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Research-in-Progress

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Abstract

With the growth of mobile advertising, in-app advertising has become the next revolution in online advertising. However, most of the studies that are conducted on online advertising cannot be applied directly to understand the in-app advertising; for that, we need specific and targeted research. Following this research gap, in this study, we look at in-app advertisement effect on mobile user behavior in respect to its ad features namely, ad size, ad position, and ad vividness. Also, we study how meta-motivations moderate the effect of vividness on the user intentions. Our hypotheses are developed to analyze how ad features will achieve the actual product knowledge and perceived ad diagnosticity and then how they lead to the actual ad accessibility. The model will be tested using data from a laboratory experiment. This study is one of the pioneer studies that examine the role of user interaction effect on mobile ad features. The study will contribute to enhancing the goals of the both advertisers and publishers of online ad ecosystem and it introduces new concepts and measurement techniques for the mobile marketing literature.

Keywords: *mobile advertising, in-app advertising, ad size, ad position, ad vividness, meta-motivational states*

Introduction

With the development of technologies, the research community consequently addressed the questions of different advertisement channels' performance (Jolodar and Ansari 2011); compared the traditional and online settings (Goldfarb and Tucker 2011), and discussed the design of the online advertisement itself (Pieters et al. 2010; Rodgers and Thorson 2000). However, yet there is a research gap in understanding the user behavior in respect to mobile application advertising or in-app advertising. As per Rebecca Grant, now most advertisers willing to execute their ad campaigns as part of the mobile application (Rebecca Grant 2015). Because, currently, it is the most effective mobile advertising practice compared to other approaches. In-app advertisements can be displayed either as banner ads, video ads, interstitial ads, etc. There has been only very few systematic research that looks specifically into the domain of in-app advertising. This may be due to the fact that, many researchers consider that mobile advertising has the same characteristics like the web advertising (Vatanparast and Asil 2007). But, the user behavior on in-app advertising reflects a unique fields of research (Chen and Hsieh 2012) which enables unique personalized and customized advertisements to be displayed on the users' mobile applications (Shankar and Hollinger 2007). For an example compared to web advertising in-app advertising has a fixed set of ad positions and ad sizes (IAB 2015). Also, the amount of graphics, texts, and animations embedded in in-app advertisements are relatively different than the web advertisements (IAB 2015). As Cross, R., & Smith (1997) argue that interactive marketing and advertising techniques will not work unless practitioners "step into the shoes" of theirs and approach the context from the consumer's vantage point. Therefore, it's important to apprehend on mobile application advertising from its unique perspective.

One of the critical issues that online advertising especilly the in-app advertising facing at the moment is lower conversion rates (Lee et al. 2012). A conversion is identified as either click or any action of a user on a particular advertisement. The advertisement is advertised on an impression which is an ad slot on a mobile application. Most of the existing studies on online advertising including the in-app advertising have applied techniques such as linear programming, optimization algorithms, learning algorithms etc. (Shankar and Hollinger 2007) to optimally utilize the available ad conversions. But such solutions would not improve the user interactions with the advertisements because they do not study the attraction between the users and the advertisements. Yet, there are few studies which were conducted to understand the effectiveness of online advertisements on the web context (Yaveroglu and Donthu 2008). But to the best of our knowledge, there are no any studies that conducted to find out how mobile advertisement effectiveness leads to the mobile user ad accessibility. Thus, to better understand the mobile user behavior and the distinctiveness of the mobile advertising, it is needed to carry out a discrete study. Having in mind the potential of mobile advertising, we are attempting to find whether there is a difference in how ad features on mobile applications affect the effectiveness of advertising compared to the ad features on websites. Since there are studies already looked at the web advertising effectiveness with similar ad features, our proposed approach will bridge the gap to understand similar interactions from the in-app advertising perspective. Accordingly, we propose a unique model which considers the existing theoretical studies on interactive online advertising, product understanding, and technology acceptance. Aligned with the proposed model, we design a laboratory experiment which helps to measure the user behaviors on in-app banner advertisements and provides us the opportunity to further understand the focal phenomenon behind the in-app advertising.

