Touch, Swipe, and Tilt: Exploring the Impact of Mobile In-App Advertising Content on Consumer Brand Choice Intention

Yusuf Oc
Bayes Business School, City St George University of London
Kirk Plangger
King's College London
Stefan Bernritter
King's Business School
Francesca Sotgiu
Vrije Universiteit Amsterdam, School of Business and Economics

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Abstract

The mobile advertising industry reached $90 billion in 2023, engaging over 3 billion consumers in mobile gaming ads alone. This study examines the effectiveness of interactive, rewarded in-app mobile advertising on consumer brand choice, leveraging data from 268,209 consumers across 250 global advertising field experiments. It focuses on two elements: engagement objectives (explore, interact, play) and embodied engagement (tap, tilt, swipe, shake). Using a random-effects regression model, the findings reveal that gamified ads with play objectives significantly enhance brand choice, while tapping and tilting are more effective than swiping or shaking. Product type moderates these effects, while regional and industry differences underscore the need of contextual alignment. Using grounded cognition theory, this research contributes to marketing literature by introducing engagement goals with embodied engagement and emphasizing the need for tailoring ad features to product and context.

Keywords: embodied engagement, mobile marketing, field choice experiments

Intended for Methods, Modelling & Marketing Analytics track

1. Introduction

Driven by the ubiquity of smartphones in both developed and developing economies, many brands are attracted to mobile advertising. Beyond market penetration, smartphone advertising leverages interactive capabilities via touchscreens to create active, immersive experiences that lead to enhanced promotional outcomes. For example, the popular Angry Birds gaming app requires consumers to interact with advertisements actively rather than passively skip them, showcasing the added value and persuasion potential of this type of advertising.

The existing literature contains many insights that trigger consumer engagement, enhancing consumer and brand outcomes (Blut et al., 2023; de Oliveira Santini et al., 2020). However, most studies have examined engagement in traditional or digital settings, often excluding the specific context of smartphones. Mobile advertising research has made conceptual contributions and provided empirical insights concerning consumer privacy (Rafieian & Yoganarasimhan, 2021), attitudes towards mobile ads (Bart et al., 2014), and the link between ad variety and attention (Rafieian & Yoganarasimhan, 2022). Despite these advances, research on the interactive affordances of mobile devices that can drive deeper consumer engagement remains limited.

This paper aims to examine the effectiveness of two categories of strategic design elements enabled by smartphones: (1) engagement objectives (explore, interact, play) and (2) embodied engagement elements (tap, tilt, swipe, shake). Engagement objectives are designed to inspire consumers to engage with their devices, leading to cognitive effects like psychological ownership and behavioral effects like hedonic choices (Shen et al., 2016). These effects are crucial for mobile advertising effectiveness (Grewal et al., 2016). Meanwhile, embodied engagement elements evoke cognitive processes grounded in bodily experiences (Barsalou, 2008). For instance, consumers' preferences for products may change depending on their gaze direction (Van Kerckhove et al., 2015). Mobile ads entice consumers to interact in specific ways, which can significantly impact advertising outcomes.

This study addresses two research questions: How do engagement goals in a mobile ad impact brand choice? And, to what extent do embodied engagement elements in a mobile ad impact brand choice? We answer these questions using a unique proprietary dataset of 268,209 consumer brand choices after exposing 155,963 consumers to 250 mobile ad campaigns. Our findings reveal significant insights into how different interactive features influence consumer brand preferences. This paper makes two key contributions to marketing literature:

differentiating the effects of various ad engagement goals and delineating the impact of embodied interactions on brand choice.

2.Strategic Design Elements of Mobile Advertising Campaigns

Informative content, such as product descriptions, price information, promotions, and deals, can lead to quick conversions, but combining it with brand personality content often yields better results (Ducoffe, 1996; Lee et al., 2018). Most mobile ads contain informative content, and consumers can browse further details by tapping or sliding. Given the small screen size, more user-initiated browsing is necessary. We created an "explore" dimension, defined as any touch, shake, or tilt action that helps users access more information.

Millennials, who grew up with multiple digital communication devices, prefer entertaining ads that are easy to navigate (Smith, 2019). Mobile features also enable game-like environments within ads. We introduced a "play" component, defined as any element providing a game-like experience through touch, shake, or tilt actions.

