimate functions of advertising [1,2,4,6,11,12,15,55,58,68]. Some studies have confirmed that attitude toward advertising is developed by informativeness and entertainment [15,17,18]. We define informativeness and entertainment as relievers of perceived intrusiveness and privacy concerns, and we propose that they reduce perceived intrusiveness and privacy concerns as follows:

**Hypothesis 8a (H8a).** *Informativeness decreases perceived intrusiveness in mobile social media.*

**Hypothesis 8b (H8b).** *Informativeness decreases privacy concerns in mobile social media.*

**Hypothesis 8c (H8c).** *Entertainment reduces perceived intrusiveness in mobile social media.*

**Hypothesis 8d (H8d).** *Entertainment reduces privacy concerns in mobile social media.*

### 3.7. Social Interaction and Social Integration

Studies investigating Internet advertising have shown that social interaction is positively associated with human–human interaction but is negatively associated with human–message interaction [6,69]. Prior studies have treated peer influence and self-brand congruity in the context of SNA and in-game advertising [15,16]; we refine them into social interaction and social integration in mobile social media [24]. The findings of prior studies have suggested that social interaction and social integration show mostly positive effects in the context of advertising [1,4,6,15].

In our study, we assume that social interaction and social integration are benefits derived from social capital and well-being [45,70]. Social capital is the benefit derived from social network relationships, whereas social well-being refers to global cognitive judgments of self [55]. Motivations using media gratify consumer needs [71]. Following the previous studies, we propose that social interaction and social integration play positive roles in advertising, and we develop the following hypotheses.

**Hypothesis 9a (H9a).** *Social interaction reduces perceived intrusiveness in mobile social media.*

**Hypothesis 9b (H9b).** *Social interaction reduces privacy concerns in mobile social media.*

**Hypothesis 9c (H9c).** *Social integration reduces perceived intrusiveness in mobile social media.*

**Hypothesis 9d (H9d).** *Social integration reduces privacy concerns in mobile social media.*

#### 4. Methodology and Research Design

##### 4.1. Data Collection

To test the research model and hypotheses, we conducted off-line surveys and collected 434 responses. Of those, we used 374 valid responses for statistical analysis. The demographic statistics show that 52.1% of the participants were male ( $n = 195$ ) and 47.9% were female ( $n = 179$ ). In age, 93.3% were in their twenties, and 6.7% were of other ages. In educational background, 86.4% of the participants were undergraduate students. Among the participants, 85.8% reported using mobile social applications over one hour daily, which is relatively high. The main mobile social media applications that we investigated were KaKao Talk ( $n = 308$  users) and Facebook ( $n = 112$  users). The types of advertising that appeared most often in mobile social media were messages or text ads ( $n = 133$ , 35.6%), banner ads ( $n = 125$ , 33.4%), brand app ads ( $n = 97$ , 25.9%), and video ads ( $n = 62$ , 16.6%). The degree of perceived advertising exposure was high: 75.9% of the participants reported that they unintentionally received ads in mobile social media more than three times a day. In Table 1, we summarize the participants' demographic statistics. Approximately 80% of the participants were college students, who were the most active social network users [1,72].

**Table 1.** Results of demographic analysis.

Demographics	Percentage (%)	Demographics	Percentage (%)
Gender		Mobile Social Application *	
Male	52.10	KaKao Talk	82.40
Female	47.90	Facebook	29.90
		WeChat	6.40
Age		Twitter	1.30
20s	93.30	Line	2.10
30s	4.30	Others	6.70
40s	1.30		
Over 50s	1.10	Advertisement Types *	
		Message or Text Ads	35.60
Educational Background		Banner Ads	33.40
High School	11.30	Brand App Ads	25.90
Graduate		Video Ads	16.60
College	81.20	Others	1.60
Undergraduate		Perceived Advertising Exposure Frequency	
Master	1.90	One Time	4.00
Doctor	3.20	2–3 Times	16.00
Others	2.40	4–5 Times	23.80
Mobile Social Media Use Time		Over 6 Times	56.10
Within One Hour	14.20	Sharing Experience	
Over 1–Within 3 h	55.40	Yes	47.00
Over 3–Within 5 h	21.00	No	53.00
Over 5 h	9.90		

\* Survey questions with multiple choices.

#### 4.2. Measures

Ubiquity was developed as a second-order reflective construct consisting of time saving (3 items), spatial flexibility (3 items), and contextual flexibility (5 items), which were adapted from prior studies [2,7,24,27,56] and adjusted to fit mobile social media. Personalization and customization were adapted from a study on customization in location-based advertising [6]. Measures of informativeness and entertainment were adapted from prior advertising research [1,14–16,30,73]. Social interaction and social integration were developed from prior studies investigating social motivation in social media [1,2,13,15,30,73–75]. Factors such as perceived intrusiveness, privacy concerns, irritation, perceived advertising value, and advertising avoidance were developed from Ducoffe's investigations of web advertising [38] and from studies on privacy concerns [28,53,74,76] and advertising avoidance [31,40,41]. We conducted an exploratory factor analysis (EFA) to ensure the validity and reliability of the research factors. We deleted the measures with a factor loading of less than 0.5 after varimax rotation. Finally, the EFA models showed goodness of fit, where the Eigenvalues of the factors were higher than 1, and the KMO values were almost all higher than 0.9, KMO value in EFA for endogenous factors is 0.895, indicating that the EFAs for both exogenous and endogenous factors were acceptable (results shown in Tables 2 and 3).

