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Keywords: personal innovativeness, mobile marketing, communications planning

Attention on mobile commerce

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Does personal innovativeness moderate the effect of irritation on consumers' attitudes towards mobile advertising?

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Abstract

The existing literature shows that there is a negative relationship between irritation and consumers' attitudes towards mobile advertising. In spite of this, little attempt has been made to reduce this effect. Thus, this study examines the moderating effect of personal innovativeness on the relationship between irritation and attitudes towards mobile advertising. The authors found a negative relationship between irritation and attitudes towards mobile advertising. It also was noted that there is a positive relationship between personal innovativeness and attitudes towards mobile advertising. Additionally, the study found that personal innovativeness moderates the relationship between irritation and attitudes towards mobile advertising. The findings imply that targeting individuals who are innovative has the potential for reducing the negative effect of irritation on attitudes towards mobile advertising.

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Introduction

The advancement in information, communications and technology is affecting every facet of human life. It is changing the way business activities are carried out. This has also contributed to the emergence of new disciplines such as mobile commerce (m-commerce), which involves the use of mobile applications to conduct business transactions. Because of its distinctive features and nature, m-commerce has received attention from both practitioners and scholars. Several studies have been conducted on m-commerce — some have studied it from mobile payments perspectives,¹ whereas others have concentrated on mobile advertising.^{2,3} Still others have studied from mobile shopping perspectives, etc.⁴ M-commerce was projected to contribute \$119 billion to global trade by the end of 2015.⁵

In recent times, mobile technologies have become a conduit of marketing campaigns and programmes. They are sometimes used as a stand-alone

Mobile marketing campaigns

channel for marketing communications or used to complement conventional advertising media such as radio, billboards, television, print, etc.⁶

As reported by the Mobile Marketing Association in 2010, some marketers now use short message services to disseminate marketing information to customers and persuade them to respond positively to their marketing programmes through activities such as couponing, gaming, etc.⁷

Consumer acceptance of mobile ads

In spite of this, advertisers are consistently finding ways through which they can effectively and efficiently carry out mobile advertising campaigns.⁸ This might account for the growing body of scholarly works on the subject. Their discussions have been centred on the consumers' attitudes towards and acceptance of mobile advertising. Irritation, perceived usefulness, informativeness, value corruption, credibility, permission and entertainment dominate the factors that affect consumer attitudes towards mobile advertising.^{8–10} Most of the existing literature indicates that there is a negative relationship between irritation and consumers' attitudes towards mobile advertising.^{11,12} However, some studies have shown that irritation in advertising can be reduced.¹³ In spite of this, little attempt has been made to address this negative effect in order to make mobile advertising effective and efficient so that advertisers can have value for their money and efforts.

Moderation by personal innovativeness

In attempting to address this problem, this study argues that personal innovativeness will moderate the effect of irritation on consumers' attitudes towards mobile advertising. In other words, personal innovativeness will reduce the negative effect of irritation on consumers' attitudes towards mobile advertising. This will mean that mobile advertisers will have to target consumers who are willing to try and accept new technologies. Personal innovativeness is simply defined by an individual's ability to be innovative.¹⁴ According to Prahalad and Ramaswamy,¹⁵ a consumer's ability to adapt to a new technology and its applications makes the consumer personally innovative. Individuals with higher levels of personal innovativeness are expected to develop more positive beliefs from new technologies.¹⁶ An innovative attitude towards technological innovations may enhance the perception of usefulness.¹⁷ Kaasinen¹⁸ concluded that people's attitude towards innovations will have an influence on the intention to use new technologies and on their behaviour, noting that the more personally innovative a consumer is the more able they are to adapt to new technologies and ideas.

Positive effect on attitudes to ads

Based on these premises, it can be concluded that personal innovativeness can reduce the negative effect of irritation on consumers' attitudes towards mobile advertising. It can also be concluded that personal innovativeness has a positive effect on consumers' attitudes towards mobile advertising. On the basis of the above, this study seeks to address the following research questions:

1. What is the relationship between irritation and consumers' attitudes towards mobile advertising?
2. What is the relationship between personal innovativeness and consumers' attitudes towards mobile advertising?
3. Can personal innovativeness moderate the effect of irritation on consumers' attitudes towards mobile advertising?

