

The advertising value of Twitter Ads: a study among Mexican Millennials

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Abstract

Purpose – This study set out to measure the perceived Advertising Value of Twitter ads on a large sample of Mexican Millennials.

Design/methodology/approach – An online survey was used to collect data among 630 university students. The hypothesized antecedents of Advertising Value were Informativeness, Entertainment, Irritation and Credibility. The model was estimated using Partial Least Squares.

Findings – Results indicate Informativeness and Entertainment were the strongest predictors, with Credibility in third place. In addition, Credibility displayed gender effects: it was significant for female respondents but not for males. Irritation failed to reach statistical significance in most subsamples, suggesting Twitter ads are more acceptable to Millennials than other advertising formats.

Originality/value – Millennials tend to dismiss traditional advertising formats. At the same time they are heavy users of Social Networking Sites. This research provides the first empirical estimation of the Ducoffe model of Advertising Value in the microblogging service Twitter, and the first application of this robust model of web advertising to a Latin American sample. Our results have important implications for both regional and global brands targeting Millennials.

Keywords – Social media advertising; Millennials; microblogging; Twitter



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1 Introduction

Despite being ranked among the top destinations on the Internet, Social Networking sites (SNS) often struggle to generate revenues commensurate to their large operating costs. Typical revenue models used by SNS are advertising, subscription and transaction (Enders, Hungenberg, Denker, & Mauch, 2008). Among them, the advertising model, which includes text and banner ads, affiliate ads, and sponsorships, is the most commonly used by SNS (Enders et al., 2008; Nogueira-Cortimiglia, Ghezzi, & Renga, 2011). This model depends on a large user base, with monthly active users as the key metric, because most advertisers will require several million unique visitors to consider a particular SNS as a feasible option to invest their advertising budgets.

Twitter is among the most popular SNS; it claims 310 million monthly users, with 79% of them outside the US (Twitter, 2016). In Latin America, Brazil and Mexico have the largest number of users, expected to reach 27.7 and 23.5 million by 2016 (Emarketer, 2016a). Moreover, Twitter users in the region are mostly teenagers and young adults, which suggest Twitter advertising would be an attractive option for brands targeting Millennials.

However, companies have struggled to connect with the Millennial generation, because many of the traditional methods of advertising have proven ineffective at capturing their attention. Only 1% of Millennials surveyed in a recent study said that a compelling advertisement would increase their trust in a brand. Millennials believe that advertising is all spin and not authentic (Schawbel, 2015).

Therefore, it is imperative to better understand the opinions and attitudes of young Latin American consumers toward Twitter ads. In particular, establishing to what extent factors such as the perceived Credibility of the ad, or the Irritation attached to it, affect users' attitudes toward Twitter advertising, and whether this should encourage or discourage brands from such

practices. This study provides a clear empirical answer to these questions using the model of Advertising Value proposed by Ducoffe (1996). Our findings are thus relevant to global and regional brands targeting young consumers in Latin America.

2 Twitter Features and Ad Formats

The microblogging service Twitter was launched in 2006, and has grown to become one of the most popular SNS in the world. An independent forecast from Emarketer (2016b) estimated that worldwide active Twitter users, defined as those who enter their account at least monthly, will reach 291 million in 2016, with most of the growth coming from emerging markets.

Like other SNS, users can post status updates to their connections (called Followers in Twitter), and in turn can read the updates of the people or companies they are following. These posts were originally limited to 140 plain-text characters, thereby allowing the service to operate over mobile phone networks as SMS messages. This native ability to run both over the Internet and cell-phone networks greatly contributed to Twitter's rapid diffusion.

Companies and their brands soon discovered Twitter, and began using it to connect with their customers (Israel, 2009). In particular, airlines provide an early example of businesses using Twitter as an effective marketing platform. For instance, Mexican low cost carriers Volaris and VivaAerobus have been in a heated competition to achieve the greater social media presence since 2009, when they opened their Twitter sites. In two years, Volaris reached 88 thousand followers in Twitter versus 77 thousand for VivaAerobus (Reyes, 2011). Both airlines use the platform to announce promotional fares, and draw prospects to their website. Volaris also uses the platform to listen to its customers, who tend to be "extremely direct" when tweeting carriers (Cruz, 2010). Volaris thus learns about customer problems in real time, and can usually provide an answer or solution faster than a conventional call center.

Like most other SNS, Twitter provides its service free to users, and relies on an advertising revenue model (Enders et al., 2008). Twitter began paid advertising in 2010, and has seen its ad revenues grow steadily, particularly in the mobile platform which currently comprises 90% of ad revenues (Emarketer, 2016c). However, Twitter has been careful to protect its user experience, and to avoid overloading users with ads (Copeland, 2012). Ad clutter on Twitter is perceived as lower than other popular Internet platforms, such as Google Search or Facebook (Tassi, 2013).