Our paper is organized in the following manner: Next section explains the theoretical lens of this study. After that, we provide the in details of the hypotheses. The following section elaborates on the research methodology. The final section provides the expected theoretical and practical implications.

Theoretical framework

In order to answer this research question, we would build our hypothesis upon two theoretical models which provides a detailed description of interactive advertising in online (Rodgers and Thorson 2000) and product presentation understanding of online consumers (Jiang and Benbasat 2007). In their study, the authors, Jiang and Benbasat (2007) assess and compare four online presentation formats which consumers are able to virtually feel, touch and try products. The authors have measured the product, understanding based on two constructs that are actual product knowledge and perceived website diagnosticity. Actual product knowledge is defined as the extent to which consumers actually understand product information. The perceived website diagnosticity is referred as consumers' perceptions of the extent to which a particular website is helpful for them to understand products in online shopping. Moreover, Jiang and Benbasat (2007) have followed the TAM model (Davis 1989), to identify the product usefulness and intention to return through the actual product knowledge and the perceived website diagnosticity. On the other hand, Rodgers and Thorson (2000), conceptualized three basic structural components as part of the Interactive Advertising Model (IAM), which includes ad types, formats, and features. Ad features can be defined as a structure of an interactive ad that can be found within different ad types and formats. The authors have identified a list of objective ad features such as size, vividness, and position. Along with these two studies, in our study, we focus on what extent the different objective ad features affects the in-app advertisements' effectiveness. The conceptual research model is illustrated in Figure 1.

As shown in Figure 1, three features (Vividness, position, size) are considered as the most important ad features when predicting the likelihood that a visitor will click on an ad (Novak and Hoffman 1997). Vividness can be defined as "the representational richness of a mediated environment as defined by its formal features; that is, the way in which an environment presents information to the senses." (Steuer et al. 1995). Rich media tools such as video, audio, and animation may be considered as tools that increase the vividness by enhancing the richness of the experience (Coyle and Thorson 2001). As the second ad feature, we look at how the position of the ad affects user behavior. The position is a well-known ad feature that has been evaluated in various online advertising related research (Tseng et al. 2007). In the mobile advertising context, we consider two positions, top and bottom of the each view of the mobile application. The

third feature that we look at is the size of the advertisement; there are three main ad sizes defined by the IAB (Interactive Advertising Bureau); Interstitial (300x250), banner (300x50) and wide banner (320x50).
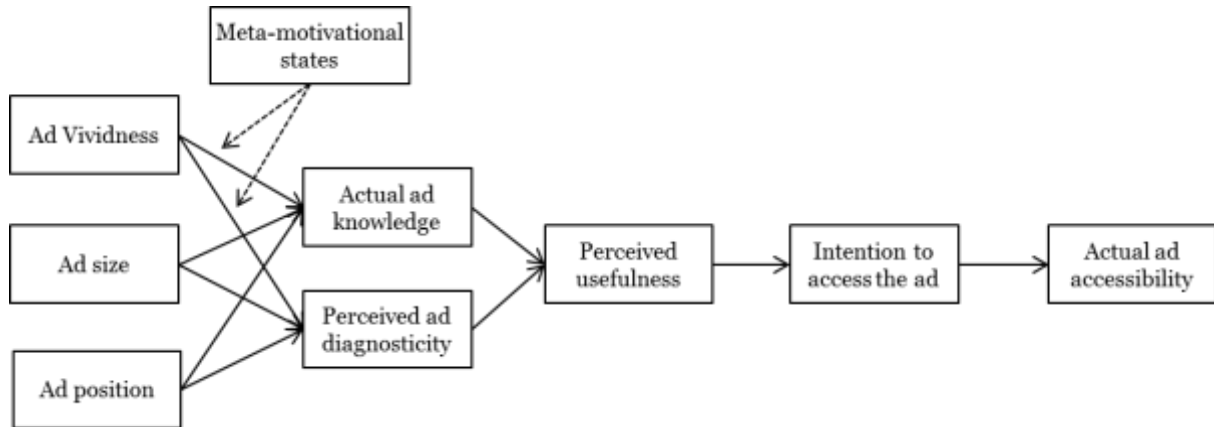
Figure 1. The proposed theoretical model