**Table 2.** Measures and results of EFA on exogenous factors.

Constructs	Measurement Items	Total Sample in 2019 ( <i>n</i> = 374)		
		Factor Loadings	Eigenvalues	Cumulative %
Ubiquity-Time saving	Using mobile social media can be an efficient way to manage my time.	0.895	4.136	11.178
	Using mobile social media makes my life easier.	0.604		
	Using mobile social media can easily fit my schedule.	0.898		
Ubiquity-Spatial Flexibility	Using mobile social media enables me to find information from any place.	0.665	3.933	21.807
	Using mobile social media gives me an ability to overcome spatial limitations.	0.676		
	Using mobile social media fits any location, wherever I go.	0.715		
Ubiquity-Contextual Flexibility	Using mobile social media provides immediate access to others anywhere anytime conveniently.	0.734	3.759	31.966
	Mobile social media is convenient to use.	0.807		
	Using mobile social media can help me get what I want for less effort.	0.819		
	Mobile social media is easier to use.	0.835		
	Using mobile social media can help me obtain the information I want without any delay.	0.726		
Personalization	Advertising in mobile social media is relevant to my job and activities.	0.809	3.397	41.146
	Advertising displayed in mobile social media is interesting to me.	0.859		
	Advertising in mobile social media is relevant to my needs.	0.717		
Customization	Advertising provided in mobile social media is related to me when in a specific location.	0.802	2.756	48.595
	Advertising provided in mobile social media is related to me when in a specific time.	0.751		
	Advertising in mobile social media allows me to choose ad categories by my preferences.	0.604		

Table 2. Cont.

Constructs	Measurement Items	Total Sample in 2019 ( <i>n</i> = 374)		
		Factor Loadings	Eigenvalues	Cumulative %
Informativeness	Advertising in mobile social media is a valuable information source of a product/service.	0.673	2.664	55.796
	Advertising in mobile social media is a convenient information source of a product/service.	0.725		
	Advertising in mobile social media makes information immediately accessible.	0.621		
	Advertising in mobile social media keeps me up-to-date for free.	0.768		
Entertainment	Advertising in mobile social media is enjoyable, amusing, and entertaining.	0.696	2.206	61.758
	Advertising in mobile social media is pleasant.	0.806		
	Seeing advertising in mobile social media gives me a more enjoyable and relaxing time.	0.820		
	Seeing advertising in mobile social media derives fun and enjoyment.	0.811		
	Seeing advertising in mobile social media entertains and stimulates my mind.	0.584		
Social Interaction	I will recommend advertising in mobile social media to others.	0.762	2.199	67.702
	I will say positive things about advertising in mobile social media to others.	0.745		
	I need to interact with people through mobile social media or advertising in it to make myself interested in things that happen outside.	0.745		
	To feel like a part of a larger community, I need to interact with people through mobile social media or advertising in it.	0.710		
	I need to spend time supporting general online community activity through mobile social media or advertising in it.	0.555		
Social Integration	The brands advertised in mobile social network advertising are consistent with how I see myself.	0.652	1.748	72.427
	The brands advertised in mobile social network advertising cater to people like me.	0.675		
	The brands advertised in mobile social network advertising reflect who I am.	0.725		
	Interactions through mobile social network advertising can expand my personal/social networks.	0.744		
	Interactions through mobile social network advertising can help me derive gratification from influencing others.	0.653		
	Interactions through mobile social network advertising can reinforce my credibility/authority or status/reputation.	0.729		

KMO value = 0.911,  $\chi^2_{(666)} = 9119.319$ ,  $p = 0.000$ .

**Table 3.** Measures and results of EFA on endogenous factors.

Constructs	Measurement Items	Total Sample in 2019 ( <i>n</i> = 374)		
		Factor Loadings	Eigenvalues	Cumulative %
Perceived Intrusiveness	Advertising in mobile social media is invasive.	0.813	3.506	20.622
	Advertising in mobile social media is interfering.	0.843		
	Advertising in mobile social media is forceful.	0.810		
Privacy Concerns	It usually bothers me when advertisers ask for my personal information in mobile social media.	0.811	2.805	37.124
	I am concerned about the potential misuse of personal data in mobile social media.	0.855		
Perceived Advertising Value	Advertising in mobile social media is useful.	0.880	2.681	52.896
	Advertising in mobile social media is valuable.	0.924		
	Advertising in mobile social media is important.	0.884		
Irritation	Advertising in mobile social media is irritating, annoying, intrusive, deceptive, and confusing.	0.649	2.399	67.008
	Advertising in mobile social media disturbs my use of mobile social media.	0.696		
	Advertising in mobile social media is not enjoyable, and I don't like it.	0.773		
	I am not satisfied with the service provided by advertising in mobile social media.	0.800		
	I feel uncomfortable in surfing through advertising in mobile social media, and doing that is not a good way to spend my time.	0.791		
Advertising Avoidance	I will neglect or not pay attention to advertising in mobile social media.	0.620	1.616	76.514
	I will delete the messages from my smartphone if I think it is advertising.	0.814		
	I will cancel the notice about advertising messages in mobile social media.	0.826		
	I don't see any advertising in mobile social media and will pass right by them.	0.748		

KMO value = 0.895,  $\chi^2_{(136)} = 3941.868$ ,  $p = 0.000$ .

## 5. Results

### 5.1. Measurement Model

The convergent validity and discriminant validity of the research factors were provided from confirmatory factor analysis (CFA); the results are listed in Tables 4 and 5.