The rapid growth of SNS advertising budgets is strong justification for researching consumer attitudes toward the ads they encounter on these platforms (Saxena & Khanna, 2013; Taylor, Lewin, & Strutton, 2011). Previous studies have examined advertising in SNS in general (Chandra, Goswami, & Chouhan, 2013; Saxena & Khanna, 2013; Taylor et al., 2011) or in Facebook, the current SNS leader (Dao, Le, Cheng, & Chen, 2014; Logan, Bright, & Gangadharbatla, 2012; Méndiz-Noguero, Victoria-Mas, & Arroyo-Almaraz, 2013). There are also numerous studies on the use of Twitter as a platform for engaging with consumers, in areas such as customer service (Coyle, Smith, & Platt, 2012; Sreenivasan, Lee, & Goh, 2012), brand engagement (Kwon & Sung, 2011; Li & Li, 2014; Logan, 2014; Sandoval-Almazán & Nava-Rogel, 2012), and electronic Word of Mouth (Jansen, Zhang, Sobel, & Chowdhury, 2009; Kim, Sung, & Kang, 2014; Zhang Jansen, & Chowdhury, 2011). These studies fall under the rubric of engagement marketing, whereby companies publish branded content on their SNS, usually without any cost, in the hopes that their followers will engage with this content by “liking” it, adding a comment,

or in the best of cases forwarding it to their own social contacts (Henry & Harte, 2012).

The other use of Twitter as a marketing platform is targeted advertising, whereby Twitter places “promoted” posts in front of selected users and charges advertisers according to the actions users take. However, tech-savvy Millennials may recognize these posts as paid advertising, and may react to them unfavorably (Schawbel, 2015). This is where Ducoffe (1996) robust model of Advertising Value can provide valuable insights, because it explicitly considers consumer irritation with ads as a predictor of perceived Advertising Value. However, a direct application of this model to Twitter ads has yet to be attempted. Given the growing popularity of Twitter in Latin America, and potential advertiser concerns about user irritation with ads, our study provides the first estimation of Advertising Value for Twitter ads in a Latin American context, with Spanish-translated scales.

Currently, there are three distinct formats of Twitter advertising (see Figure 1). First there are Promoted Tweets which are ordinary Tweets created by brands to spark engagement with users. Twitter proprietary algorithms will display them at the top of relevant search results on Twitter’s search page, and on users’ newsfeeds when the Tweet is deemed relevant to the search or to the user’s interests. These Tweets are visibly labeled as Promoted, and Twitter charges the advertiser if the user clicks, favorites or retweets the Promoted tweet. Twitter does not give users the option to opt-out of seeing Promoted Tweets, but it does provide a Dismiss button the user can click on if he dislikes the ad (Twitter, 2014a). Twitter uses this negative reaction to refine its targeting of ads to that user as well as providing feedback to the advertiser.



Figure 1. Twitter advertising formats. Source: www.serps-invaders.com.
Note. used with permission.

Next, there are Promoted Accounts, which appear on the Who to Follow section of the user's homepage, again marked as Promoted. The Twitter algorithm analyzes the brand's followers and determines other brands those users tend to follow. When it detects a user that follows those brands, but not the advertiser's account, the algorithm recommends the advertiser's Promoted Account to that user (Twitter, 2014b). The advertiser pays for the number of new followers it gains.

Third, there are Promoted Trends, which appear at the top of the Trending Topics list on Twitter and are also labeled as Promoted. They are visible to all users of Twitter while they are being promoted (Twitter, 2014c).

With the exception of the "Promoted" label, these ad formats look just like as ordinary tweets, trends and suggested accounts. Therefore, they display natively in the Twitter desktop and

mobile user interface, as well as the various Apps Twitter provides for all mobile operating systems: iPhone, Android, Blackberry, Windows, Symbian, etc. Given the growing importance of mobile advertising, this compatibility between desktop and mobile screens has become an important advantage for Twitter in the ongoing shift of digital advertising budgets toward mobile platforms (Emarketer, 2015; Koh, 2014).

3 Consumer Attitudes Toward SNS Advertising

The most commonly used theory to explain user perceptions and attitudes toward Internet advertising is the model of Advertising Value proposed by Ducoffe (1996) and later refined by Brackett and Carr (2001). In this model, the consumers' Advertising Value is defined as "a subjective evaluation of the relative

worth or utility of advertising to consumers” (Ducoffe, 1995, p. 1). This evaluation is conceived as a thoughtful “cognitive assessment of the extent to which advertising gives consumers what they want” (Ducoffe, 1996, p. 24).