**Personal
innovativeness**

The literature review

Personal innovativeness is a concept that was introduced into the information systems literature by Agarwal and Prasad.¹⁹ Personal innovativeness can be defined as an individual's eagerness to give a new technology a go — that is, an individual's readiness to experiment with a new technology. Chao, Reid and Mavondo²⁰ discussed three types of consumer innovativeness: vicarious innovativeness, consumer innate innovativeness and domain-specific innovativeness. Hirschman²¹ explained vicarious innovativeness as a situation where a consumer is willing to pay attention to product or service information or concept in an advertisement without using the product or service. Consumer innate innovativeness is an inborn trait.²² Consumers with this trait can be considered as early adopters of innovation.²³ Domain-specific innovativeness, however, has been defined as the degree to which a consumer is willing to acquire knowledge about a product or service and adopt it in a specific context.²⁴

**Differences in
innovativeness**

This article follows the general concept of personal innovativeness²⁵ and in it no distinction is made. Personal innovativeness is critical to gaining insights into individuals' attitude towards and usage of technology innovation.¹⁹ It has been applied to understand consumers' online shopping intentions, mobile learning, wireless services adoption, mobile advertising, etc.^{25,26} Some studies have shown that personal innovativeness has a positive effect on individuals' attitudes and real behaviour towards product innovation.²³ In other areas like mobile learning, Mahat, Ayub and Wong²⁵ provided evidence that suggests that personal innovativeness impacts on students' mobile learning intentions. The existing literature appears to suggest that people differ in terms of their innovativeness.²³

**Moderating role of
personal
innovativeness**

The effect of irritation on consumers' attitude formation has been established.²⁷ De Pelsmacker and Van Den Bergh²⁸ postulated that irritation explains consumers' attitude towards advertising. In contrast, advertising has been noted to influence consumers' attitudes.²⁹ However, it becomes irritating when advertisers employ annoying and manipulative techniques in advertisements.³⁰ Consequently, countless studies have found a negative relationship between irritation and consumers' attitudes towards mobile advertising.^{11,12} This is partly because some consumers perceive it to be intrusive and sometimes the content of mobile advertisements are confusing.¹² Wang, Oh and Wang¹¹ investigated consumers' attitudes towards mobile advertising among 103 consumers from China and found that the informativeness of mobile advertising reduces perceived intrusiveness. The study also found that consumer privacy positively impacts on intrusiveness, and perceived intrusiveness increases consumers' irritation and avoidance of advertisements.

**Irritation and
advertising**

Although the sample was small, the findings have significant implications for research and practices. They imply the need to reduce the effect of irritation in order to improve acceptance. Similarly, Martí -Parreño, Sanz-Blas, Ruiz-Mafe and Aldas-Manzano¹³ examined the determinants of teenagers' attitudes towards mobile advertising and its impact on their adoption behaviour. The respondents consisted of

Innovativeness and advertising

355 teenagers from Spain. The authors found a negative relationship between irritation and attitudes towards mobile advertising. Again, they noted that the perceived usefulness reduces irritation. This suggests that irritation in advertising can be reduced, and therefore advertisers should find different ways to reduce the effect of irritation on consumers' attitudes towards mobile advertising.

Karahanna *et al.*³¹ postulated that most innovative consumers believe that new technologies are less complicated and therefore are willing to become early adopters. Similarly, Rogers²³ asserted that decidedly innovative individuals usually have more positive attitudes towards a new technology. This affects their knowledge of the technology and consequently their perceptions about the technology.³ Again, innovative consumers have shown a positive attitude towards risk.³² On the basis of these premises, it can be concluded that personal innovativeness can reduce the negative effect of irritation on consumers' attitudes towards mobile advertising and that it has a positive effect on consumers' attitudes towards mobile advertising.

Respondent profile

Methodology

This study used survey research design to gather information about respondents' characteristics and to make deductions from the data obtained.³³ Furthermore, the method has been found to be suitable for analysing a phenomenon, situation, problem or attitudes of individuals.³⁴ The total number of respondents used in the final analysis was 473. The sample consisted of individuals who frequently receive advertising messages on their mobile phones. They were made up of 57.6 per cent males and 42.4 per cent females. The ages of the respondents were as follows: the majority (65.0 per cent) of the respondents were aged 18–27 years; 24.7 per cent were aged 28–37 years; those who were aged 38–47 years constituted 7.4 per cent; and those aged 48–57 years accounted for 3 per cent.

Administering the survey

As the researchers wanted to select this category of people, the purposive sampling technique was used. This method has been found to be appropriate when a researcher wants to select a particular group of respondents.³⁵ Consistent with survey design, a questionnaire was used to collect the data. All the measures were adapted from the previous studies (see Table 1 for the measures and their sources, including those by Agarwal and Prasad,¹⁹ Xu,³⁶ and Taylor and Todd³⁷). To avoid ambiguity, the items were measured using a five-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree. The researchers, together with some students, administered the questionnaires to the respondents. Some of the respondents filled and returned the questionnaires instantly, whereas others submitted the filled questionnaires later. It took the researchers one month to collect the data.