The CFA of exogenous factors provided an acceptable fit:  $\chi^2/df = 2.022$ , SRMR = 0.072, RMSEA = 0.052, GFI = 0.850, NFI = 0.872, IFI = 0.931, and CFI = 0.930. Similarly, the overall goodness-of-fit indices in CFA for endogenous factors were good:  $\chi^2/df = 2.284$ , SRMR = 0.063, RMSEA = 0.059, GFI = 0.928, NFI = 0.939, IFI = 0.965, and CFI = 0.965. All the estimates of the observed indicators are significant ( $p < 0.050$ ) and strongly load on their latent factors, thus ensuring convergent validity. Further, the values of average variance extracted (AVEs) are greater than 0.5, and the values of construct reliability (CR) are almost all above 0.7, which ensures the convergent validity of the factors. To confirm the discriminant validity of factors, we compared the square roots of AVEs for each factor with their correlations. As presented in Table 6, the square roots of AVEs are higher than the correlations, thus ensuring the discriminant validity of factors. At the same time, to test the

factors' reliability, we calculated Cronbach's  $\alpha$  for each factor. As listed in Tables 5 and 6, almost all Cronbach's  $\alpha$  values were higher than 0.81, and Cronbach's  $\alpha$  value for privacy concerns was 0.648, which confirms the reliability of the factors [64,77].

**Table 4.** CFA on exogenous factors.

Factors	Measures	Estimate	Standardized Estimate	S.E.	T	P	AVE	Composite Reliability	Cronbach $\alpha$
Ubiquity	Time saving	0.837	0.474	0.113	7.389	***	0.537	0.697	0.537
	Spatial flexibility	1.000	0.813						
	Context flexibility	0.851	0.851	0.098	8.675	***			
Time Saving	UBts1	0.822	0.796	0.051	15.994	***	0.646	0.757	0.825
	UBts2	0.513	0.589	0.043	11.893	***			
	UBts3	1.000	0.978						
Spatial Flexibility	UBsf1	0.952	0.773	0.065	14.589	***	0.587	0.739	0.805
	UBsf2	1.000	0.827						
	UBsf3	0.917	0.693	0.070	13.139	***			
Context Flexibility	UBcf1	1.022	0.688	0.074	13.839	***	0.561	0.838	0.869
	UBcf2	1.000	0.808						
	UBcf3	1.072	0.760	0.069	15.635	***			
Personalization	UBcf4	1.043	0.818	0.061	17.072	***	0.688	0.723	0.865
	UBcf5	0.988	0.658	0.075	13.121	***			
	TAp1	0.845	0.786	0.048	17.768	***			
Customization	TAp2	1.000	0.893				0.602	0.655	0.81
	TAp3	0.842	0.805	0.046	18.479	***			
	TAct1	0.922	0.780	0.058	15.784	***			
Informativeness	TAct2	1.000	0.865				0.597	0.732	0.852
	TAct3	0.832	0.670	0.062	13.499	***			
	IMif1	0.914	0.750	0.057	16.141	***			
Entertainment	IMif3	1.000	0.855				0.686	0.739	0.909
	IMif4	0.950	0.774	0.056	16.840	***			
	IMif5	0.850	0.705	0.057	14.874	***			
Social Interaction	IMen1	0.825	0.689	0.050	16.528	***	0.566	0.847	0.868
	IMen2	0.927	0.871	0.035	26.374	***			
	IMen3	0.985	0.913	0.033	29.841	***			
Social Integration	IMen4	1.000	0.928				0.581	0.731	0.891
	IMen5	0.857	0.710	0.049	17.368	***			
	SCsi2	0.843	0.632	0.064	13.095	***			
	SCsi3	0.824	0.672	0.058	14.214	***	0.581	0.731	0.891
	SCsi4	0.934	0.833	0.049	19.187	***			
	SCsi5	1.000	0.863						
	SCsi6	0.776	0.734	0.048	16.065	***	0.581	0.731	0.891
	SCst1	0.871	0.775	0.049	17.850	***			
	SCst2	0.961	0.827	0.049	19.739	***			
	SCst3	1.000	0.861				0.581	0.731	0.891
	SCst4	0.935	0.732	0.057	16.430	***			
	SCst5	0.873	0.731	0.062	14.091	***			
	SCst6	0.792	0.624	0.061	13.095	***			

$\chi^2_{(599)} = 1211.236$ , GFI = 0.930, NFI = 0.872, CFI = 0.850,  $\chi^2/df = 2.022$ , SRMR = 0.072, RMSEA = 0.052; UBts, time saving; UBsf, spatial flexibility; UBcf, context flexibility; TAp, personalization; TAct, customization; IMif, informativeness; IMen, entertainment; SCsi, social interaction; SCst, social integration. \*\*\*  $p < 0.001$ .

**Table 5.** CFA on endogenous factors.

Factors	Measures	Estimate	Standardized Estimate	S.E.	T	P	AVE	Composite Reliability	Cronbach $\alpha$
Perceived Intrusiveness	PI1	0.621	0.606	0.050	12.515	***	0.647	0.717	0.833
	PI2	1.000	0.914						
	PI3	0.950	0.861	0.050	18.866	***			
Privacy Concerns	PC3	1.000	0.819				0.537	0.555	0.648
	PC4	0.751	0.635	0.116	6.453	***			
Perceived Advertising Value	AL1	0.887	0.879	0.034	26.154	***	0.792	0.851	0.917
	AL2	1.000	0.954						
	AL3	0.854	0.832	0.037	23.318	***			
Irritation	AI1	0.736	0.734	0.044	16.587	***	0.629	0.828	0.896
	AI2	0.869	0.824	0.043	20.079	***			
	AI3	1.000	0.878						
	AI4	0.877	0.802	0.045	19.322	***			
	AI5	0.830	0.716	0.051	16.158	***			
Advertising Avoidance	AA1	1.000	0.780				0.590	0.771	0.863
	AA2	0.963	0.777	0.064	14.972	***			
	AA3	0.844	0.712	0.063	13.495	***			
	AA4	0.982	0.800	0.063	15.556	***			

$\chi^2_{(107)} = 244.383$ , GFI = 0.928, NFI = 0.939, CFI = 0.965,  $\chi^2/df = 2.284$ , SRMR = 0.063, RMSEA = 0.059; PI, perceived intrusiveness; PC, privacy concerns; AL, perceived advertising value; AI, irritation; AA, advertising avoidance. \*\*\*  $p < 0.001$ .

