# What Makes Consumers Recall Banner Ads in Mobile Applications

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**Abstract**

The uses of mobile advertisements are increasing their popularity across the world. Companies can gather information about the mobile users based on their locations, lifestyle, and preferences via GPS, cookies and browsing history and embed highly personalized banner ads in mobile applications. However, in the literature there is hardly any work on the effectiveness of these highly personalized in-app banner ads. The aim of the study is to reveal which factors affect the effectiveness of in-app banner ads. An experimental study was designed and 209 subjects participated. The results of Ordinal Logistic Regression indicated that prior brand attitude and attitude towards application have a positive effect, while brand engagement with self-concept has a negative effect on the recall of in-app banner ads. Moreover, in-app banner ads are recalled more when they are located in landscape applications and positioned at the top part of the screen. This research provides some implications for future studies and practitioners.

**Keywords:** Mobile ads, Application, Banner advertising, In-App Banner Ads

# What Makes Consumers Recall Banner Ads in Mobile Applications

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## 1. Introduction

The uses of mobile advertisements are increasing their popularity across the world. This increase couples with the recent decline in traditional forms of communication in favor of a shift of attention to other media (e.g., Internet, mobile devices, social media) in the advertising industry (Siemens et al., 2015a). Mobile advertising provides several advantages to the companies such as high penetration rate, personal communication device, individual addressability, multimedia capability, and interactivity (Chang and Huo, 2011). Research also supports that mobile advertising outperforms non-mobile advertising (Rosenkrans and Myers, 2012; MediaMind, 2011). Mobile advertising providers monitor the online users' location, lifestyles, preferences and interests via GPS systems, emails, social media activities, cookies (Haddadi et al, 2010) and browsing history (Lambrecht and Tucker, 2013); then display the online ads of the products and services based on consumers' interests, locations, mobility patterns and daily habits (Haddadi et al, 2010). Despite this strong interest, most marketers still exert mixed if not negative view towards the effectiveness of mobile advertising (Bart et al., 2014), what makes one question whether marketers collect and use the right information in placing their in-app ads. Hence, more research is needed to explore how to enhance its effectiveness (Vatanparast and Butt, 2010; Nittala, 2011; Xie et al., 2013). The current research aims to contribute to the nascent mobile advertising literature by trying to understand which factors impact mobile advertising effectiveness (recall) by conducting an experimental research on in-app advertising. In-app advertising includes campaigns that are portrayed through mobile applications (Xie et al., 2013). The previously studied factors of advertising such as contextual factors (application orientation), advertisement factors (banner location), personal factors (brand engagement with self concept, product involvement, attitude towards application), and brand related factors (attitude) are adapted and examined this time for in-app mobile advertising effectiveness (recall) to

provide a holistic view on this current and under investigated topic.

The sample of the research compromises of Generation Y consumers in Turkey. The statistics support that worldwide smartphone penetration is higher among these younger consumers (Bart, Stephen, and Sarvary, 2014), and it is acknowledged that they use multiple features of their smartphones consistently and continuously on social networking sites, and various applications (Jain and Pant, 2012; Bhave et. al., 2013). They are projected to enhance mobile commerce as they enter them prime income earning years and have more disposable income to spend (Emarketer, 2012). Therefore, this generation is suitable to study in-app mobile advertising.

## 2. Conceptual Framework and Hypotheses Development

Mobile advertising provides several advantages to the companies such as high penetration rate, personal communication device, individual addressability, multimedia capability, and interactivity (Chang and Huo, 2011). Mobile advertising providers monitor the online users' location, lifestyles, preferences and interests via GPS systems, emails, social media activities, cookies (Haddadi et al, 2010) and browsing history (Lambrecht and Tucker, 2013), then display the online ads of the products and services based on consumers' interests, locations, mobility patterns and daily habits (Haddadi et al, 2010). However, the effectiveness of these highly personalized ads has not been researched in the context of in app banner ads.

