

# Mobile Advertising Effectiveness: A Digital Marketing Perspective on Consumer Attitudes

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## Abstract

The digital marketing literature has shown that there are various variables affecting attitude towards mobile advertising. Given the importance of the subject in Tunisia especially during the COVID period, this article aims to test the effect of informativeness, creativity, value, credibility, frequency and irritation on the attitude of consumers with regard to mobile advertising. Thus, we administered a questionnaire to 262 individuals. The results show that only frequency, credibility and value affect attitude towards mobile advertising.

**Key words:** Mobile marketing, mobile advertising, attitude towards mobile advertising

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## Introduction

The number of mobile phones and smartphones sold worldwide continues to increase and this is mainly due to people' mobility. Indeed, mobile phones, particularly smartphones, have replaced not only landline phones, but also office and laptop computers. This is certainly due to the evolution of these devices and their operating systems, which has considerably improved their technical capacities as well as their speed of execution of tasks simultaneously. Today, marketers have taken advantage of the inevitable presence of the mobile phone in the lives of consumers as they always seek to reach them in an interactive, direct and personalized way (Liu et al. 2012). Compared to other communication channels, it can be noted that these tools make it possible to reach consumers by spending much less money. Thus, characterized by its recency and rapid evolution due to the increase in business spending on this type of advertising in recent years (Statista, 2021), Kotler and Keller (2016) consider that mobile advertising is now one of the of the most important elements of the communication mix.

The first research in this area was conducted in the early 2000s to study the use of SMS as a means of advertising communication allowing companies to target their customers in a precise, direct and individual way (Tsang et al. 2004). However, these studies were not specific to behavior towards mobile advertising and the researchers always resorted to models and theories that have already existed in the literature such as the Ducoffe web advertising model (1996). Nevertheless, these theories do not take into account the specificities of mobile phones and smartphones (Kim and Han, 2014; Liu et al. 2012; Tsang et al. 2004; Xu, 2006; Yang et al. 2013). Within the same line of thought, Tsang et al. (2004) found that incentives, permission and several other variables significantly affect consumers' attitude towards mobile advertising. Thus, most researchers in the field of mobile advertising have relied on the study by Tsang et al. (2004) who, in turn, used the web advertising model of Ducoffe (1996) (Kim and Han, 2014; Liu et al. 2012; Xu, 2006; Yang et al. 2013). Given the current importance of this area of research and its future prospects in Tunisia, especially after the Covid-19 pandemic (Modgil et al. 2021; Nugroho and Utomo, 2024; Kaban et al. 2024; Laila et al. 2024), a qualitative study was conducted with 16 individuals to understand the determinants of Tunisian consumers' attitudes. The results of these semi-structured interviews have shown that only irritation, frequency, creativity, informativeness, value and credibility determine the attitude of Tunisian consumers (Abdelkefi, 2025). This led us to ask about the effect of these determinants on the attitude of consumers towards mobile advertising. This is the aim of this paper.

This article is composed of three sections. It starts with the literature review section. This section deals with mobile advertising and its relationship with the communication mix. Then, we present the methodology followed by the analysis and the presentation of the findings. Finally, we present the conclusion along with implications, limitations and future research prospects.

## Literature review and Hypotheses

### *Mobile advertising*

According to the «Wireless Advertising Association», mobile advertising is the use of mobile networks to transmit advertising messages via wireless communication devices such as mobile phones (Chen and Hsieh, 2012).

Business spending on advertising via mobile phones has experienced strong global growth between the years 2010 and 2021. They went from 743 million dollars in 2010 to 138,147 million dollars in 2018; they reached 233,500 million dollars in 2021 and will reach around 500,000 in 2024 (Statista, 2019; Statista, 2021). When it comes to spending, mobile advertising is the most used type of advertising by businesses globally with a US\$6 billion gap compared to TV ads. In the United States, 43% of corporate spending on advertising is dedicated to mobile ads (eMarketer, 2018).