We added an “interact” dimension for ads requiring user-specific inputs (e.g., tap to change an object's color) or co-creation (e.g., choosing an option to change a story flow). Ads often use multiple elements, making these characteristics non-exclusive.

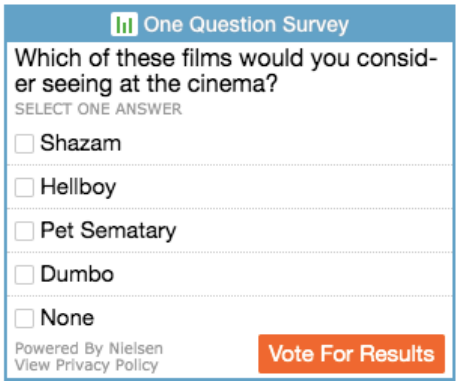
3.Data

To assess the impact of embodiment objectives and features, we analyzed the brand choice intention of 268,209 consumers across 250 field experiments conducted by Digital Turbine, a U.S.-based mobile advertising agency. The experiments followed standard digital advertising testing protocols, randomly assigning users to exposed or control conditions. In the exposed condition, 155,963 consumers were shown the in-app advertisement, while 112,246 were not. A survey (see Figure 1) asked consumers about their brand choice intentions seven days after exposure, administered by Nielsen Research for unbiased assessment.

In total, we observed 250 campaigns across 24 countries between 2018 and 2021. On average, campaigns involved 1,072 participants, with repeated exposures averaging 7.3 impressions per campaign. Most campaigns (72%) promoted low-involvement products like FMCG and movies. Industry-wise, consumer packaged goods led (34%), followed by

entertainment (21%), and technology and communications (15%). Regionally, 40% of campaigns were conducted in the Middle East, followed by Europe (29%), Africa (23%), and Latin America (8%).

Figure 1: Single-question survey example.



3.1 Interactive Advertising Classification Procedure

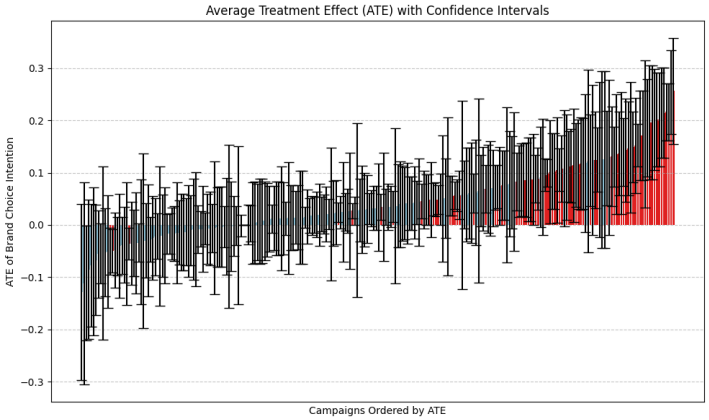
In-app ads mainly consist of two parts: the body and the end-card. The body part, often a video, is followed by the end-card, which contains extra videos, call-to-action buttons, game elements, and interactive product catalogs. To categorize each mobile in-app ad, we followed established literature on ad content (Liaukonyte et al., 2015) and grounded cognition theory (Barsalou, 2008). We identified 21 ad content elements across three engagement objectives: explore (e.g., tap, touch, swipe), play (e.g., tilt, drag and drop), and interact (e.g., co-creation via tap or tilt). An expert panel validated the classification, and four independent coders analyzed the ads. They viewed each ad multiple times and completed a questionnaire for each campaign. A subset of ads was re-coded by two new coders to measure reliability. Swiping and dragging were combined under "swipe" based on similarity, confirmed through exploratory factor analysis. The final variables represented the sum of embodied features and engagement objectives.