### 2.1. BESC and Self-Brand Concept

In order to understand in-app mobile banner ad recall, our research proposes that brand engagement with self concept (BESC) enhances the in-app mobile banner ad recall. BESC is defined as "an individual difference measure representing consumers' propensity to include important brands as a part of how they view themselves" (Sprott, Czellar & Spangenberg, 2009, p. 92). It is a generalized conceptualization of the relationship of consumers with brands. Increased levels of BESC and brand-self connection create likelihood to include favorite brand/s with the self and increase strength of the brand/s in memory (Sprott, Czellar, and Spangenberg, 2009). Based on this discussion, our research proposes:

> *H1: Consumers' level of BESC positively increases recall of in-app mobile banner ads.*

### 2.2. Product Involvement

Product involvement refers to the personal relevance of the product, based on inherent needs, values, and interests of the consumer (Zaichkowsky, 1985). Level of involvement is determined with respect to how much active engagement is needed for product-focused judgment and decision-making (Petty, Cacioppo, and Schumann 1983; Zaichkowsky 1985). Consumers develop diversified involvement levels through product categories (Manzur et al., 2012). Low-involvement products are consumable items that require minimal effort and consideration before purchasing whereas high-involvement products entail more effort and consideration prior to their purchase. Recall, which requires sufficient attention, is more likely for high-involvement products. Consumers pay more attention to advertisements of products that they have high involvement with (Holbrook and Lehmann 1980) since they have more important personal consequences (Apsler and Sears 1968); therefore, are personally relevant and intrinsically important to consumers (Sherif and Hovland 1961). Thus:

> *H2: Consumers' level of involvement with a product category increases brand recall of in-app mobile banner ads.*

### 2.3. Brand Attitude

It was Ehrenberg (1974), who first argued that consumers typically only pay attention to advertising of brands for which they have a pre-existing favorable attitude. As such, users of a brand have a higher recall in advertising of the brand and hold a favorable attitude towards its advertising (Rice and Bennett, 1998). Similarly, prior research in advertising recall suggests that well-known brands are better recalled than unfamiliar brands by consumers (Kent and Allen 2004; Nelson, Yaros, and Keum 2006; Schneider and Cornwell 2005). Nelson (2002), also showed in a series of experiments that a brand's market prominence in the consumer mind positively affected the recall of the brand in product placements. Similarly, in their study on product placement in computer games, Mackaya et. al (2009) also found out that pre-existing high positive attitudes resulted in higher levels of both spontaneous and prompted recall. In mobile advertising, Bhave, Jain and Roy (2013) found out that the recall was higher if the brand also used other media for advertisement as well and ensuring that consumers were already familiar with the brands. Similarly, the study by Siemens et al. (2015) located the positive impact of a well-known brand on brand recall within in-game advertising. Thus:

> H3: Pre-existing positive brand attitude increases recall of in-app mobile banner ads.

### 2.4. Attitude Towards Application

According to the limited capacity model of mediated message processing (Lang, 2000), people have limited capacity information processing, and activate it automatically in response to motivationally relevant stimuli in the environment. Thus, whether a consumer has a positive or negative attitude towards mobile application may influence consumer motivation, their information processing, and their memory in return. Siemens et. al (2015b) concluded in their study that enjoyment and flow had a mediating positive influence on brand attitude in in- game advertising. Similarly, Yoo and Pena (2001) showed in their study that the negative associations of a violent video game elicited low brand recall in in-game advertising. Thus, it can be inferred from their results that consumer's attitude (liking) towards the mobile applications may divert or focus consumer attention on the ad, and hence have an impact on brand recall. Thus:

> *H4: Positive attitude towards the application increases recall of in-app mobile banner ads.*

### 2.5. Banner Location

Since the screens of mobile phones are small, there are only limited places for banner ads within the applications. In-app mobile ads are mostly embedded at the top or bottom of the application (Woolridge and Schneider, 2011). Although there is hardly ever study about the effect of mobile banner location on the ad effectiveness, there are some studies about banner location's effectiveness in the context of computer web pages which come up with contradictory results. For example, Resnick and Albert (2014) revealed that top of the page is one of the most effective locations to get user's attention. On the other hand, Goodrich (2010) claimed that ads draw more attention when they are placed at the bottom of the page rather than at the top. Furthermore, Çalışır and Karaali (2008) indicated that there is no significant relationship between the banner location and advertising recognition. In the context of mobile applications, the thumbs of the users generally located around bottom of the screen. Therefore, the likelihood to miss the in-app banner ad is high when it is located at the bottom. Thus:

> *H5: Embedding banner ads at the top of applications increases recall of in-app mobile banner ads.*

### 2.6. Application Orientation

Mobile applications can be designed in two forms: landscape and portrait. The orientation of applications may affect the effectiveness of mobile banner ads since the holding position of the mobile phones and the dimensions of the banners are different for landscape and portrait orientations. In this context, it is hypothesized that;

*H6: Application orientation affects recall of in-app mobile banner ads.*

### 3. Methodology

In order to investigate the effects of application orientation (Landscape and Portrait) and banner location (Top and Bottom) on ad recall, an experimental study was designed. There were four experimental groups and subjects that were randomly assigned to each group and in each group there were at least 50 subjects. They were given a smart phone and requested to use a mobile application for 5 minutes. In order to prevent the possible effect of prior experiential effect, a professional mobile technology agency was hired to create two brand new applications (one is in portrait mode the other one is in landscape mode). The characteristics of experiment groups are shown in Table 1.