### *Mobile advertising: a crucial element of the communication mix*

In the literature, the communication mix of companies initially contained very few communication tools. Kitchen (1993) presented four communication tools namely: Advertising, Sales Promotion, Personal Selling and Public Relations. Then, Kotler and Armstrong (2008) introduced a fifth communication tool which is “direct marketing”. According to Kotler and Keller (2016), the communication mix contains eight elements which are: advertising, sales promotion, personal selling, public relations, sponsorship, direct marketing, e-marketing and mobile marketing. According to Lamb et al. (2018), there are several mobile-specific advertising communication tools that can be used to deliver mobile advertisements. However, the most used tools are: SMS, MMS, Bluetooth, WAP, QR codes and advertisements on mobile websites and in mobile applications. The appearance of these advertising tools as well as the evolution of mobile marketing and the mobile Internet which allows consumers to be permanently connected without geographical barriers have favored the progressive integration of mobile advertising as an element of the communication mix of companies (Kotler and Keller, 2016).

### *Hypotheses Development*

In this current work, we intend to test the impact of the determinants of attitude towards mobile advertising in general and not the attitude towards a particular type of mobile advertising.

The first hypothesis is concerned with the “irritation” variable. In general, irritation in the field of advertising is defined as a negative feeling of annoyance felt after receiving an annoying or irritating advertising message (Tricahyono et al. 2019). With regard to advertisements on mobile phones, consumers may feel confused or uncomfortable, especially when it comes to advertisements that are not interesting to them, which can lead to negative reactions (Haghirian et al. 2005). Therefore, the feeling of irritation caused by an unwanted mobile advertisement can affect the valuation of the advertisement or even of the company, can harm its brand image and can also lead to the avoidance of the advertisement by consumers (Loureiro, 2018). In other words, this is a phenomenon similar to inconvenience, which means that mobile users tend to refuse irritating or annoying mobile advertisements when they feel that the advertisement does not respect their preferences and their privacy (Haghirian and 2005). This includes advertisements that are perceived to be too long or video advertisements that automatically play with a very high pitch (Loureiro, 2018).

Several authors have investigated the effect of irritation in the field of advertising (Abdelkefi and Ben Brahim, 2015; Aslam et al. 2016; Ducoffe, 1996; Kim and Han, 2014; Liu et al. 2012; Loureiro, 2018; Tsang et al. 2004; Wang and Genç, 2019; Xu, 2006; Yang et al. 2013). Research findings in the field of mobile advertising have shown that intensive exposure to banner ads and pop-up ads can lead to feelings of irritation and avoidance (Abdelkefi and Ben Brahim, 2015). Similarly, receiving spam SMS is considered annoying and unacceptable by consumers (Aslam et al. 2016). The literature ranks irritation among the factors that influence the attitude towards advertising. This variable has a negative effect on the attitude in the field of advertising in general and in the field of mobile advertising (Ducoffe, 1996; Wang and Genç, 2019). Thus, this is our first hypothesis:

### **H<sub>1</sub>: Irritation has a negative impact on consumers' attitude towards mobile advertising**

The second variable is the frequency of exposure to advertising messages which is defined as the number of times an individual is exposed to an advertising message. Indeed, according to some researchers like Haghirian et al. (2005), the repetition of the advertising message improves audience recall. In other words, the more the consumer watches or listens to an advertising message, the more he becomes familiar with its content and with the brand or with the issuing company. This is why the frequent repetition of an advertising message significantly improves the knowledge and recall among consumers (Schmidt and Eisend, 2015).

On the other hand, according to Haghirian et al. (2005), a high frequency of exposure is likely to negatively affect the attitude of receivers towards mobile advertising. This is because this advertisement will be perceived as unwanted and annoying; which devalues advertising and generates negative responses from the consumers (Haghirian et al. 2005). In addition, the more restricted the advertising communication channel, such as the mobile phone or the smartphone, the faster the advertising clutter is reached, especially with large mobile ads such as banner ads and pop-ups (Schmidt and Eisend, 2015). According to Yaakop et al. (2012), when we speak of ad clutter or a high frequency of exposure to advertisements, we are talking about the irritation of consumers because ad spamming leads to a feeling of rejection and violation of the consumer privacy. Subsequently, by referring to the literature review and the results of the qualitative study, we assume that the frequency of advertising exposure acts positively on irritation and negatively on the attitude of consumers towards mobile advertising (Haghirian et al. 2005; Abdelkefi, 2025). Hence,

**H<sub>2</sub>: The frequency of exposure to advertising has a positive effect on irritation.**

**H<sub>3</sub>: The frequency of exposure to advertising has a negative effect on consumers' attitude towards mobile advertising.**

Creativity has become a necessary element in the field of advertising to position itself in the mind of the consumer and to distinguish itself from the advertisements of the competition and subsequently improve the perception of advertising (El-Murad and West, 2003).