3.2 Model-Free Evidence

Initial analysis across the 250 field experiments shows that consumers exposed to mobile ads had a 48% higher intention to choose the brand compared to the control group ($M_{exposed} = 37\%$ vs. $M_{control} = 25\%$; $p < .001$). Campaigns with a "play" objective had the highest average brand choice intention ($M = 0.40$), followed by "browse" ($M = 0.37$) and "interact" ($M = 0.34$). Tilt features had the highest brand choice intention ($M = 0.43$), while shake had the lowest ($M = 0.32$). Significant differences were found between these features ($p < 0.001$). Looking at average treatment effects (see Figure 2), a notable proportion of field experiments (32.4%) showed a

positive and significant effect, while 1.6% demonstrated a negative effect. Most experiments yielded non-significant results, indicating the variability in outcomes and the importance of context in mobile advertising effectiveness.

Figure 2: Average campaign treatment effects for brand choice.



Modeling Approach

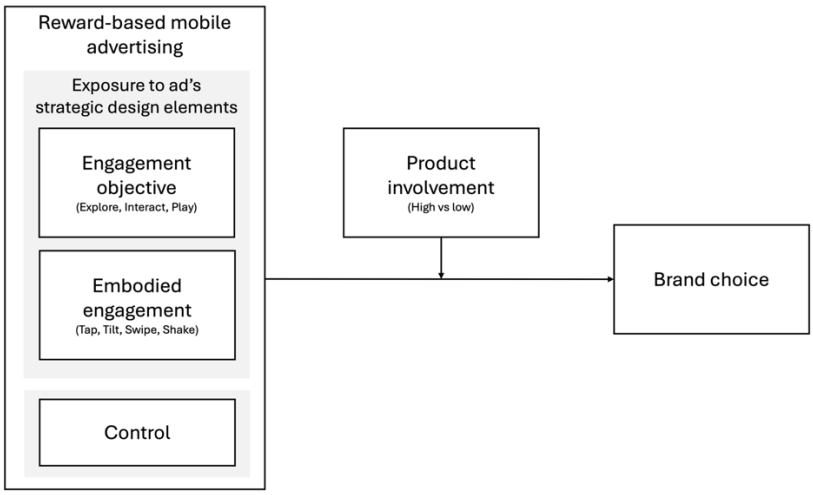
To assess the impact of different interactivity features on brand choice intention, we estimated a random-effects logit model with brands included as random effects. The Hausman test ($p > .05$) and the Likelihood Ratio test ($p < .001$) indicated that a random-effects specification was preferable to a fixed-effect model, though both provided similar insights. Brand choice intention was modeled (see Figure 3) as a function of ad exposure characteristics (exposure, impressions, recency), ad design elements including engagement objectives (explore, interact, play) and embodiment features (tap, swipe, tilt, shake), and contextual variables (regions, industries). We also included product involvement as a dummy variable and accounted for participant-level heterogeneity. Interaction effects between product involvement and ad design elements were also examined. The model is as follows:

$$Brand\ Choice\ Intention_{ci} = \frac{\exp\ (U_{ij})}{1+\exp\ (U_{ij})} \qquad (1)$$

$$U_{ij} = \alpha_j + \sum_{k=1}^{K} \beta_k Exposure\ Characterisics_{k,j} + \sum_{l=1}^{L} \beta_{K+l} Ad\ Design\ Elements_{l,j} + \sum_{m=1}^{M} \beta_{L+m} Involvement_{m,j}\ x\ \beta_{L+m} Ad\ Design\ Elements_{m,j}\ x + \sum_{n=1}^{N} \beta_{M+n} Contextual\ Variables_{n,j} + \varepsilon_{ci}$$

Where $\alpha_j$represents the random intercept for brand *j*, which allows the baseline level of brand choice intention to vary across different brands. $\in_{ij}$ is the residual error term for individual *i* in brand *j*.

Figure 3: Conceptual Model of the Study



Results

Table 1 shows that ad exposure significantly increases brand choice intention (b = .291, p < .001), with a slight positive effect from the number of impressions (b = .003, p < .001). Recency of ad exposure has a small negative effect (b = .000, p = .016). The explore objective negatively affects brand choice (b = -.039, p < .001), while the play objective has a positive effect (b = .165, p < .001). Interactions with involvement show positive effects for explore (b = .026, p = .003) and interact (b = .201, p < .001), while play shows a negative effect for high-involvement products (b = -.414, p < .001).