**Table 6.** AVEs for discriminant validity.

Factors	Mean	S.D.	UBts	UBsf	UBcf	Taps	TAct	IMif	IMen	SCsi	SCst	AL	PI	PC	AI	AA
UBts	4.959	1.176	<b>0.803</b>													
UBsf	5.398	1.032	0.410 **	<b>0.766</b>												
UBcf	5.598	0.911	0.416 **	0.641 **	<b>0.749</b>											
Taps	3.837	1.421	0.034	0.136 **	0.114 *	<b>0.829</b>										
TAct	3.860	1.275	0.126 *	0.193 **	0.166 **	0.546 **	<b>0.776</b>									
IMif	4.037	1.223	0.094	0.213 **	0.190 **	0.502 **	0.566 **	<b>0.773</b>								
IMen	3.092	1.237	-0.037	0.021	-112 *	0.403 **	0.453 **	0.595 **	<b>0.828</b>							
SCsi	3.727	1.226	0.047	0.147 **	0.033	0.286 **	0.410 **	0.512 **	0.606 **	<b>0.752</b>						
SCst	3.456	1.118	0.102 *	0.178 **	0.078	0.412 **	0.500 **	0.526 **	0.613 **	0.666 **	<b>0.762</b>					
AL	3.938	1.316	0.130 *	0.127 *	0.015	0.362 **	0.301 **	0.513 **	0.541 **	0.535 **	0.509 **	<b>0.804</b>				
PI	4.595	1.285	0.034	0.172 **	0.207 **	-143 **	0.025	-0.097	-0.028	-0.025	-0.013	-0.166 **	<b>0.733</b>			
PC	5.607	1.187	0.152 **	0.199 **	0.256 **	-0.024	-0.022	0.028	-113 *	-0.016	-166 **	-0.049	0.296 **	<b>0.890</b>		
AI	4.868	1.114	0.076	0.116 *	0.209 **	-296 **	-178 **	-345 **	-439 **	-327 **	-310 **	-453 **	0.494 **	0.273 **	<b>0.793</b>	
AA	5.474	1.105	0.145 **	0.187 **	0.359 **	-199 **	-170 **	-247 **	-436 **	-283 **	-292 **	-315 **	0.386 **	0.375 **	0.671 **	<b>0.768</b>

Two-tailed: \*\*  $p < 0.01$ , \*  $p < 0.05$ . Diagonal elements are square root of average variance extracted values.

5.2. Common Method Variance and Response Bias

To investigate if any serious bias resulted from the common method in our self-reported collected data, we subjected the data to Harman’s one-factor test for confirmatory factor analysis. As suggested by Podsakoff et al. [78], a worse fit for the one-factor model indicates that the common-method variance is not a serious threat. In our study, the one-factor model for exogenous factors/endogenous factors yielded  $\chi^2_{(629)} = 5350.827/\chi^2_{(119)} = 1947.080$ . Compared to the results of  $\chi^2_{(599)} = 1211.236/\chi^2_{(107)} = 244.383$  in the measurement model for exogenous factors/endogenous factors, the fit was considerably worse, suggesting that common method bias was not a serious threat to exogenous or endogenous factors. Using the method described by Armstrong and Overton [79], we found no statistically significant differences in the research variables between the 30 early and the 30 late respondents (where the range of  $p$  values was 0.194–0.89), thereby confirming a lack of response bias [78,79].

5.3. Hierarchical Regression Analysis with OLS

Given the results of the measurement model assessment, we then used ordinal least square (OLS) regression to assess our research hypotheses, except for Hypothesis 5. To test our research model, we used SPSS 24 for the 374 valid responses. The results listed in Table 7 indicate the significant or non-significant  $\beta$  coefficients in the research model, and the results validated the research hypotheses in Table 8 and Figure 1.