Checking validity of results

To ensure reliability and validity of the measures, the composite reliability and the discriminant validity tests were performed. All the factor loadings and composite reliability values met the cut-off point 0.6 recommended by Hair, Black, Babin, Anderson and Tatham³⁸ — Table 1

Table 1: Reliability and validity of the construct and descriptive analysis

Personal innovativeness (Source: Agarwal and Prasad¹⁹); CR = 0.80; AVE = 0.51	
I am interested in new ideas (mean = 3.916), (SD = 1.154)	0.60
I am interested in news that deals with new development in technologies or discovery (mean = 3.899), (SD = 1.095)	0.74
I am interested using new technologies (mean = 3.872), (SD = 1.097)	0.70
In general, I am falling behind other people in terms of accepting something new (mean = 2.920), (SD = 1.321)	0.63
Irritation (Source: Xu), CR = 0.83; AVE = 0.6	
I feel that mobile advertising is irritating (mean = 2.798), (SD = 1.260)	0.65
Contents in mobile advertising are often annoying (mean = 2.798), (SD = 1.260)	0.75
Mobile advertisements disturb my use of the mobile devices (mean = 2.828), (SD = 1.124)	0.81
Mobile advertising disturbs me (mean = 2.861), (SD = 1.234)	0.71
Consumers' attitudes toward mobile advertising (Source: Taylor and Todd ,1995), CR = 0.84; AVE = 0.6	
I read any mobile advertising I receive on my phone (mean = 2.987), (SD = 1.271)	0.60
Mobile advertisements can provide pleasant experience for me (mean = 2.985), (SD = 1.141)	0.74
I have a positive attitude towards mobile advertising (mean = 2.962), (SD = 1.151)	0.70
Overall, I like mobile advertising (mean = 2.924), (SD = 1.227)	0.63

Table 2: Correlations among constructs and discriminant validity test

Constructs	ATT	IRR	PI
Attitude towards mobile ad(ATT)	0.6		
Irritation	0.032	0.6	
Personalization	0.278	0.002	0.51

p<0.001, AVEs are given in bold in the diagonal of the table.

contains the values. Furthermore, the discriminant validity test was conducted using two methods. The first was to check whether the factor loadings meet the acceptable threshold and the items load on their exact constructs.³⁹ The results show that these criteria were met — there were no cross loadings, and the factor loadings were all high as shown in Table 1. This also shows that there is no issue of common method bias.³⁹ The second method was to check whether the average variance extracted (AVEs) is higher than the squared correlations of the constructs.³⁹ Again, this criteria was met (see Table 2). Hierarchical regression was used to address the moderating effect of personal innovativeness on the relationship between irritation and attitudes towards mobile advertising. This method has been recommended for moderations.³⁸

Findings

Modelling results

As indicated earlier, a hierarchical regression analysis was used to address the research questions. To avoid multicollinearity issues, the variance inflation factor (VIF) of the variables was assessed, and they were all below the recommended threshold of 10.³⁸ In the first model, irritation and personal innovativeness were entered. The adjusted R^2 was significant — adjusted $R^2 = 0.163$, $p = 0.000$, $F(2,471) = 46.959$ (see Tables 3 and 4).

Table 3: Model fit and analysis of variance indicating the significance of the model

Model	Adjusted R^2	Change statistics				
		R^2 change	F change	df1	df2	Sig. F change
1	0.163	0.166	46.959	2	471	0.000
2	0.197	0.036	21.161	1	470	0.000

Table 4: ANOVA analysis showing the significance of the models

Model		df	Mean square	F	Sig.
1	Regression	2	36.188	46.959	0.000 ^a
	Residual	471	0.771		
	Total	473			
2	Regression	3	29.338	39.700	0.000 ^b
	Residual	470	0.739		
	Total	473			

^aPredictors: Personal innovativeness, Irritating.

^bPredictors: moderation of personal innovativeness.

Dependent variable: Attitude towards mobile advertising.

Table 5: Regression coefficients showing contribution of each variable to the model

Model		B	Std. error	Beta			VIF
1	Irritating	-0.165	0.041	-0.168	-3.985	0.000	1.001
	Personal innovativeness	0.415	0.048	0.367	8.711	0.000	1.001
	Moderation of personal innovativeness	-0.193	0.042	-0.190	-4.600	0.000	1.002

Dependent variable: Attitude towards mobile advertising.

irritation x personal innovativeness

Additionally, the beta coefficients for irritation ($\beta = -0.168$, $p = 0.000$) and for personal innovativeness ($\beta = 0.367$, $p = 0.000$) were all significant (see Table 5). This means that 17 per cent of the variance in individuals' negative attitudes towards mobile advertising is due to irritation. In contrast, personal innovativeness explains 37 per cent of individuals' positive attitudes towards mobile advertising. Thus, the results show that irritation significantly and negatively affects individuals' attitudes towards mobile advertising. It also means that personal innovativeness has a significant positive effect on individuals' attitudes towards mobile advertising.