As explained earlier, according to Jiang and Benbasat (2007), we define two dependent variables from two perspectives: actual advertisement understanding and perceived ad diagnosticity (Silvera and Austad 2004). The actual advertisement knowledge refers to the extent to which consumers actually understand the information of the advertisement. For examples, whether they understood the content of the product or service that is advertised and recognized the brand (logo). The perceived advertisement diagnosticity is defined as users' perception of the extent to which a particular advertisement is helpful for them to understand the product or service that advertising. In this case, we can question, whether they think that the advertisement is helpful for them to evaluate the product, whether it's helpful for them to understand the performance of the advertised product, etc. The choice of these two dependent variables is due to the concern that users' self-reporting of their performance of using information systems is sometimes a poor surrogate for their objective performance (Goodhue et al. 2000). To understand the impacts of these two constructs on other aspects of users' behavior, perceived usefulness can be defined based on the technology acceptance model (TAM), which is the most important determinant of technology adoption. In the advertising context, perceived usefulness can be referred to the extent to which particular mobile advertisement is supported to induce the user to access the complete product information, of the advertised product. Even though Jiang and Benbasat (2007) have defined the intention to return as the key dependent variable, in this study, we considered the actual usage as the second dependent variable which results from the behavioral intention to use. Thus, in our study, the two dependent variables are the intention to access the advertisement and the actual accessibility to the advertisement. According to the perspective of Drèze and Hussherr (2003), advertisement effectiveness that is actual ad accessibility can be measured through two indicators: the degree of the memorization of the banner advertising and the click rate. Here, the first measure refers to the affective component and the second measure is the cognitive component. As, Nihel (2013) discussed, given the concept of memorization functions, the user should be able to judge the quality and relevance of information given by the banner advertising. Therefore, it can be evaluated in relation to our proposed three factors, the position of the banner, size and availability of more graphics.

Additionally, we define a moderator effect to check how the goal specificity could be effected understanding the advertisement with regard to the ad features. In Jiang and Benbasat (2007) study, they have considered the task complexity as the moderator effect, but the effect of complexity on advertising has been well researched (Pieters et al. 2010). In accordance to that, we look into the reversal theory which discusses the dynamic aspects of human experience and behavior (Apter 2001, 2003). It suggests a comprehensive way of considering different psychological needs and exploring how they might relate to human emotion and behavior. This factor is similar to the subjective features which discussed in the IAM model where it defines how user excitement affects the user decisions on the advertisements. With respect to that, we follow the two different meta-motivational states presented by the reversal theory: Telic versus Paratelic. The Telic state is characterized as goal-oriented in which the ultimate goal of any ongoing activity is perceived as essential for the individual and the activity itself is peripheral. In this state, individuals are shown future oriented and serious-minded characteristics. On the other hand, Paratelic state is related to excitement –seeking where the goal of the activity is not important compared to the ongoing activity. Therefore, in these states, individuals are showing excitement seeking and immediate enjoyment characteristics.

Hypotheses

The mobile ad vividness

For both actual advertisements knowledge and perceived advertisement diagnosticity, the vividness has an effect. When there are more animations and relevant graphics, it is easy to recognize the advertisement information (Lewalter 2003). As Park and Hopkins (1992) have suggested, a dynamic depiction can make the change processes more explicit and easier to understand than the static pictures. For an example, with certain colors and shapes, we can identify the brand of the advertised product easier than the text advertisements (Pieters et al. 2010). Also, with more vivid information, more internal mechanisms can be provided for the advertised products (Lewalter 2003).
H1a. High vividness on mobile advertisements leads to a higher actual advertisement knowledge in the mobile users than low vivid advertisements.

Richer media are typically considered more capable of unambiguously conveying information to the users. When the advertisement's information is clear and attractive, mobile users' perception of an advertisement's capability to help them learn about advertised product's or service's information is enhanced. Since high vividness reflects more rich media in the advertisements, it leads to a high user perception of the ad (Li and Bukovac 1999).
H1b. High vividness on mobile advertisements leads to a higher perceived advertisement diagnosticity than those low vivid advertisements.