Advertising creativity is “the extent to which an advertisement is original and unexpected” (Lee and Hong, 2016, p. 364).

On the other hand, advertising creativity plays an important role in the planning and implementation of advertisements by companies. It is considered a key success factor in the field of advertising creation and advertising in general. Thus, by communicating an advertising message, companies must make a combination between advertising creativity and the characteristics and specificities of the products on the one hand and the promise and the competitive advantage on the other.

Creative advertising messages are more appreciated by consumers than ordinary non-creative advertising messages and attract their attention since they are unique and create added value; which is perceived as an appreciable and valuable effort by consumers and the general public (Lee and Hong, 2016; Azman et al. 2025; Isabell and Luqman, 2025). However, advertising creativity increases the risk. In other words, the more the advertisement is creative, the more it would be risky for the companies to establish it because the elements of creativity can be misinterpreted or misperceived by the audience or by the consumers (El-Murad and West, 2003).

According to the findings of several studies in the field of advertising, advertising creativity improves the effectiveness of advertising by calculating the return on investment and by making surveys of consumers who have shown a greater purchase intention in the case of creative advertisements (El-Murad and West, 2003; Lee and Hong, 2016; Azman et al. 2025; Isabell and Luqman, 2025). An advertisement perceived as creative is likely to improve the attitude of consumers towards the brand and towards the advertisement (Bauer et al. 2005). So we can say that:

**H<sub>4</sub>: Advertising creativity has a positive effect on consumer's attitudes towards mobile advertising**

According to Ducoffe (1996), informativeness has been defined as the ability of the advertising message to provide information-rich communications for consumers to be aware of new products, services and promotional offers of the company. Therefore, the usefulness of the advertising message increases when the information communicated in it is perceived as important and relevant by consumers (Xu, 2006). The latter favor advertising communications that are likely to help them in the process of seeking information, because in general, consumers always want to be aware of news, especially when it comes to their favorite brands (Abdelkefi and Ben Brahim, 2015). The informative character of the advertising message has a great influence on its valuation, which makes it possible to say that informativeness is considered as a major influence and a valuable call to action in the field of marketing in general and mobile marketing (Varshney, 2003). According to Bauer et al. (2005), informativeness positively influences the acceptance of mobile users to receive advertisements on their mobile phones. In the field of mobile advertising, it is much easier for consumers to judge whether mobile advertising provides relevant information or not since the mobile phone or smartphone is a device that is mostly in their hands and the consultation of advertising messages is done instantaneously. If the search for information is among the priorities of consumers when consulting a mobile advertising message, then their attitude must improve by finding the information they are looking for in this message (Bauer et al. 2005). Furthermore, we can state that:

**H5: Informativeness has a positive effect on consumers' attitude towards mobile advertising**

As for value, it consists in what consumers perceive from the company's offer in advertising communication by comparing it to their expectations and taking into account cumulative experience, past exchanges or transactions between consumers and the company. According to Arora and Agarwal (2019), it is likely to influence consumers' actions in the world of advertising either positively or negatively. In addition, the value of advertising can be used to measure the effectiveness of an advertising campaign which is considered as a satisfaction index making it possible to identify how the audience or consumers valued the advertisement and to test the importance and the utility of this publicity for them (Mayer, 1991). If the advertisement is of high value, important and useful for consumers, it will generate positive reactions (Ducoffe, 1996).

According to Ducoffe (1996), several factors can determine the value of advertising such as the advertising medium and the media context. Thus, companies must select in a studied way the most suitable advertising medium to broadcast advertising communication according to its objective and according to the product itself to target an audience that will be interested in the product and/ or service, which will allow them to improve the effectiveness of the advertising campaign. In the field of mobile advertising, Liu et al. (2012) asserted that it is important to measure the effectiveness of the mobile advertising campaign as well as the effect of advertising on the decision-making process among consumers. According to these authors, since mobile phones and smartphones allow instant interactivity and the measurement of the click-through rate on mobile advertisements, it has become easier to estimate whether the advertisement was interesting, useful and of value for consumers or not. The value of advertising has been used in several research studies to study its influence on consumers' attitude (Abdelkefi and Ben Brahim, 2015; Arora and Agarwal, 2019). Thus, we can say that:

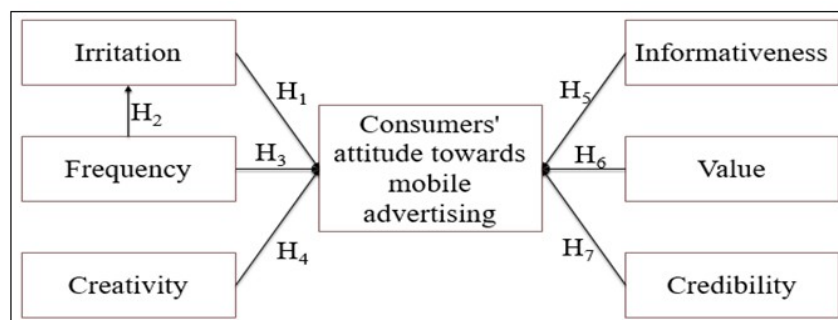
**H6: The value of mobile advertising has a positive effect on consumer attitudes towards mobile advertising**

In marketing, credibility is based on the extent to which the consumer believes that the seller or sales force member has the expertise and honesty necessary to complete the exchange or transaction as promised and in a reliable and effective manner (Pavlou and Stewart, 2000). Therefore, if consumers find that the company's advertising messages lack credibility, they will eventually stop taking them seriously (Bauer et al. 2005).

According to Tricahyono et al. (2019), the advertising medium and source are likely to influence the credibility of the advertising message. The results of the study done by Marshall and WoonBong (2003) showed that the perceived credibility of the printed advertising message is more important than that of the advertising message broadcast on the Internet. This is because printed media are perceived as more credible sources than digital sources, unless the company that is broadcasting the advertising communication has a strong brand image.

The credibility of advertising affects its valuation by consumers, which then affects their reactions (Brackett and Carr, 2001). Considering the results of previous research that proved the existence of a positive effect of credibility on the attitude towards advertising (Abdelkefi and Ben Brahim, 2015; Tricahyono et al. 2019; Wang and Genç, 2019), we can assume that:

**H7: The credibility of mobile advertising has a positive effect on consumers' attitude towards mobile advertising**



**Figure 1. Conceptual model**

## Methodology

### Sample

In order to achieve the objective of this paper, we administered a questionnaire to 300 individuals but only 262 responses were retained. The questionnaire was distributed face-to-face and online. The characteristics of the sample are presented in Table 1. Our sample is made up of 66.4% women and 33.6% men. The majority of respondents belong to the age group [25-34[, i.e. 53.4%. We also notice that more than 64% of respondents (64.1%) hold a university degree. According to the same table, people who receive less than 1000 DT per month represent 56.8% of the sample. Among them, 97 people (37% of the sample) have an income of less than 500 DT and 52 people (19.8% of the sample) have a monthly income between 500 and 1000 DT.

**Table 1: Sample Characteristics**

	Respondent number	%
<b>Gender</b>		
Female	184	66.4%
Male	88	33.6%
<b>Age</b>		
[18-24[	51	19.5%
[25-34[	140	53.4%
[35-44[	48	18.3%
[45-54[	17	6.5%
55 et +	6	2.3%
<b>Instruction level</b>		
Unfinished primary	3	1.1%
Primary completed	4	1.5%
Unfinished secondary	11	4.2%
Secondary completed	14	5.3%
Uncompleted university	62	23.7%
University completed	168	64.1%
<b>Monthly income</b>		
[0-500[	97	37%
[500-1000[	52	19.8%
[1000-1500[	51	19.5%
[1500-2000[	24	9.2%
2000 et +	38	14.5%