Reduced irritation

In stage 2 of the hierarchical regression, the moderated variable (personal innovativeness $\times$ irritation) was entered. From the results, there was a significant change in R^2 — $\Delta R^2 = 0.016$, $p < 0.000$ (see Table 3).

This indicates that personal innovativeness moderates the relationship between irritation and attitudes towards mobile advertising. Further analysis shows that personal innovativeness significantly reduces the negative effect of irritation on attitudes towards mobile advertising by 19 per cent ($\beta = -0.190$, $p = 0.000$) (see Table 5).

Discussion of findings

Moderating irritation

This study examined the relationship between irritation and consumers' attitudes towards mobile advertising. Furthermore, it assessed the relationship between personal innovativeness and consumers' attitudes towards mobile advertising. Additionally, it examined the moderating effect of personal innovativeness on the relationship between irritation and attitudes towards mobile advertising. This study found a negative relationship between irritation and attitudes towards mobile advertising. Also, it found a positive relationship between personal innovativeness and attitudes towards mobile advertising. Additionally, the study found that personal innovativeness moderates the relationship between irritation and attitudes towards mobile advertising.

Avoiding advertisements

Irritation in mobile advertising has been discussed in the extant literature. Even in conventional advertising media, people have always found a way of avoiding some advertisements. For example, there are people who switch television channels to avoid some advertisements. Similarly, some individuals have found mobile advertising to be irritating and therefore have always shown negative attitudes towards it.³⁰ The findings of this current study corroborate some existing studies that have found a negative relationship between irritation and attitudes towards mobile advertising.^{11,12,30}

Targeting for effectiveness

Zernigah and Sohail¹² attributed the negative effect of irritation on mobile advertising to the intrusive nature of mobile advertising. That is, mobile advertising sometimes interferes, distracts and annoys the recipient. This is especially true when the content of the advertisement is not informative.⁴⁰ Again, if the advertisement is invasive and importunate, it is likely to irritate the recipient. Thus, targeting the recipient with relevant advertisement becomes necessary for effective and efficient mobile advertisement.¹³ Furthermore, reducing irritation in mobile advertisement and improving individuals' positive attitudes towards mobile advertising will require that advertisers target individuals who are innovative. According to Agarwal and Prasad¹⁹ individuals who are innovative have a higher tendency to accept innovation, and, as mobile advertising can be considered as an innovation in advertising, innovative people are likely to accept and show a positive attitude towards it.

Innovative individuals want discoveries

As found in this study, personal innovativeness has a positive relationship with attitudes towards mobile advertising and also reduces the negative effect of irritation on attitudes towards mobile advertising. This is probably because the respondents are interested in new ideas and new technologies. This is consistent with Rogers²³ and Im and Ha³ who found that people accept technologies because they themselves are eager to use new technologies. Such people see themselves as lagging behind other

people if they do not accept or use a new technology.¹⁹ Again, individuals who are innovative always want new discovery and will want to accept new developments in technology.¹⁹ In other words, a consumer who is more adventurous and daring about trying any new technology is considered as being innovative. This might explain why personal innovativeness reduces the negative effect of irritation on individuals' attitudes towards mobile advertising.

Reducing negative effects

Conclusions and implications

On the basis of these findings, the study concludes that irritation has a negative influence on people's attitudes towards mobile advertising. However, the negative effect is reduced when advertisements are targeted towards innovative individuals. The study also concludes that there is a positive relationship between personal innovativeness and consumers' attitudes towards mobile advertising. This implies that mobile advertisers must be selective and target consumers who are innovative in employing mobile advertising. Mobile advertisers must not just send advertisements to consumers' mobile devices, but must identify those consumers willing to pay attention to product or service information or concept in advertisements but might not necessarily use the product or service²¹ or consumers with innate innovativeness.²² They can also target consumers who are willing to acquire knowledge about a product or service and adopt it in a specific context. These attributes of consumers can be captured through consumer surveys.

Impact of purchasing power

Limitations

One of the limitations of this study is that it did not account for the purchasing power of the respondents — this can influence their attitudes and moderates the effect of irritation on mobile advertising. Future studies must address this limitation. Again, this study used a non-probability sampling technique, which has its effects on the representativeness of the sample. Thus, future studies should employ a probability sample technique.

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