This model is based on the theory of media Uses and Gratifications (McQuail, 1983), which argues that media users expose themselves selectively to media based on their needs and gratification-seeking motives, and thus satisfy their utilitarian and/or hedonic

needs. Accordingly, Ducoffe (1996) proposed Informativeness, Entertainment and Irritation as antecedents of Advertising Value, and proposed a positive association between Advertising Value and Attitude toward web advertising. Credibility was later included in the model as a fourth antecedent of Advertising Value, again in the context of cyberspace advertising (Brackett & Carr, 2001). Figure 2 displays the model and the associated hypotheses. Next, we provide construct definition and formulate our hypotheses.

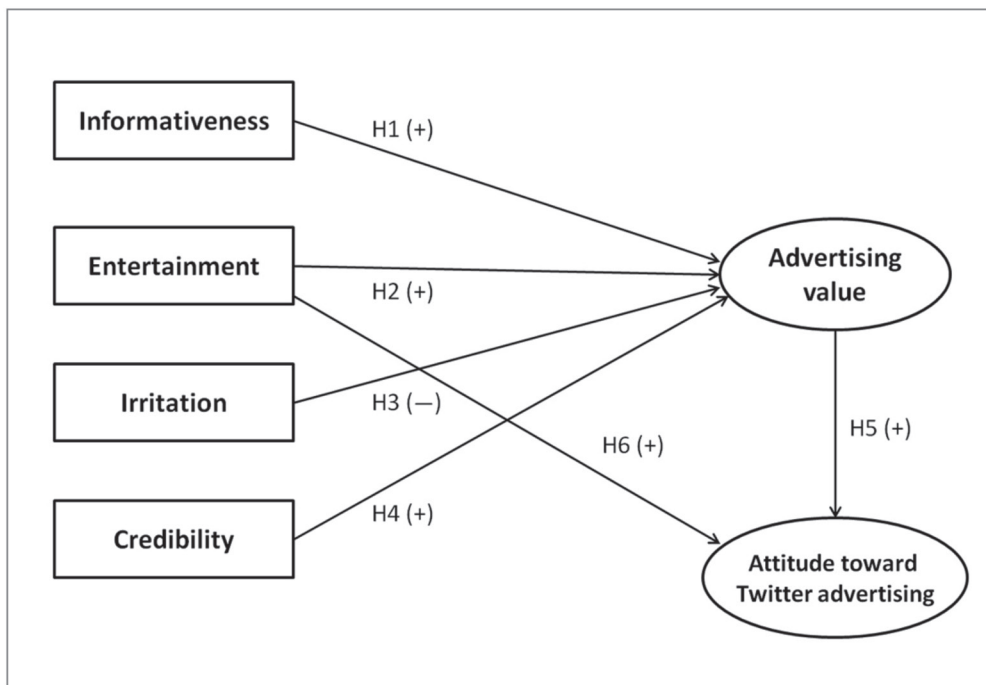


Figure 2. Advertising Value model.

Informativeness. Marketing theorists generally agree that the primary function of advertising is to convey information about products and services to allow consumers to make the best possible purchase decisions. If an ad provides useful, timely and relevant information consumers are more likely to perceive the ad as valuable. Hence our first hypothesis:

H1: *The perceived Informativeness of the Twitter ad is positively associated with its perceived Advertising Value.*

Entertainment. Advertising represents a substantial proportion of all media content. Hence, consumers are more likely to reach a positive evaluation of an ad when they find it entertaining (Ducoffe, 1995). According to uses and gratifications theory, the entertainment value of advertising content lies on its ability to fulfill consumer needs for escapism, diversion, aesthetic enjoyment or emotional release (McQuail, 1983). Moreover, the Promoted Tweet ad format provides opportunities for advertisers to be highly creative

in both ad copy and the multimedia material that Twitter currently allows. Therefore, we propose:

H2: *The perceived Entertainment of the Twitter ad is positively associated with its perceived Advertising Value.*

Irritation. Consumers can be irritated by advertising tactics they find annoying, offensive or overly manipulative (Ducoffe, 1996). The excessive amount of advertising that users find on some sites, or ad clutter, can also be a source of irritation (Kim & Sundar, 2010). This leads to our third hypothesis:

H3: *The perceived Irritation of the Twitter ad is negatively associated with its perceived Advertising Value.*

Credibility. Brackett and Carr (2001) proposed Credibility as a valid extension to the Ducoffe model, citing its prevalence in other models (Eighmey, 1997; MacKenzie & Lutz, 1989). In their study of web advertising value among college students, they found that using Credibility as an antecedent of Advertising Value increased the predictive power of the original model. Therefore, we postulate:

H4: *The perceived Credibility of the Twitter ad is positively associated with its perceived Advertising Value.*

In Ducoffe's (1996) original formulation, Advertising Value positively influenced Attitude toward web advertising, with an estimated

correlation of 0.70. Furthermore, he proposed that Entertainment also had a direct and positive effect on attitude toward web advertising because "both these constructs possess affective dimensions that are not captured by Advertising Value" (Ducoffe, 1996, p. 30), the latter being conceived mainly as a cognitive construct. We capture these two hypothesized relationships as follows:

H5: *The perceived value of the Twitter ad is positively associated with the Attitude toward Twitter advertising.*

H6: *The perceived Entertainment of the Twitter ad is positively associated with the Attitude toward Twitter advertising.*

Previous studies based on this model have examined various digital advertising formats, including banners (Brackett & Carr, 2001; Ducoffe, 1996; Sun, Lim, Jiang, Peng, & Chen, 2010), sponsored links in search engine results (Lin & Hung, 2009), Facebook ads (Logan et al., 2012; Dao et al., 2014); and online TV ads (Logan, 2013). In the increasingly important field of mobile advertising, the model has been used to explain consumer acceptance of SMS ads (Blanco, Blasco, & Azorín, 2010; Haghirian, Madlberger, & Inoue, 2008; Liu, Sinkovics, Pezderka, & Haghirian, 2012) and of location-based advertising (Xu, Oh, & Teo, 2009). Table 1 provides an overview of the Beta coefficients in the estimated structural models of these previous studies. To the best of our knowledge, this study is the first application of this classic model of advertising to the Twitter platform.

Table 1
Previous applications of Advertising Value model

Study	Advertising format	Survey/sample	Method	Predictors of Advertising Value	Signif. Betas	Direct effect on Attitude toward Advertising	Fit indices
Ducoffe (1996)	Banner ads	Intercept survey in Manhattan business districts n=318 age=32avg. 71% male	Path analysis	Informativeness Entertainment Irritation	0.419 0.358 - 0.202		0.914 (AGFI)
Brackett & Carr (2001)	Banner ads	Paper survey n = 421 University students, 53% male	General factorial Anal. of Variance	Informativeness Entertainment Irritation Credibility	Significant Significant Significant Significant	Significant Significant not sig. Significant	0.556 0.488 (Adj R ²)
Lin & Hung (2009)	Sponsored search links	Online/paper survey n = 711 37.6% older than 25; 53% male	PLS	Informativeness Entertainment Irritation Credibility	0.186 0.122 - 0.155 0.408	not sig. 0.196 - 0.212 0.18	0.684 (R ²)
Sun et al. (2010)	Banner ads	Laboratory experiment n = 134 university students, 35% male	PLS	Informativeness Entertainment Irritation	0.232 0.288 - 0.264		0.99 (AGFI)
Logan et al. (2012)	Facebook ads	Online survey n = 259 female university students	SEM	Informativeness Entertainment Irritation	0.52 0.41 -	- 0.40 -0.13	0.99 (AGFI)
Logan (2013)	Online streaming TV advertising	Professional online survey n = 377 young adults (18-34), 55% male	SEM	Informativeness Entertainment Irritation	0.34 0.61 -	- 0.51 -	0.82 (R ²)
Xu et al. (2009)	Location based advertising (Opt-in SMS)	Laboratory experiment n = 82 university students, 50% male	PLS	Informativeness Entertainment Irritation	0.324 0.442 - 0.153		0.627 (R ²)
Haghirian et al. (2008)	Opt-in SMS in mobile phones	Paper survey n = 164 Austrian university students, 49% male	PLS	Informativeness Entertainment Irritation	0.354 0.400 not sig.	0.263 not sig. not sig.	n.a.
		Paper survey n = 170 Japanese university students, 71% male	PLS	Informativeness Entertainment Irritation	0.250 0.409 - 0.242	0.368 not sig. not sig.	n.a.
Liu et al. (2012)	Opt-in SMS in mobile phones	Paper survey n = 164 Austrian university students, 49% male	SEM	Infotainment Irritation Credibility	0.126 not sig. 0.122		0.94 (CFI)
		Paper survey n = 170 Japanese university students, 71% male	SEM	Infotainment Irritation Credibility	0.112 - 0.085 0.116		0.94 (CFI)
Van-Tien Dao et al. (2014)	Facebook ads	Online survey n = not reported for FB model Vietnamese university students	PLS	Informativeness Entertainment Credibility	0.267 0.184 0.130		0.207 (R ²)



4 Instrument Development and Data Collection

Scales for Informativeness, Entertainment, Irritation and Advertising Value were adapted from Ducoffe (1996) in order for respondents to evaluate Twitter ads. Following Bracket and Carr (2001), we based our scale for Credibility on the items proposed by MacKenzie and Lutz (1989). The measure for Attitude toward Twitter advertising was adapted from Alwitt and Prabhaker's (1994) scale of attitudes toward TV advertising. Published scales were translated to Spanish by two native English speakers (none of the authors), and differences were reconciled. Spanish scales were then translated back to English by a third English speaker. Original and translated scales are provided in Appendix.