When applying reversal theory, we can draw on the distinct between Telic and Paratelic meta-motivational states to characterize the two distinct types of activities that users perform when they use mobile devices: goal oriented (Telic states) versus non-directed experiential (Paratelic states). When the advertisement is very likely with rich media, it will be accessible by the users who are in Paratelic states, because they will be excited from the animation or other media which embedded in the advertisement and curious to view the advertisement (Yun Yoo and Kim 2005). Since the users enjoying the media capabilities they will observe more actual product knowledge and perceived the advertisement diagnosticity in a greater manner. But when it comes to goal-oriented users, they will not get excited from such media and since they are serious-minded and they will act opposite way the user who is in Telic states performed (Apter 1984). Therefore, in this context, we are looking at the vividness; how it affects the actual advertisement knowledge and perceived advertisement diagnosticity when the user is in these two different states.
H1c. The high level of vividness positively influences actual advertisement knowledge when the user is in the Paratelic state than when the user is in the Telic state
H1d. The high level of vividness positively influences perceived advertisement diagnosticity when the user is in the Paratelic state than when the user is in the Telic state

The mobile ad size

The size and position of the advertisement have a similar effect on the above two dependent variables (Homer 1995; Azimi et al. 2012; Nihel 2013). When the ad size is larger, we have more space and can embedd information precisely in the advertisement. Therefore it helps to convey the advertised product's or service's information clearly and effectively. Also, when the ad size is larger user attention to the advertisement is much higher than when it is smaller (Li and Bukovac 1999). Therefore, following hypotheses can be derived in this regard.
H2a. Larger size mobile advertisements lead to a higher actual advertisement knowledge in the mobile users than smaller size advertisements.
H2b. Larger size mobile advertisements lead to a higher perceived advertisement diagnosticity than those smaller size advertisements.

The position of the ad

In terms of the ad position, there are researches which carried out on both web display advertising (Azimi et al. 2012) and sponsored search advertising (Agarwal et al. 2011). As they have found out, when the advertisements are displayed on the top of the web page they get a higher attention than they are displayed in the bottom of the web page (Tseng et al. 2007). Therefore, align with that, we can state the following hypotheses.
H3a.   When the mobile advertisements are displayed on top of the mobile application, leads to a higher actual advertisement knowledge in the mobile users than they are positioned on the bottom of the mobile application.
H3b.   When the mobile advertisements are displayed on top of the mobile application, leads to a higher perceived advertisement diagnosticity in the mobile users than they are positioned on the bottom of the mobile application.

Perceived usefulness

As we explained earlier, users demonstrate their behaviors towards a particular task when they understand it is useful for them. As Jiang and Benbasat (2007) explained, the actual advertisement understanding and perceived advertisement diagnosticity positively influence the user to decide the perceived usefulness of the advertised product.
H4a.   Actual advertisement knowledge positively influences perceived usefulness of advertisements.
H4b.   Perceived advertisement diagnosticity positively influences perceived usefulness of advertisements.

Intention to access the ad and Actual ad accessibility

Furthermore, TAM posits that perceived usefulness leads to intended usage. Similarly, in our study, we hypotheses that perceived usefulness leads to intention to access the ad. Also, in this situation, we can directly identify the user interaction with the advertisement. That is, the user will click the advertisement when she has an intention to access the ad. Therefore, through the click on an advertisement we can measure the true accessibility to the advertisement while perceiving it through the user. Moreover, most of the studies that measured the advertisement effectiveness did not consider the actual ad accessibility following the advertisement clicks; instead, those studies only considered the intention to access the ad. But in this study we hypotheses as follows,
H5.   Perceived usefulness of advertisement positively influences the users' intention to access the advertisement.
H6.   Intention to access the advertisement positively influences the users' actual accessibility to the advertisement.