**Table 1: The Characteristics of Experiment Groups**

| Subjects who used mobile application in portrait mode with the banner at the top (N: 54) | Subjects who used mobile application in portrait mode with the banner at the bottom (N: 53) |
|---|---|
| Subjects who used mobile application in landscape mode with the banner at the top (N: 51) | Subjects who used mobile application in landscape mode with the banner at the bottom (N: 51) |

Adidas was chosen as advertised brand, which is among the Lovemarks of Turkey. A dynamic mobile banner ad that consisted of three different screens was created. The ad included Adidas brand, background color, Adidas's slogan "Impossible is nothing", Messi's picture who is the brand ambassador of Adidas, and picture of Adidas shoes. Unaided advertising recall was used as the dependent variable of the study. The items used to measure advertising recall were adapted from Li and Bukovac's (1999) study. The subjects were first asked whether they noticed any banner ads while using the application. If the answer was a 'yes', then they were asked about the details of the advertisement to reveal their recall of the mobile banner ad. The subjects were not provided any cue about the banner advertising. The questions

included "What was the brand in the banner?", "Who was the celebrity endorser in the banner?", "What is the brand slogan in the banner?", "Which product was endorsed in the banner?", "What color was used in the background of the banner?". Based on the answers, a recall score was calculated for each subject as an outcome variable which range between 0 and 5. After the application of the experiment, the subjects were requested to fill a questionnaire which consisted of questions about their attitude towards the application (measure adopted from Muehling et al., 1991) that they used, attitude towards Adidas brand (Muehling et al., 1991), product category involvement (Seiders et al., 2007) towards sneakers, brand engagement with self-concept (Sprott et al., 2009).

### 4. Findings

A total of 209 subjects (109 Male and 100 Female), who already owned a smart phone, participated in the study. Their ages ranged from 18 to 30, with a mean of 23 and their education level varied from primary school graduation to PhD degree. Approximately 40% of the subjects have Undergraduate degree and 47 % of them have high school degree. A Factor Analysis was conducted on the 14 items with Varimax rotation. The KMO measure verified the sampling adequacy, KMO = .77. Bartlett's test of sphericity $\chi\zeta$ (91) = 2503, p < .001, indicated that correlations between items were sufficiently large for PCA. Four components had eigenvalues over Kaiser's criterion of 1 and in combination explained 75.51 % of the variance. Table 2 shows the factor loadings after rotation.

**Table 2: Factor Loadings of the Constructs**

| | Brand Engagement | Attitude towards Application | Brand Attitude | Product Category Involvement | Variance Explained | Cronbach's α |
|---|---|---|---|---|---|---|
| BE1 | .847 | | | 100 | | |
| BE2 | .833 | | | | | |
| BE4 | .784 | | | | 22.9 | 0.858 |
| BE3 | .782 | | | | | |
| BE5 | .699 | | | | | |
| ATA1 | | .922 | | | | |
| ATA3 | | .882 | | | 17.7 | 0.890 |
| ATA2 | | .875 | | | | |
| ATB1 | | | .903 | | | |
| ATB3 | | | .889 | | 17.7 | 0.893 |
| ATB2 | | | .882 | | | |
| PCI1 | | | | .894 | | |
| PCI2 | | | | .889 | 16.9 | 0.861 |
| PCI3 | | | | .836 | | |

Shapiro-Wilks statistics (.584, p < 0.001) test indicated that recall score is not normally distributed. Therefore, to test the model Ordinal Logistic Regression was preferred. Insignificance of Test of Parallel Lines, which tests the proportional odds assumption, indicated that ($\chi2(18) = 27.31$, p > .05) the model is suitable for the OLP analysis.