### Measures

An in-depth review of the literature was carried out to be able to choose the most appropriate and adequate measurement scales for our variables (Abdelkefi, 2025). *The irritation* was measured by the scale of Kim and Han (2014). This scale has been used by several researchers such as Lee et al. (2017) and Martins et al. (2019) and has three items. For *frequency*, we opted for the scale proposed by Akpojivi and Bevan-Dye (2015) in the same field of research and which is composed of three items. For *creativity*, we chose the measurement scale proposed by Lee and Hong (2016) and used in the field of advertising on social networks. Its four items have been adapted for use in mobile advertising. For the *informativeness* scale, we chose that of Kim and Han (2014), which is made up of four items and used in fields similar to ours (Abdelkefi and Ben Brahim, 2015; Martins et al. 2019). The *value of advertising* was measured by the scale proposed by Ducoffe (1996) which is composed of three items. This scale has been used by several researchers in the field of advertising in general and mobile advertising (Brackett and Carr, 2001; Kim and Han, 2014; Liu et al. 2012; Martins et al. 2019). For the *credibility* of mobile advertising, we adapted the measurement scale proposed by Xu (2006) and composed of three items. It has been used by several researchers in the fields derived from advertising and its reliability was striking (Abdelkefi and Ben Brahim, 2015; Yang et al. 2013). For *attitude towards mobile advertising*, we used the scale of Yang et al. (2013) that is composed of four items.

## Analysis and results

### Analysis

The analysis in this article went through three stages. We started with a principal component analysis on SPSS 19 in order to verify the unidimensionality of the measurement scales and the reliability of these instruments. The results are shown in Table 2.

**Table 2: Scales measures**

Variable	Items	Communality	$\lambda_i$	Alpha
<b>Irritation</b>	I feel that mobile advertising is irritating	0.778	0.736	0.950
	I feel that mobile advertising is annoying	0.875	0.804	
	I feel that mobile advertising is intrusive	0.798	0.739	
<b>Frequency</b>	I am happy with the volume of mobile advertising I receive.	0.895	0.651	0.941
	It annoys me that I receive unsolicited mobile advertising.	0.913	0.675	
	I am sensitive towards receiving mobile advertising.	0.875	0.701	
<b>Creativity</b>	The mobile advertising is unique	0.889	0.801	0.964
	The mobile advertising is really out of ordinary	0.910	0.827	
	The mobile advertising is intriguing	0.900	0.803	
	The mobile advertising is surprising	0.915	0.819	
<b>Informativeness</b>	Mobile advertising provides timely information on products or services	0.769	0.677	0.928
	Mobile advertising supplies relevant information on products or services	0.787	0.750	
	Mobile advertising is a good source of information	0.874	0.732	
	Mobile advertising is a good source of up to date products or services information	0.858	0.739	
<b>Advertising value</b>	I feel that mobile advertising is useful.	0.916	0.759	0.965
	I feel that mobile advertising is valuable	0.946	0.801	
	I feel that mobile advertising is important	0.945	0.795	
<b>Credibility</b>	I use personalized mobile advertising as a reference for purchasing.	0.778	0.691	0.886
	I trust mobile advertising.	0.875	0.662	
	The content provided by mobile advertising is credible	0.798	0.653	
<b>Mobile advertising attitude</b>	I am favorable toward mobile advertising	0.899	0.635	0.966
	I like mobile advertising.	0.925	0.678	
	I am satisfied with mobile advertising.	0.926	0.682	
	Overall, mobile advertising is positive	0.882	0.612	

In the second step, we established a measurement model including all of the variables. We therefore used the Maximum Likelihood method and we started by eliminating outliers. After performing the Bootstrap procedure, we made the necessary modifications and obtained an adequate adjustment:  $\chi^2/df = 1.941$ , RMSEA = 0.061, RMR = 0.070, GFI = 0.869, AGFI = 0.830, CFI = 0.984, TLI = 0.968 and NFI = 0.973. We checked the reliability of the model by calculating the Joreskog Rho and the convergent validity through the Mean-Variance extracted. The values found for the rho exceed 0.7, which leads us to affirm the satisfaction of the reliability. As for the VME values, the results show that they exceed 0.5, confirming that the convergent validity is verified. For the discriminant validity, we calculated the values of the square roots of the AVEs of each construct. We found that these values exceed the correlations between the variables, which leads us to conclude that our discriminant validity is verified.