The survey was built and posted online using Google Forms, which afforded the important advantage of displaying correctly in both desktop and smartphone. We reasoned many potential respondents would first see the invitation in their cell phone, and we wanted to make it very quick and easy for them to respond to the survey from their mobile. We piloted the survey with twelve graduate Marketing students, and their suggestions were used to refine some items and improve the invitation and the layout of the survey in desktop/mobile screens.

We recruited participants for the study using a snowball sample. We enrolled two sections of business students (55 total students) in a class exercise to measure the reach and their ability to mobilize their personal social networks. Students first answered a brief survey with their name, age, gender, e-mail and number of Twitter followers and Facebook friends. Later, each student was given a personalized URL for an individual online copy of the Twitter survey created with Google Forms. Students were instructed to send their personalized URL through their personal social networks using whatever personal message they deemed most effective to viralize the invitation to take the survey among their first-order contacts,

and the second order-contacts of their contacts. No class credit was awarded for participating. The process ran for ten days and students were then shown the results of their recruiting efforts (656 total surveys completed, with the top recruiter obtaining 85 surveys, and 17 recruiters obtaining 0).

In addition, three research assistants (from the same major and age group as the previous students), who worked with one of the authors, sent the survey URL to their own personal networks, and obtained 110 completed surveys. Finally, 30 additional surveys were answered by students participating in a separate paper survey on mobile search advertising who volunteered their Twitter handle and were sent the URL for the survey. In all, 796 surveys were filled online between October and November 2013.

Careful examination of captured surveys revealed some respondents answered more than one survey, probably because they received invitations from several friends. These repetitions were discarded and only the first survey (according to the timestamp) was retained. Some surveys were completed by users whose age and workplace indicated they were no longer university students, and these too were discarded because they did not fit the target demographic for this research. We also discarded a few invalid surveys ($n = 15$) which had the same answer on all items. Given the socio-economic profile of our recruiters, the sample was heavily biased toward private university students, but the age and gender profile was appropriate for our study. A few ($n = 12$) students currently in high school also completed the survey and we retained their responses. In the end, 630 surveys were deemed usable.

Although not a probabilistic sample, we decided that a large sample composed mostly of university students was adequate for our study for two reasons. First, Millennials are an important target demographic for marketing studies, and particularly relevant for companies interested in using Twitter as advertising media (Smith, 2011; Moore, 2012). Second, the age distribution of

SNS in general, and of Twitter in particular, is heavily loaded toward teen and young adult users, as reported in a recent nationwide study in Mexico (Asociación Mexicana de Internet [AMIPCI], 2013) shown in Table 2. By comparison, final sample characteristics are displayed in Table 3.

Table 2
Demographics of twitter versus Facebook users in Mexico

	Twitter	Facebook
Percentage of internet users who have opened an account	69%	96%
Percentage accessing through a smartphone	55%	56%
Female	56%	55%
Male	44%	45%
18-24	48%	39%
25-34	26%	26%
35-44	14%	16%
45-54	8%	13%
55+	4%	6%

Note. Source: Adapted from “*Estudio de marketing digital y social media 2013*”, by AMIPCI, 2013.

Table 3
Sample characteristics

		Number	Percentage
Gender	Male	282	44.8%
	Female	348	55.2%
Age	15-16	7	1.1%
	17-18	37	5.9%
	19-20	190	30.2%
	21-22	291	46.2%
	23-24	75	11.9%
	25 or more	21	3.3%
	invalid/no answer	9	1.4%

5 Model Estimation

The hypothesized model was tested using the Partial Least Squares (PLS) method of structural equation modeling, which is suitable for exploratory research and is not subject to the normality assumption of covariance based SEM (Hair, Sarstedt, Ringle, & Mena, 2012). Estimation was carried out using SmartPLS version 2.0 (Ringle, Wende, & Will, 2005). We first evaluated the measurement or outer model, which involves examining indicator reliability, internal consistency reliability, convergent validity and discriminant validity (Hair et al., 2012).

Table 4 shows the outer model loadings, Cronbach alphas and composite reliabilities. Item irr1 was discarded because its loading was well below the 0.70 threshold suggested by Hulland (1999). All other items had acceptable loadings (numbers shown in Table 4 are after removing item irr1). In addition, composite reliabilities for all scales are well above the suggested threshold of 0.70 (Bagozzi & Yi, 1988), indicating good internal consistency.