Methodology

In order to have control over the information flow, which is displayed to a user, we would conduct a laboratory experiment to test the hypotheses. We suggest using 2 (vividness: high versus low) x 2 (position: top versus bottom) x 3 (advertisement size: Interstitial versus banner versus wide banner) x 2 (meta-motivational states: Telic versus Paratelic) between subjects factorial design. We adopt a lab experiment since it allows us to effectively manipulate the treatments, and control for the possible distractions which are likely to happen in a field experiment. In lab experiments, we would be able to randomly assign the users to a treatment group and conduct a manipulation check to make sure that our treatments (e.g. actual knowledge about the advertisement) worked efficiently. The adaptation theory (Helson 1964) suggests that people's judgments are based on (1) the sum of their past experiences, (2) the context and background of a particular experience, and (3) a stimulus. As a result of randomization, we can ensure the homogeneity of the sum of subjects' past experience. To build a common benchmark, before the subjects examine the advertisements in their assigned conditions they will be shown mobile apps that demonstrate other advertisements. This can provide reasonable confidence that the context and background of the subjects' experimental experiences will equivalent. Therefore, the different behaviors occur only due to the different treatment stimulus.

For our experiment, we would create a mock news related mobile application which can be easily developed using the Android platform. Also, we need to design different types of advertisements with three sizes and two levels of vividness. Therefore, we can consider three kinds of advertisements like electronic item related, mobile game application related and some clothing sales related. For each these types, we create two types of advertisement with high vividness and low vividness. Then those designs will be again rearranged according to three sizes, based on the IAB standards. The segregation of the vividness levels can be achieved by adding more graphics and animations and display the same content with only texts. Then, that will allow for the suggested treatments. In addition, we would preliminary conduct consultations with senior practitioners and colleagues, followed by pre-tests, in order to make sure that the advertisement and their content descriptions have the desirable properties, and fall into the conceptual categories.

During the experiment, the users would be asked to use the mock news mobile app, and the advertisement of a particular category (like a banner ad with high vividness) is displayed either top or bottom of the app. To implement the moderator effect, we will design hypothetical scenarios which we respectively facilitate Paratelic and Telic states. To implement the Telic state, the subjects ask to find certain news from the app and otherwise ask them to just browse the app (Paratelic). After the experimental session, the survey would be conducted in order to obtain the measures for dependent variables. Our instruments for the measurement are developed by incorporating and adapting the existing valid and reliable scales where appropriate. Initially, we adapt the measurement from Jiang and Benbasat (2007) on both perceived advertisement diagnosticity and actual product knowledge. The measurement items for perceived advertisement diagnosticity of the ad size as follows; and it is based on the seven-point Likert scale,

> "The size of this advertisement is helpful for me to evaluate the product."
> "This size of this advertisement is helpful in familiarizing me with the product."
> "This size of this advertisement is helpful for me to understand the performance of the product."

Similarly, we have generated another set of items to measure the position and vividness as well. Also, the actual product knowledge will be measured based on the questions that related to the product features that are advertised. To check the meta-motivational states of subjects we have adapted (O'Connell and Calhoun 2001) Telic /Paratelic state instruments. We will conduct the experiment with minimum 120 subjects and the assessment of the research model using Partial Least Square (PLS) analysis which is a regression-based technique that can analyze structural models with multiple-item constructs and direct and indirect paths.

Conclusion

Goal of the study is examination of objective features of ads to improve the ads effect on the mobile user's ad accessibility decision. Following the recommendations from Compeau et al. (2012), we would like to explicitly explain that, with respect to generalization, our study seeks to provide the contextual generalization, since we are conducting an empirical study in which we are looking at the representative sample of one population in a specific context of mobile users. Therefore, we are following the recommendations of the context specific theorizing (Hong et al. 2013) and seeking to contribute to the several areas of knowledge. There are three key theoretical implications. First, we would like to solve the puzzle of advertisement effectiveness of mobile devices, which still remains an open question. Second, we hope to make a minor contribution to Interactive advertisement model by applying it in the newly emerged context of the mobile advertising. Third, we eager to take a closer look, at the goal-oriented user behaviors in the mobile advertising context. Among the practical implications, we are hoping to bring knowledge and guidelines on a better design mobile app with flexible advertisement display opportunities to the mobile app developers. Also, we wish to provide useful insights to advertising companies, so they can effectively use the existing features of the platforms and implement more efficient and interactive advertisements.

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