**Table 3 : Measurement model results**

Variable	P	AVE	Credibility	Irritation	Informativeness	Frequency	Creativity	Advertising value	Mobile advertising attitude
<b>Credibility</b>	0.895	0.794	<b>.891</b>						
<b>Irritation</b>	0.955	0.828	-.788	<b>.909</b>					
<b>Informativeness</b>	0.933	0.718	.829	-.748	<b>.847</b>				
<b>Frequency</b>	0.946	0.854	-.823	.839	-.779	<b>.924</b>			
<b>Creativity</b>	0.968	0.858	-.823	-.749	.736	-.740	<b>.926</b>		
<b>Advertising value</b>	0.947	0.860	.739	-.733	.743	-.754	.664	<b>.927</b>	
<b>Mobile advertising attitude</b>	0.968	0.815	.868	-.806	.789	-.879	.753	.788	<b>.902</b>

In the last step, we established a structural model that allowed us to test the hypotheses. In this model, the attitude towards advertising is directly linked to its determinants. As we did for the measurement model, we started by eliminating outliers, carrying out the bootstrap operation and making the necessary modifications. The adjustment indices found are satisfied:  $\chi^2/df = 1.952$ , RMSEA = 0.065, RMR = 0.070, GFI = 0.861, AGFI = 0.823, CFI = 0.970, TLI= 0.965 and NFI = 0.943.

### Results

The results show that the link between irritation and attitude is not significant ( $p = 0.748$ ), indicating that irritation has no effect on the attitude towards mobile advertising. Therefore, we reject hypothesis H<sub>1</sub>. This result opposes that found by Wang and Genç (2019) but confirms that found by many researchers such as Aslam et al. (2016), Kim and Han (2014), Tsang et al. (2004) or Xu (2006). On the other hand, we found a significant ( $p = 0.0001$ ) and negative (CR = -4.315) effect. So, it can be said that the frequency has an effect on the attitude towards mobile advertising. Therefore, we accept H<sub>2</sub>. These results are consistent with the logic and the research work of Haghirian et al. (2005) and Schmidt and Eisend (2015).

Regarding the effect of frequency on irritation, we found a significant ( $p = 0.001$ ) and positive effect. We therefore support hypothesis H<sub>3</sub> and conclude that frequency has a significant effect on irritation. This result is opposed to that found by Loureiro (2018) or Wang and Genç (2019). For the effect of informativeness on attitude, we found it to be non-significant, indicating that informativeness has no effect on the attitude towards mobile advertising. Thus, we reject hypothesis H<sub>4</sub> and align with the research of Tricahyono et al. (2019) and Xu (2006). Moreover, we did not find a significant effect of creativity in relation to mobile advertising ( $p = 0.207$ ). Moreover, we reject the H<sub>5</sub> hypothesis and we align ourselves with the results of the work of Moldovan et al. (2019). As for the effect of value on attitude, we found a positive (CR = 3.255) and significant ( $p = 0.001$ ) link. We can therefore see the existence of an effect of value on attitude and we confirm that hypothesis H<sub>6</sub> is verified. This appears consistent with the results found in previous studies in this same context such as those of Abdelkefi and Ben Brahim (2015). For hypothesis H<sub>7</sub>, the results show that there is a significant and positive effect (CR = 4.375) of credibility on the attitude towards mobile advertising. We then join some researchers such as Abdelkefi and Ben Brahim (2015), Tricahyono et al (2019), Tsang et al. (2004), Wang and Genç (2019), Xu (2006) and Yang et al. (2013).

**Table 4: Hypothesis Results**

			Estimation	C.R.	P	Accepted/rejected
<b>Attitude</b>	<==	<b>Irritation</b>	-.020	-.321	.748	Rejected
<b>Attitude</b>	<==	<b>Frequency</b>	-.421	-4.315	***	Accepted
<b>Irritation</b>	<==	<b>Frequency</b>	.886	17.580	***	Accepted
<b>Attitude</b>	<==	<b>Informativeness</b>	-.010	-.155	.877	Rejected
<b>Attitude</b>	<==	<b>Creativity</b>	.058	1.262	.207	Rejected
<b>Attitude</b>	<==	<b>Advertising value</b>	.156	3.255	.001	Accepted
<b>Attitude</b>	<==	<b>Credibility</b>	.428	4.375	***	Accepted

### **Results discussion**

The main objective of this article is to test the effect of attitude determinants on the attitude towards mobile advertising. The results of our quantitative study allowed us to conclude that the attitude of consumers is influenced by three variables, namely credibility, frequency and value. According to our results, the credibility and the value of mobile advertising positively affect the attitude of consumers towards the advertisement in question while the frequency affects it negatively. This means that the more the advertisement is perceived as credible, reliable, valuable, of great importance and useful, the more the attitude of the consumers towards this advertisement becomes positive; which subsequently improves purchase intention (Abdelkefi and Ben Brahim, 2015).