Table 5 shows the average variance extracted (AVE), square root of the AVE (in bold on the main diagonal) and inter-construct correlations. All AVE values are well above 0.50 which indicates good convergent validity (Bagozzi & Yi, 1988). Furthermore, complying with the Fornell-Larcker criterion, each of the elements on the main diagonal is greater than the respective row and column off-diagonal elements, which indicates adequate discriminant validity at the construct level (Henseler, Ringle, & Sinkovics, 2009; Hulland, 1999).

Table 4
Indicator loadings, scale Cronbach alphas and Composite reliabilities

Scale	Indicator loading	Cronbach alpha	Composite reliability
Informativeness		0.7843	0.8741
inf1	0.8355		
inf2	0.8549		
inf3	0.8162		
Entertainment		0.8494	0.9088
ent1	0.8594		
ent2	0.8862		
ent3	0.8842		
Irritation		0.8434	0.9274
irr1*	0.5647		
irr2	0.9283		
irr3	0.9313		
Credibility		0.7925	0.8756
cred1	0.8416		
cred2	0.7950		
cred3	0.8740		
Advertising Value		0.8377	0.9023
adval1	0.8546		
adval2	0.8781		
adval3	0.8736		
Attitude toward Twitter Advertising		0.7781	0.8712
atoat1	0.8121		
atoat2	0.8449		
atoat3	0.8395		

Note. * This item was dropped from the analysis, loading < 0.70. Adapted from “Use of partial least squares (PLS) in strategic management research: A review of four recent studies”, by J. Hulland, 1999, *Strategic Management Journal*, 20, 195-204.

Table 5
Average variance extracted and inter-construct correlations

	AVE	INFORM	ENTERT	IRRIT	CREDIB	ADVALUE	ATOAT
INFORM	0.6983	0.8356					
ENTERT	0.7685	0.6713	0.8766				
IRRIT	0.8646	-0.4484	-0.5485	0.9298			
CREDIB	0.7014	0.6190	0.5972	-0.4758	0.8375		
ADVALUE	0.7548	0.7797	0.7352	-0.4874	0.6164	0.8688	
ATOAT	0.6927	0.7600	0.6512	-0.3824	0.4810	0.7234	0.8323

The cross loadings of the indicators provide a complementary check for discriminant validity, this time at the indicator level (Henseler et al., 2009). The loading of each indicator should be greater than all of its cross-loadings, and this was indeed the case. In sum, the measurement model displays adequate indicator and internal consistency reliability, as well as convergent and discriminant validity.

Figure 3 displays hypothesized model estimation for the full sample. The R² values indicate that the hypothesized predictors explain

70% of the variance of Advertising Value and 55% of the variance of Attitude toward Twitter advertising. With the exception of the path for Irritation, all coefficients had the expected signs and were statistically significant. Because normality is not assumed for PLS studies, tests of significance rely on bootstrapping (Hair et al., 2012). The t-values for the path coefficients are shown in Table 6. In this case, all coefficients are significant at the 5% level (critical value 1.96 for two-tailed tests), with the exception of Irritation, which falls short of significance.

Table 6
Path coefficients for original sample (n = 630) and 5000 bootstrapping samples

Path coefficient	Original sample	5000-samples mean	5000-samples standard error	t-statistic
INFORM -> ADVALUE	0.4726	0.4729	0.0319	14.7936
ENTERT -> ADVALUE	0.3310	0.3315	0.0360	9.1904
IRRIT -> ADVALUE	-0.0438	-0.0462	0.0264	1.6574
CREDIB -> ADVALUE	0.1054	0.1045	0.0337	3.1292
ENTERT -> ATOAT	0.2596	0.2594	0.0384	6.7562
ADVALUE -> ATOAT	0.5325	0.5327	0.0373	14.2746