**Table 3: Results of Ordinal Logistic Regression**

| Parameter Estimates | | Estimate | Std. Error | Wald | df | Odds Ratio | 95% Confidence Interval | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | L. Bound | U. Bound |
| Threshold | [recall = .00] | 2,63 | 1,64 | 2,57 | 1 | - | -0,59 | 5,85 |
| | [recall = 1.00] | 2,76 | 1,64 | 2,82 | 1 | - | -0,46 | 5,98 |
| | [recall = 2.00] | 3,76 | 1,66 | 5,15 | 1 | - | 0,51 | 7,00 |
| | [recall = 3.00] | 4,20 | 1,66 | 6,39 | 1 | - | 0,95 | 7,46 |
| Location | Brand Attitude | 0,30* | 0,17 | 3,33 | 1 | 1,355 | -0,02 | 0,63 |
| | Product Category Involvement | 0,20 | 0,22 | 0,83 | 1 | 1,223 | -0,23 | 0,63 |
| | Attitude Towards Application | 0,49*** | 0,16 | 9,64 | 1 | 1,632 | 0,18 | 0,80 |
| | BESC | -1,16*** | 0,25 | 2,20 | 1 | 0,314 | -1,64 | -0,68 |
| | [Portrait=1.00] | -0,65* | 0,36 | 3,16 | 1 | 0,523 | -1,36 | 0,07 |
| | [Landscape=2.00] | 0a | - | - | 0 | - | - | - |
| | [Top=1.00] | 1,57*** | 0,33 | 22,28 | 1 | 4,821 | 0,92 | 2,23 |
| | [Bottom=2.00] | 0a | - | - | 0 | - | - | - |

Note: ***p < 0.001, **p < 0.05, *p < 0.1

Model Fit: $\chi^2(6) = 49.81$, p < .001
Psedu $R^2$ = 0.212 (Cox & Snell),  0.243 (Nagelkerke).

Goodness of Fit: Pearson = $\chi^2$ (786) = 781, p = 0.541., Deivance = $\chi^2$(786) = 379, p = 1.000

The results of Ordinal Logistic Regression analysis are shown in Table 3. The significant chi-square statistic (p<.0001) indicates that the final model gives a significant R2 value (Nagelkerke = .243) indicates that independent variables explain approximately 25 % of the ad recall. Parameter Estimates indicated that pre-existing brand attitude (H3: Supported) and attitude towards mobile application (H4: Supported) have positive effect on ad recall, while BESC (H1: Rejected) has negative effect. In addition, mobile banner ads are recalled more when the ads are located at the top (H5: Supported) of the screen and in landscape applications (H6: Supported). On the other hand, product involvement (H2: Rejected) has no significant effect on advertising effectiveness.

## 5. Discussion and Conclusion

This study was one of the preliminary studies in in-app mobile advertising research that tried to incorporate different factors of advertising effectiveness and test them together to foster knowledge in the field. Mobile advertising is a useful, novel method that have already bypassed traditional forms of advertising in terms of effectiveness and usage, given the increasing number of smartphone and application users. One of the key characteristics of mobile advertising is that it enables the advertiser to customize the advertising process according to individual likes, behavior, and preferences. Thus, it is important to understand which factors have an effect on advertising recall in in-app mobile advertising so that a direction could be provided to the practitioners on which dimensions to individualize their ads. The findings of this research are believed to help with this process.

The research puts forward a seemly positive effect of brand attitude and attitude towards the application on brand recall, highlighting the importance of attitudes on brand recall. Even though, attitude is treated as an outcome variable in most advertising research, this research preferred to treat it as an antecedent of brand recall and proved its effect on recall in in-app banner ads. This is one of the contributions of this research to existing literature. The implications of this result underline the importance of personalization in in-app ads for practitioners and offer perspective. Accordingly, mobile advertisers should track and identify individual consumer brand preferences through social media follows and likes; and place the ads of each consumer's most liked brands to applications that they use frequently. In other words, they should pay attention to both individual brand attitude/usage/purchase, and also application choice/usage/liking when deciding on in-app mobile banner ad strategy in order to increase ad effectiveness. As to the type of application and location of the banner, it is advisable for advertisers to choose landscape applications and locate the banner at the top of the screen.

An interesting finding of this research was that BESC has a negative impact on brand recall of in-app mobile banner ads. This was an unexpected result since it was thought that as people are more involved with brands and use them to define themselves, their likelihood of recall would be higher. One plausible explanation for this negative effect might be that the brand under question in this research (Adidas) may not be in the set that consumer engage with and use to define themselves. Given that brand attitude has a positive impact on brand recall contrary to BESC, it is possible that if the brand is among the prominent brands that consumers identify with, the recall will be higher. Thus, this finding needs further exploration. Additional factors such as brand self-connection might be added to the model to develop the research.

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