In Tunisia, four types of mobile advertising are the most used, namely: SMS, advertising banners, pop-ups and integrated advertisements. To this end, our results have indicated that the attitude of consumers towards mobile advertisements in Tunisia is negative in most cases and that most consumers wish to no longer receive them in the future since this type of advertisement is perceived as irritating and undesirable. This is particularly the case of banner ads and pop-ups which are perceived as the most irritating since they interrupt the use of mobile phones and smartphones especially when users are reading articles or playing games.

In the case of SMS advertisements, the results showed that this type is much more irritating in the case of unsolicited SMS messages received from companies that do not respect consumer privacy (Haghirian et al. 2005). In this regard, all respondents stated that they receive unsolicited advertising SMS. On the other hand, the advertising SMS received from the shops and the companies preferred by consumers are not perceived as annoying since the customers intentionally gave their telephone numbers in order to receive notifications concerning the novelties of these brands, to be up-to-date and not miss opportunities.

Ads integrated into applications such as Facebook and Instagram are the least irritating and the best perceived by customers, because of their design, which is consistent with the content of these applications (Li et al. 2018). This type of advertising is perceived as creative and out of the ordinary by consumers since it is easy to skip it because these ads do not take up screen space but appear as posts or stories in the apps such as Facebook, Instagram and Snapchat and can be navigated through in the same way that scrolling up posts are zapped or tapping the screen in the case of stories (Lee et al. 2016).

The results also showed that most consumers believe that companies in Tunisia do not make enough research and creativity efforts for the case of mobile advertisements and that the latter are perceived as "copy-paste" of advertisements from other companies. This lack of credibility has resulted in feelings of rejection among consumers.

### **Conclusion**

From a managerial point of view, this paper sheds light on the levers of action that companies are called upon to cultivate internally to try to improve consumers' attitudes towards mobile advertising. First, our study provides an overview of the determinants that can influence the attitude of Tunisian consumers towards mobile advertising. Policy makers and marketers are called upon to moderate the number of mobile ads sent to their targets, especially in the case of SMS ads, banner ads and pop-ups because, according to our research, these types of advertising are the most irritating and the least appreciated by consumers. They are also invited to avoid unsolicited commercial messages. Indeed, unsolicited advertising SMS disturb consumers in a considerable way. Moreover, and because of the laws that protect the privacy and personal data of citizens in Tunisia, marketing managers are called upon to find ways to convince consumers to accept to receive advertising messages. Financial incentives are among the most effective means of inducing consumers to accept the receipt of mobile



advertisements. It is also better for marketers to design credible advertising messages and pay attention to the trustworthiness of their content in order to improve the attitude towards such type of advertising and subsequently of the purchase intent. We invite them to use in-app and SMS ads rather than banner ads and pop-ups. Banner ads and pop-ups in apps and on mobile websites are the two most annoying types for consumers according to the results of our study. Thus, it is recommended to reduce the use of these two types of mobile advertising and to be careful with the integration of mobile advertising in the company's communication mix. Marketers in Tunisia are invited to make more efforts in the field of mobile advertising since nearly 72% of respondents said that the effort of Tunisian companies in this area is insufficient.

However, as with any marketing research, our findings cannot be translated without taking into account the limits of this work, which lead to new avenues of reflection and open as many new avenues for future research. Indeed, the first limit concerns the variables of the model which are limited only to the attitudinal component of consumers. The conative component on predispositions or actual behavior has been omitted. In addition, the model does not take into account the moderating variables capable of explaining the causal links between the determinants and the attitude. Therefore, we recommend taking into account the variables related to the individual and situational variables. It would also be interesting to study the mutual interactions between all these determinants.

The second limitation concerns the consideration of moderating variables. It would be interesting from a theoretical but above all managerial point of view to take into consideration certain moderating variables (sociodemographic or psychographic) to explain the relationship between the determinants and the attitude towards mobile advertising. The third limitation concerns the fact that the determinants of attitude towards mobile advertising in general do not relate to a single type of mobile advertising. There are certainly variables that are specific to one or a few types of mobile ads. For example, in the case of SMS advertisements, we cannot integrate variables related to colors or to the use of images, videos or music. For this, it is necessary to select variables that can be generalized to all types of mobile advertising to arrive at the establishment of a generalizable model that we can use for all types of mobile advertising.

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