**Table 7.** The results of hypotheses testing using hierarchical regression analysis with OLS.

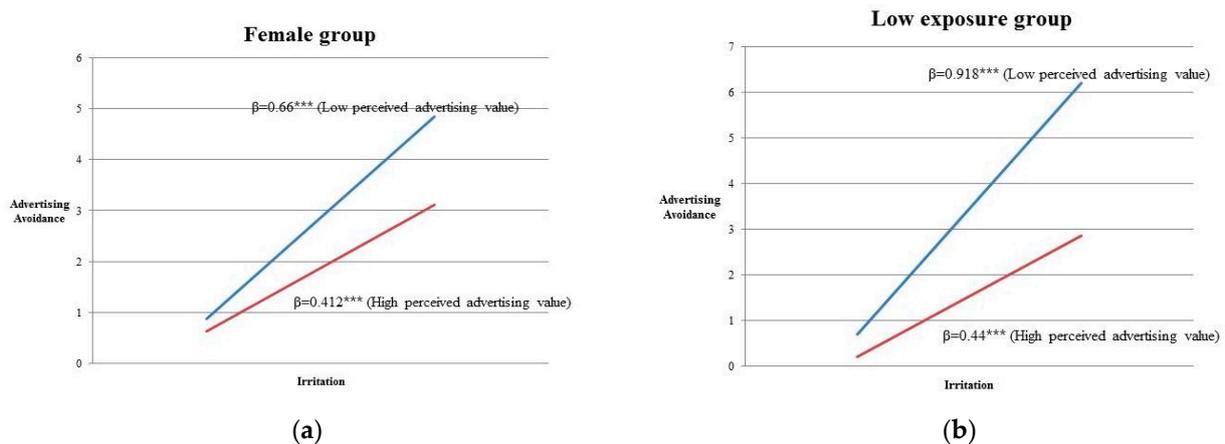
Variables	Perceived Intrusiveness	Privacy Concerns	Privacy Concerns	Irritation	Advertising Avoidance	Advertising Avoidance
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	3.560	3.970	3.054	3.625	1.459	3.238
Ubiquity	0.290 ***	0.380 ***	0.305 ***	0.130 **	0.209 ***	0.273 ***
Personalization	−0.174 ***	0.012	0.057	−0.077 *	0.032	−0.005
Customization	0.160 **	−0.014	−0.055	0.067	−0.046	−0.013
Informativeness	−0.150 *	0.090	0.129 *	−0.108 **	0.019	−0.033
Entertainment	−0.021	−0.046	−0.041	−0.205 ***	−0.151 ***	−0.251 ***
Social Interaction	0.006	0.160 **	0.159 **	−0.104 **	−0.014	−0.065
Social Integration	0.051	−0.351 ***	−0.364 ***	−0.021	−0.021	−0.031
Perceived Intrusiveness			0.257 ***	0.343 ***	0.052	0.220 ***
Privacy Concerns				0.096 **	0.148 ***	0.195 ***
Irritation					0.491 ***	
R <sup>2</sup>	0.079	0.128	0.199	0.440	0.541	0.404
Adjusted R <sup>2</sup>	0.062	0.111	0.182	0.426	0.529	0.398

Model 1: dependent variable = Perceived Intrusiveness; Model 2: dependent variable = Privacy Concerns; Model 3: dependent variable = Privacy Concerns including Perceived Intrusiveness as independent variable; Model 4: dependent variable = Irritation; Model 5: dependent variable = Advertising Avoidance; Model 6: dependent variable = Advertising Avoidance without Irritation as independent variable. Note: \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

**Table 8.** The results of hypotheses testing with hierarchical regression analysis.

Hypotheses	Paths	$\beta$ Coefficients	Standard $\beta$ Coefficients	S.E.	T	$p$	Results
H1	Irritation > Advertising Avoidance	0.491	0.495	0.047	10.421	***	Accepted
H2	Perceived Intrusiveness > Irritation	0.343	0.395	0.037	9.258	***	Accepted
H3	Perceived Intrusiveness > Privacy Concerns	0.257	0.278	0.045	5.705	***	Accepted
H4	Privacy Concerns > Irritation	0.096	0.103	0.041	2.341	0.020	Accepted
H6a	Ubiquity > Perceived Intrusiveness	0.290	0.187	0.083	3.484	0.001	Accepted
H6b	Ubiquity > Privacy Concerns	0.380	0.265	0.075	5.073	***	Accepted
H7a	Personalization > Perceived Intrusiveness	−0.174	−0.192	0.057	−3.035	0.003	Accepted
H7b	Personalization > Privacy Concerns	0.012	0.015	0.051	0.236	0.813	Rejected
H7c	Customization > Perceived Intrusiveness	0.160	0.159	0.068	2.338	0.020	Accepted
H7d	Customization > Privacy Concerns	−0.061	−0.069	0.091	−0.663	0.507	Rejected
H8a	Informativeness > Perceived Intrusiveness	−0.150	−0.143	0.077	−1.956	0.051	Accepted
H8b	Informativeness > Privacy Concerns	0.090	0.093	0.069	1.310	0.191	Rejected
H8c	Entertainment > Perceived Intrusiveness	−0.021	−0.020	0.078	−0.271	0.787	Rejected
H8d	Entertainment > Privacy Concerns	−0.046	−0.048	0.070	−0.659	0.510	Rejected
H9a	Social Interaction > Perceived Intrusiveness	−0.006	−0.005	0.076	−0.074	0.941	Rejected
H9b	Social Interaction > Privacy Concerns	0.160	0.165	0.068	2.345	0.020	Rejected
H9c	Social Integration > Perceived Intrusiveness	0.051	0.044	0.087	0.586	0.558	Rejected
H9d	Social Integration > Privacy Concerns	−0.351	−0.331	0.078	−4.496	***	Accepted

\*\*\*  $p < 0.001$ .



**Figure 1.** (a) Moderated mediation effect of perceived advertising value for women. (b) Moderated mediation effect of perceived advertising value in the low-exposure group.

Ubiquity played a negative role, and we empirically confirmed that it positively increased perceived intrusiveness ( $\beta = 0.290, p = 0.001 < 0.010$ ) and privacy concerns ( $\beta = 0.380, p = 0.000 < 0.010$ ). These results support H6 (both H6a and H6b). Personalization and customization empirically confirmed their distinct roles in advertising on mobile social media. For perceived intrusiveness, as anticipated, personalization showed a significant negative effect ( $\beta = -0.174, p = 0.003 < 0.010$ ), and customization had a significant positive effect ( $\beta = 0.160, p = 0.020 < 0.050$ ) on it, which supports H7a and H7c, respectively. For privacy concerns, the distinct roles of personalization and customization were also apparent in the  $\beta$  coefficients, where the coefficient of personalization was  $\beta = 0.012$  and the coefficient of customization was  $\beta = -0.014$ , as was consistent with our assumptions. However, both effects were statistically insignificant, thereby not supporting H7b and H7d.