The embodiment model indicates that ad exposure ($b = .224$, $p < .001$) and impressions ($b = .003$, $p < .001$) positively impact brand choice intention. Tap ($b = .034$, $p < .001$) and tilt ($b = .077$, $p = .003$) features also positively influence brand choice, whereas swipe ($b = -.082$, $p < .001$) and shake ($b = -.140$, $p < .001$) have negative effects, likely due to user discomfort. Regional analysis shows higher effectiveness in Latin America compared to Africa ($b = .629$, $p < .01$). Interaction effects suggest tap works better for low-involvement products, whereas swipe is more effective for high-involvement products.

The objectives x embodiment model confirms the positive influence of ad exposure ($b = .374$, $p < .001$) and impressions ($b = .004$, $p < .001$) on brand choice intentions. Tilt to browse shows a positive effect ($b = .252$, $p < .001$), while shake to play has a negative impact ($b = -.348$, $p < .001$). Tap interactions vary by context, with tap to interact ($b = .036$, $p = .021$) and tap to play ($b = .094$, $p < .001$) being positively associated with brand choice. Ads in Latin America ($b = .297$, $p < .001$) and campaigns for consumer-packaged goods ($b = .600$, $p = .039$) are more effective than their respective baselines, highlighting the importance of geographical and industry context in ad effectiveness. In summary, ad exposure, the number of impressions, and interactive features (e.g., Tilt, Tap) influence brand choice intentions, with effectiveness depending on the product involvement, geographical region, and campaign context.

Conclusion

Our study, based on 250 controlled field experiments, highlights the impact of mobile advertising on consumer brand choice. Mobile ads can significantly influence brand preference, but their effectiveness varies depending on the right combination of strategic ad elements (i.e., engagement objectives and embodied engagement features) and product type. Features like tilt to play strongly boost purchase intention, while others, like tilt to interact may have the opposite effect because of consumers' natural usage of bodily movements for different purposes. Minimal impact was observed for features such as tap to browset and swipe to play, emphasizing the importance of careful feature selection. The product type and ad context also play crucial roles in consumer engagement and effectiveness. Not all embodied engagement features enhance purchase intention or engagement, underscoring the need for data-driven strategies over intuition. High-involvement products may benefit from immersive interactivity, while low-involvement products might require simpler approaches. Our study contributes to mobile

Table 1: Random Effects Models Results

Model	Objectives Only *b* (SE)	Embodiment Only *b* (SE)	Objectives x Embodiment Model *b* (SE)
Campaign Exposure			
Exposure (Control vs Exposed)	.291*** (.022)	.224*** (.022)	.374*** (.024)
# of Impressions	.003*** (<.001)	.003*** (<.001)	.004*** (<.001)
Recency	(-<.001)* (<.001)	(-<.001) (<.001)	(-<.001) (<.001))
Ad Interactivity			
Explore	-.039***(.008)		
Interact	-.016 (.015)		
Play	.165*** (.014)		
Shake		-.140*** (.029)	
Tap		.034*** (.007)	
Tilt		.077** (.026)	
Swipe		-.082*** (.016)	
Tilt to Explore			.252*** (.030)
Tilt to Interact			.103 (.143)
Tilt to Play			-.025 (.072)
Shake to Interact			.1035 (.098)
Shake to Play			-.347*** (.094)
Tap to Explore			-.071*** (.010)
Tap to Interact			.036* (.015)
Tap to Play			.093*** (.014)
Swipe to Explore			.023 (.032)
Swipe to Interact			-.084* (.037)
Swipe to Play			-.121*** (.017)
Brand Characteristics			
Involvement	.070 (.247)	.175 (.224)	.124 (.268)
Explore x Involvement	.026** (.009)		
Interact x Involvement	.201*** (.031)		
Play x Involvement	–.414*** (.024)		
Shake x Involvement		.076 (.078)	
Tap x Involvement		-.049*** (.008)	
Tilt x Involvement		.068 (.046)	
Swipe x Involvement		.064** (.022)	