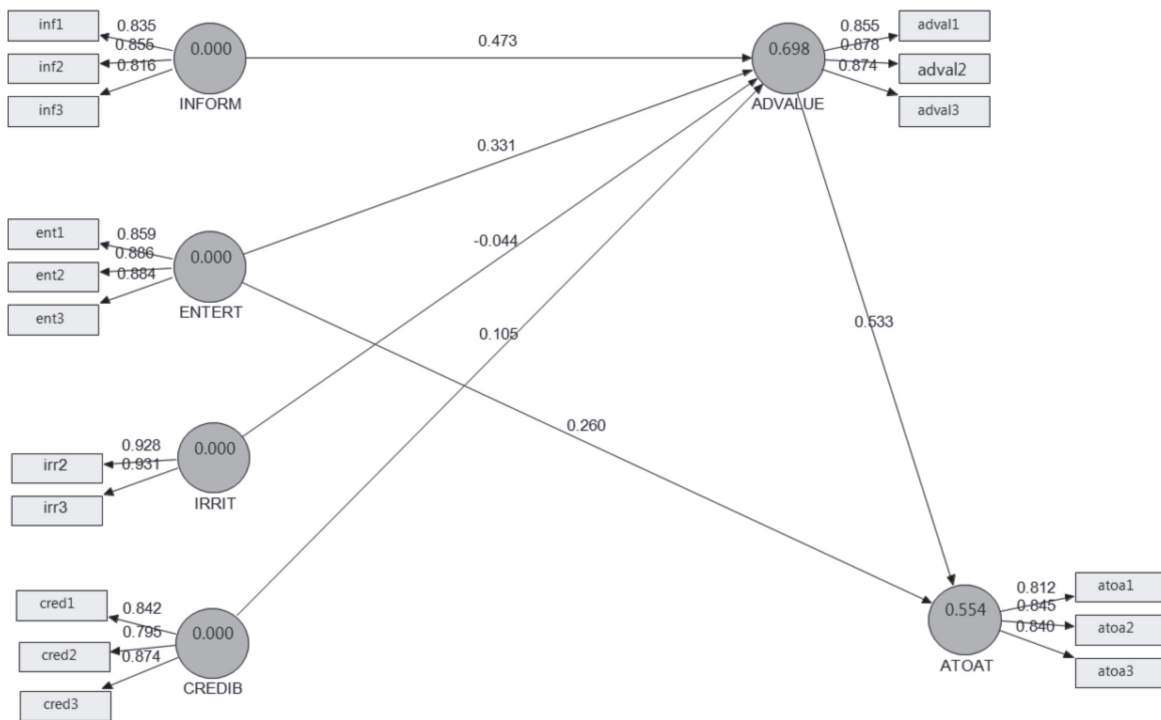


Figure 3. Estimated path coefficients for full sample (Model 1).

Overall, the hypothesized model shows very good fit to the Twitter survey data, and explains a substantial amount of the variance of the endogenous latent variables.

The results for the structural model estimation using the full sample are displayed on Table 7a as Model 1. These results support all hypothesized relationships with their expected signs, except for the path coefficient of Irritation, which came out as non-significant (although significant at the 10% level, critical value 1.650).

The minimum sample size for PLS is ten times the largest number of structural paths directed at a particular latent construct in the structural model (Hair, Ringle, & Sarstedt, 2011). In this case, the maximum is four paths directed toward Advertising Value, hence requiring a minimum sample size of 40. Therefore, with a sample large enough to support a more detailed

analysis, we decided to test the hypothesized model on a number of relevant subsamples. In every case we rechecked the outer model loadings, AVE, composite reliability, and the Fornell-Larcker criterion to make sure model reliability and validity remained acceptable despite the smaller subsample and/or different model specification (such as Models 6, 7, 18 and 19 where Irritation was not included). These test results are available as an Attachment Document.

The survey asked respondents how often they clicked on Twitter ads, reported frequencies are shown in Table 8. Respondents are approximately evenly split between those who have never clicked on an ad (41%) and those who have (59%). We tested the basic model among these two subsamples. Results are displayed side by side on Table 7a as Models 2 and 3.

Table 7a
Model estimation for full sample, click and non-click, female and male subsamples

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
	Full sample n = 630	Click n = 372	No-click n = 258	Female n = 348	Male n = 282	Female click n = 203	Male click n = 169
INFORM → ADVAL	0.473** (14.794)	0.420** (9.044)	0.521** (11.643)	0.502** (11.448)	0.443** (9.189)	0.467** (7.495)	0.371** (5.158)
ENTERT → ADVAL	0.331** (9.190)	0.381** (7.694)	0.250** (4.851)	0.292** (6.134)	0.372** (7.057)	0.331** (5.504)	0.451** (6.045)
IRRIT → ADVAL	-0.044 (1.657)	0.002 (0.076)	-0.097* (2.285)	-0.047 (1.401)	-0.037 (1.072)	--	--
CREDIB → ADVAL	0.105** (3.129)	0.106* (2.309)	0.124* (2.451)	0.126** (2.782)	0.084 (1.799)	0.145** (2.584)	0.042 (0.893)
R ² (ADVAL)	0.698	0.630	0.697	0.729	0.664	0.680	0.586
ENTERT → ATOAT	0.260** (6.756)	0.255** (4.352)	0.214** (4.149)	0.265** (5.209)	0.242** (4.046)	0.192** (2.611)	0.304** (3.249)
ADVAL → ATOAT	0.533** (14.275)	0.444** (7.803)	0.607** (12.342)	0.525** (10.931)	0.549** (9.554)	0.499** (7.064)	0.391** (4.436)
R ² (ATOAT)	0.554	0.421	0.590	0.554	0.552	0.420	0.412

Note. * significant 95%, ** significant 99% (two-tailed tests)

Table 8
Do you frequently click on Twitter ads?