Second, informativeness decreased perceived intrusiveness ( $\beta = -0.150, p = 0.050$ ), which supports H8a. The roles of entertainment in perceived intrusiveness and privacy concerns were both positive but not significant ( $\beta = -0.021, p = 0.787 > 0.050$ ;  $\beta = -0.046, p = 0.510 > 0.050$ ), and the effect of informativeness on privacy concerns was positive but not significant ( $\beta = 0.090, p = 0.191 > 0.050$ ). Therefore, Hypotheses H8b, H8c, and H8d were not accepted.

Finally, we found ambiguous results. For perceived intrusiveness, the effects of social interaction ( $\beta = -0.006, p = 0.941 > 0.050$ ) and social integration ( $\beta = 0.051, p = 0.558 > 0.050$ ) were both non-significant. However, for privacy concerns, social interaction ( $\beta = 0.160, p = 0.020 < 0.100$ ) showed a positive and significant effect, whereas social integration ( $\beta = -0.351, p = 0.000 < 0.010$ ) showed a negative and significant effect. Only the effect of social integration on privacy concerns was consistent with our assumption, which supported H9d; Hypotheses H9a, H9b, and H9c were rejected.

#### 5.4. Moderating Effects of Perceived Advertising Value

We assessed the moderating effects in the research model that were outlined by Edwards and Lambert [63] that resulted from factors such as gender, exposure frequency, and media usage-time. We leveraged the classic bootstrapping-based analytic procedure developed by Hayes [68] to scrutinize the conditional indirect effect with 5000 repeated samples. The results based on gender, exposure frequency, and media usage-time are listed in Table 9, which suggested that there are significant moderating effects of perceived advertising value on the path ranging from irritation to advertising avoidance among the women (see Figure 1a) as well as in the group with a low-exposure frequency (see Figure 1b). The above results of the moderated mediation analysis partially support H5. There were some significant differences in beta coefficients caused by the perceived advertising value for women (low perceived advertising value group,  $\beta = 0.660, p = 0.000 < 0.010$ ; high perceived advertising value group,  $\beta = 0.412, p = 0.000 < 0.010$ ;

$\Delta\beta = -0.248, p = 0.000 < 0.010$ ) and the low-exposure group (low perceived advertising value group,  $\beta = 0.918, p = 0.000 < 0.010$ ; high perceived advertising value group,  $\beta = 0.440, p = 0.000 < 0.010$ ;  $\Delta\beta = -0.478, p = 0.000 < 0.010$ ). H5a and H5b were supported. Finally, we show the results of our research model in Figure 2.

**Table 9.** Moderated mediating analysis of perceived advertising value.

Perceived Intrusiveness (X) → Irritation(M) → Advertising Avoidance (Y)					
Moderator Variable: Perceived Advertising Value	Stage		Effect		
Gender	First	Second	Direct	Indirect	Total
Male-195	$P_{MX}$	$P_{YM}$	$P_{YX}$	$(P_{YM} \times P_{MX})$	$(P_{YX} + P_{YM}P_{MX})$
Low perceived advertising value (−1 s.d.)	0.455 ***	0.784 ***	0.029	0.357 ***	0.386 ***
High perceived advertising value (+1 s.d.)	0.307 ***	0.670 ***	−0.005	0.206 ***	0.201 **
Differences between low and high	−0.148	−0.114	−0.034	−0.151	−0.185
Female-179	$P_{MX}$	$P_{YM}$	$P_{YX}$	$(P_{YM} \times P_{MX})$	$(P_{YX} + P_{YM}P_{MX})$
Low perceived advertising value (−1 s.d.)	0.278 ***	0.660 ***	0.058	0.183 ***	0.242 ***
High perceived advertising value (+1 s.d.)	0.446 ***	0.412 ***	0.146 *	0.184 ***	0.329 ***
Differences between low and high	0.169	−0.248 ***	0.087	0.001	0.088
<b>H5a: Accepted</b>					
Exposure Frequency	First	Second	Direct	Indirect	Total
Low exposure-164	$P_{MX}$	$P_{YM}$	$P_{YX}$	$(P_{YM} \times P_{MX})$	$(P_{YX} + P_{YM}P_{MX})$
Low perceived advertising value (−1 s.d.)	0.381 ***	0.918 ***	−0.025	0.350 ***	0.325 ***
High perceived advertising value (+1 s.d.)	0.437 ***	0.440 ***	0.059	0.192 ***	0.251 ***
Differences between low and high	0.055	−0.478 ***	0.084	−0.158 **	−0.073
High exposure-210	$P_{MX}$	$P_{YM}$	$P_{YX}$	$(P_{YM} \times P_{MX})$	$(P_{YX} + P_{YM}P_{MX})$
Low perceived advertising value (−1 s.d.)	0.391 ***	0.505 ***	0.052	0.197 ***	0.249 ***
High perceived advertising value (+1 s.d.)	0.325 ***	0.623 ***	0.052	0.203 ***	0.255 ***
Differences between low and high	−0.066	0.119	0.000	0.068	0.050
<b>H5b: Accepted</b>					
Use Time	First	Second	Direct	Indirect	Total
Low use time-237	$P_{MX}$	$P_{YM}$	$P_{YX}$	$(P_{YM} \times P_{MX})$	$(P_{YX} + P_{YM}P_{MX})$
Low perceived advertising value (−1 s.d.)	0.387 ***	0.678 ***	0.075	0.263 ***	0.338 ***
High perceived advertising value (+1 s.d.)	0.345 ***	0.528 ***	0.025	0.182 ***	0.207 **
Differences between low and high	−0.042	−0.150	−0.050	−0.081	−0.131
High use time-137	$P_{MX}$	$P_{YM}$	$P_{YX}$	$(P_{YM} \times P_{MX})$	$(P_{YX} + P_{YM}P_{MX})$
Low perceived advertising value (−1 s.d.)	0.361 ***	0.786 ***	0.010	0.283 ***	0.293 ***
High perceived advertising value (+1 s.d.)	0.421 ***	0.606 ***	0.126	0.255 ***	0.382 ***
Differences between low and high	0.061	−0.180	0.116	−0.028	0.088
<b>H5c: Rejected</b>					
Total Sample (374)	First	Second	Direct	Indirect	Total
	$P_{MX}$	$P_{YM}$	$P_{YX}$	$(P_{YM} \times P_{MX})$	$(P_{YX} + P_{YM}P_{MX})$
Low perceived advertising value (−1 s.d.)	0.38 ***	0.723 ***	0.049	0.275 ***	0.323 ***
High perceived advertising value (+1 s.d.)	0.366 ***	0.557 ***	0.051	0.204 ***	0.255 ***
Differences between low and high	−0.013	−0.166	0.003	−0.070	−0.068