Other Parameters			
Intercept	-1.502*** (.243)	-1.505*** (.196)	-1.509*** (.270)
Regions (Base value: Africa)			
Europe	.076 (.063)	.089 (.063)	.123 (.064)
Latam	-.066 (.074)	.232** (.079)	.296*** (.079)
Middle East	.072 (.056)	.007 (.056)	.058 (.057)
Industry (Base value: Alcohol)			
Automotive	-.163 (.408)	.629** (.224)	-.234 (.407)
Consumer Packaged goods	.612* (.267)	-.179 (.265)	.600* (.291)
Entertainment	-.168 (.303	.145 (.346)	-.207 (.333)
Finance	.205 (.407)	1.042* (.491)	.133 (.437)
Government and Non-profit	1.143* (.546)	.567 (.519)	1.038 (.582)
Health and Pharmaceutical	.545 (.572)	.523 (.348)	.525 (.590)
Restaurant	.494 (.386)	-.160 (.25)	.536 (.403)
Retail	-.154 (.291)	.541 (.291)	-.190 (.309)
Technology	.645 (.334)	.629** (.224)	.545 (.386)
Akaike information criterion	295364.6	295584.7	295453.4
Bayesian information criterion	295616.6	295857.7	295757.8
Log-likelihood	-147658.3	-147766.4	-147697.7

"***" $p < .001$, "**" $p < .01$, "*" $p < .05$, "." $p < .1$

N= 268,209; N_{brands}= 142

advertising literature by introducing a new mobile ad content classification and insights into product and device feature interactions. Brands should adopt tailored strategies, avoiding a one-size-fits-all approach, to align ad features with the product and context for maximum impact.

References

Barsalou, L. W. (2008). Grounded Cognition. *Annual Review of Psychology*, *59*(1), 617–645. https://doi.org/1.1146/annurev.psych.59.103006.093639

Bart, Y., Stephen, A. T., & Sarvary, M. (2014). Which products are best suited to mobile advertising? A field study of mobile display advertising effects on consumer attitudes and intentions. *Journal of Marketing Research*, *51*(3), 270–285. https://doi.org/1.1509/jmr.13.0503

Blut, M., Kulikovskaja, V., Hubert, M., Brock, C., & Grewal, D. (2023). Effectiveness of engagement initiatives across engagement platforms: A meta-analysis. *Journal of the Academy of Marketing Science*, *51*(5), 941-965.

de Oliveira Santini, F., Ladeira, W. J., Pinto, D. C., Herter, M. M., Sampaio, C. H., & Babin, B. J. (2020). Customer engagement in social media: a framework and meta-analysis. *Journal of the Academy of Marketing Science*, *48*, 1211-1228.

Ducoffe, R. H. (1996). Advertising value and advertising on the web. *Journal of Advertising Research*, *36*(5), 21–32.

Grewal, D., Bart, Y., Spann, M., & Zubcsek, P. P. (2016). Mobile Advertising: A Framework and Research Agenda. *Journal of Interactive Marketing*, *34*, 3–14. https://doi.org/1.1016/j.intmar.2016.03.003

Lee, D., Hosanagar, K., & Nair, H. S. (2018). Advertising content and consumer engagement on social media: Evidence from Facebook. *Management Science*, *64*(11), 5105–5131. https://doi.org/1.1287/mnsc.2017.2902

Liaukonyte, J., Teixeira, T., & Wilbur, K. C. (2015). Television advertising and online shopping. *Marketing Science*, *34*(3), 311-330.

Rafieian, O., & Yoganarasimhan, H. (2021). Targeting and privacy in mobile advertising. *Marketing Science*, *40*(2), 193-218.

Rafieian, O., & Yoganarasimhan, H. (2022). Variety effects in mobile advertising. *Journal of Marketing Research*, *59*(4), 718-738.

Shen, H., Zhang, M., & Krishna, A. (2016). Computer interfaces and the "Direct-Touch" effect: Can iPads Increase the Choice of Hedonic Food? *Journal of Marketing Research*, *53*(5), 745–758. https://doi.org/1.1509/jmr.14.0563

Smith, K. T. (2019). Mobile advertising to Digital Natives: preferences on content, style, personalization, and functionality. *Journal of Strategic Marketing*, *27*(1), 67–8. https://doi.org/1.1080/0965254X.2017.1384043

Van Kerckhove, A., Geuens, M., & Vermeir, I. (2015). The Floor Is Nearer than the Sky: How Looking Up or Down Affects Construal Level. *Journal of Consumer Research*, *41*(6), 1358–1371. https://doi.org/1.1086/679309