\* =  $p < 0.1$ ; \* =  $p < 0.05$ ; \*\*\* =  $p < 0.01$ ; s.d. means standard deviation.

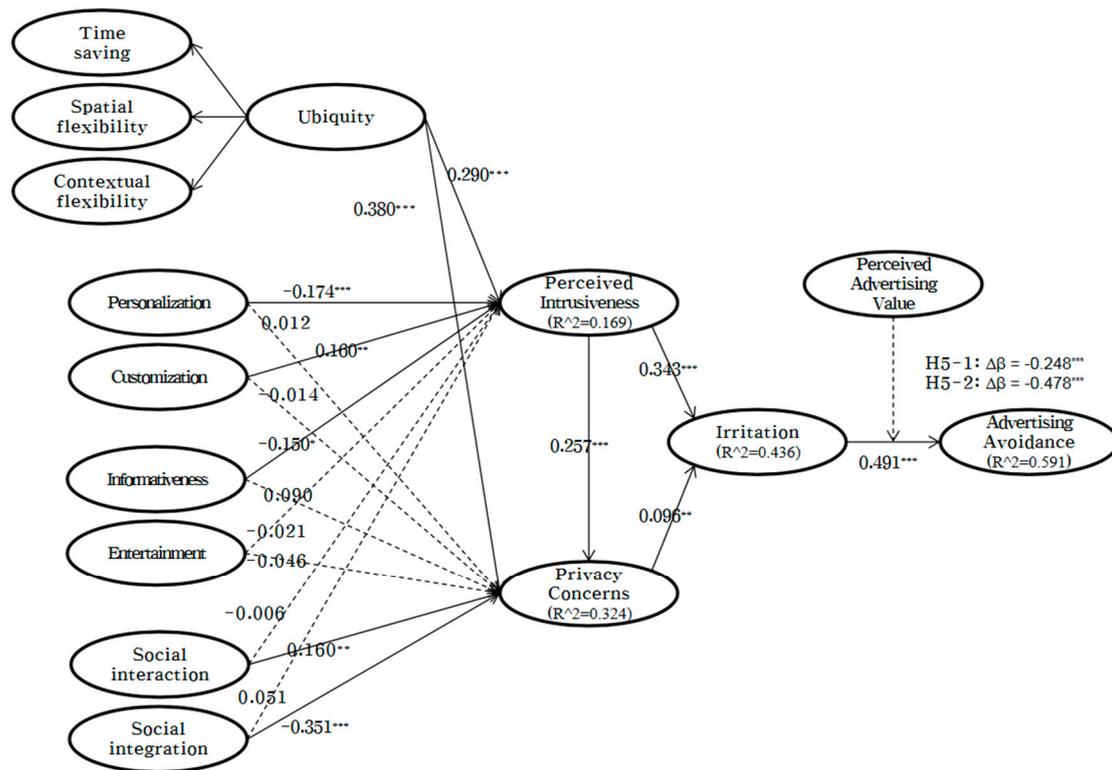


Figure 2. The results of the research model (\*\* $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ ).

## 6. Conclusions

In our study, we identified perceived intrusiveness, privacy concerns, and irritation as the determinants of advertising avoidance in mobile social media. The attributes of mobility consist of ubiquity and information tailoring. As expected, ubiquity plays a negative role in mobile social media, because it increases both perceived intrusiveness and privacy concerns. Customization and personalization played distinct roles in advertising. The distinct effects of personalization and customization on perceived intrusiveness are significantly confirmed by the results, showing that personalization decreased perceived intrusiveness and customization increase perceived intrusiveness. The effects of informativeness and entertainment are statistically insignificant in privacy concerns on mobile social media. Only informativeness decreased perceived intrusiveness. Social interaction and integration positively and negatively affect privacy concerns, respectively. However, the effects of social interaction and integration on perceived intrusiveness are both insignificant.

Both perceived intrusiveness and privacy concerns substantially aggravate advertising avoidance through irritation. When advertising is perceived as valuable, the feeling of interruption is effectively alleviated, thus resulting in less irritation [63]. We confirmed this view by our results for the women as well as for the group with less exposure, wherein the perceived advertising value effectively alleviated the effect of irritation on advertising avoidance. The results were also very similar to the results of studies insisting on the importance of the demographic variables in affecting advertising effectiveness [15,16,33–37]. We found strong mediation effects of irritation for perceived intrusiveness and privacy concerns related to advertising avoidance.

## 7. Contributions, Discussions and Implications

This study makes two main contributions to the understanding of advertising avoidance. First, for the uses of the general Internet [31] and social media [4,27], informativeness, entertainment, irritation, and advertising value were important antecedents of attitudes toward advertising. However, the important effects of perceived advertising value based on demographic characteristics have been underestimated. Demographic characteristics have

been mentioned in other advertising studies: gender has been shown to play an important role in shaping advertising receptivity [15,16,33,34]. Advertising repetition significantly increases advertising effectiveness [35–37]. Consumer attitudes toward advertising are shaped by the amount of time spent on social media [1]. The results of our empirical analysis show significantly negative moderating effects of perceived advertising value on the trend related to irritation to avoid advertising. This suggests that advertising avoidance was alleviated among the women and the group with low exposure to advertising. These results confirmed the importance of considering certain characteristics (gender, advertising exposure frequency, and media usage time) in advertising studies. In addition, there are practical implications about marketing segmentation of advertising for marketing managers. In particular, to reduce advertising avoidance and increase advertising effectiveness, implementable programs should be developed for the group with less exposure to advertising, and especially for females in mobile social media.

Irritation, as a negative attitude, plays a strong mediating role in how perceived intrusiveness and privacy concerns affect advertising avoidance, which is an empirical application of the TRA in mobile social advertising. With the proliferation of social media, privacy has become a major issue of contemporary debate in the information and communication technology field [12,22,23]. Perceived intrusiveness as the determinant for advertising avoidance appears in various advertising media platforms (conventional mass media, the Internet, mobile platforms, and SNS). Unlike other studies, we combined perceived intrusiveness and privacy concerns to investigate advertising avoidance in mobile social media. We found that perceived intrusiveness affects privacy concerns and advertising avoidance as mediated by irritation, which is another contribution to research on advertising avoidance.

Second, given the features of mobility and socialization, our research findings have implications for theoretical research and practical management. We found a negative role of ubiquity for advertising, suggesting that the challenges to privacy that are associated with advertising greatly exceeded the benefits of mobile convenience. This finding provides some cautions that may be useful for advertisers. When conducting advertising campaigns in mobile social media, advertisers should pay attention to privacy and ad intrusions. Although the mobility of social media facilitates access to advertising information, given the sensitivity of information, privacy, and intrusiveness, advertising exposure based on gender differences would be a sound strategy.

The effects of personalization and customization on perceived intrusiveness contrast with each other, which represents a meaningful contribution to information tailored to advertising in the ICT field. Prior studies have suggested that personalization and customization affect user attitudes and behavior [57,80,81]. Personalization and customization had a close relationship to perceptions of privacy, which in turn differently affect attitudes toward news websites according to “usage power.” “Power users” preferred system-initiated personalization with high privacy, but preferred user-initiated customization under low privacy [57]. In a study of location-based advertising experiments, user-tailored customization mediated by perceived intrusiveness was a more effective strategy than system-tailored personalization in inducing positive attitudes about location-based advertising [81]. We found significant differences in the effects of personalization and customization on advertising in mobile social media. More specifically, the coefficients of personalization are negative, whereas those of customization are positive. We statistically verified their direct effects, as interpreted by beta coefficients, on perceived intrusiveness and privacy concerns. Our results suggest some implications for the development of mobile social media in advertising. System-initiated personalization should be a primary concern in terms of privacy. However, in mobile social media, allowing for increasingly intensive personalization is a better way to alleviate advertising avoidance.

Informativeness alleviates perceived intrusiveness with statistical significance, but it increases privacy concerns with statistical insignificance. These findings suggest that having access to relevant and updated information in a timely fashion can decrease the

perception of intrusiveness. Frequent access to entertainment content in specific time zones is highly valuable for customers, in that increasing access to “infotainment” minimizes advertising avoidance.

Contrary to our expectations, social interaction and social integration yielded ambiguous results in the mobile social context. We found clear effects of social interaction and social integration on privacy concerns. These results indicate that socialization is much more associated with privacy concerns [23]. In prior advertising-related studies, social gratification was shown to affect attitudes toward advertising [4,27,45]. However, with serious leaks of user information [12,22,23] from social media that threaten user privacy, a comprehensive discussion about the “social role” should be initiated. We found that social interaction increases privacy concerns, thereby confirming the results of [82]. Privacy concerns increase when users are more active in a social network. Social integration improves advertising effectiveness by reducing privacy concerns, which ensures the positive aspect of socialization. Thus, when promoting advertising via mobile social media, any interaction between consumers via advertising elicits some privacy concerns. However, forming a virtual social community to improve “social integration” is an effective approach to reducing privacy concerns, which subsequently minimizes advertising avoidance.

## 8. Limitations and Future Study

Although we found several interesting results by studying advertising avoidance in mobile social media, our study has limitations. First, the research subjects were mostly undergraduate students who were mostly in their twenties, who cannot represent the whole population of the advertising audience. Cultural variables also have to be included in advertising research [14]. A much wider and deeper investigation that considers the broader population as well as cultural differences can ensure the validity of our study’s findings.

Second, researchers have proposed several determinants of advertising avoidance in diverse advertising contexts, such as perceived risk [27,34], ad clutter, and prior negative experience [60]. In our study, we investigated the relationships between perceived intrusiveness, privacy concerns, irritation, and advertising avoidance in terms of mobile social media. In future, combining experimental research and field studies to investigate advertising avoidance may increase the validity of the results and lead to interesting findings.

Finally, different types of SNS have different privacy controls. In addition, different SNS users have different privacy approaches. Future research on user privacy, power [57], and self-regulation [12] is needed to better tailor the effects of advertising via mobile social media.

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