	Female	Male	Total	Percentage
I never have	145	113	258	41.0%
I have clicked a few times	177	142	319	50.6%
I click often	19	26	45	7.1%
I click (nearly) every time I log in	7	1	8	1.3%
Total	348	282	630	100.0%

For participants who have never clicked on a Twitter ad, the Irritation variable becomes significant with the expected negative effect on Advertising Value. By contrast, for participants who do click on ads, the path coefficient of Irritation drops nearly to zero, and the t-statistic remains non-significant.

Next we tested the model on the male and female subsamples, results are displayed on Table 7a as Models 4 and 5. In both cases, Irritation comes out as non-significant, which is the same result as Model 1. However, an interesting difference appears for Credibility. For female respondents, Credibility retains the significance it had in the full sample, whereas for male respondents Credibility fails the significance test.

To perform a more detailed analysis of participants who click on ads, for whom it is already established that Irritation is not significant, the sample is next split into female (Model 6) and male (Model 7) respondents who have clicked on Twitter ads. The results reveal that Credibility is significant for female respondents, but not for males, the same conclusion derived earlier from Models 4 and 5.

At this point, we questioned whether there would be significant differences between users with low versus high levels of posting activity and between those who recently joined the SNS versus those who are more experienced. We did not measure these variables in our survey, but since over 90% of our survey respondents did provide their Twitter username, we complemented user

survey data with two statistics we obtained from their public profile: tenure and total number of tweets. We then split the sample on the median of these two variables and tested the basic model on these new subsamples. We examined first whether users differed on account of their level of posting activity; the results are displayed on Table 7b as Model 8 and Model 11. For both subsamples there were important differences with respect to the basic Model 1.

For respondents with the lower number of total tweets, the Irritation path coefficient became significant; whereas for those with the higher number of total tweets, both Irritation and Credibility became non-significant. Moreover, when the first group is further partitioned into female and male subsamples (Models 9 and 10), Irritation became non-significant for males but significant for females, whereas Credibility became non-significant for both males and females. On the other subsample, among users with the higher number of tweets, the comparison between females and males (Models 12 and 13) yielded no gender differences. These results indicate that as both male and female users gain more experience with the Twitter platform, Irritation and Credibility become less important in their assessment of Advertising Value.

Next we examined whether Twitter tenure revealed significant differences among survey respondents. Results for low and high tenure are displayed in Table 7c as Models 14 and 17.

Table 7b
Model estimation low and high total tweets, female and males subsamples

	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13
	Low tweets n = 282	Low tweets female n = 149	Low tweets male n = 133	High tweets n = 283	High tweets female n = 171	High tweets male n = 112
INFORM → ADVAL	0.463** (9.567)	0.470** (6.670)	0.458** (6.854)	0.524** (10.993)	0.571** (9.719)	0.469** (5.803)
ENTERT → ADVAL	0.295** (5.630)	0.281** (3.535)	0.308** (4.201)	0.337** (6.789)	0.333** (5.771)	0.347** (4.234)
IRRIT → ADVAL	-0.112* (2.501)	-0.148* (2.321)	-0.067 (1.332)	0.016 (0.577)	-0.056 (1.270)	-0.013 (0.272)
CREDIB → ADVAL	0.106* (2.075)	0.091 (1.414)	0.131 (1.921)	0.078 (1.719)	0.095 (1.643)	0.058 (0.961)
R ² (ADVAL)	0.671	0.667	0.680	0.710	0.772	0.617
ENTERT → ATOAT	0.300** (4.986)	0.264** (3.732)	0.328** (3.206)	0.245** (4.592)	0.265** (3.388)	0.218** (3.197)
ADVAL → ATOAT	0.447** (7.940)	0.516** (7.854)	0.373** (4.010)	0.572** (11.114)	0.536** (7.294)	0.629** (9.489)
R ² (ATOAT)	0.477	0.525	0.419	0.595	0.577	0.631

Note. * significant 95%, ** significant 99% (two-tailed tests)

Table 7c
Model estimation for low and high tenure, female and male subsamples

	Model 14	Model 15	Model 16	Model 17	Model 18	Model 19
	Low tenure n = 264	Low tenure female n = 145	Low tenure male n = 119	High tenure n = 265	High tenure female n = 154	High tenure male n = 111
INFORM → ADVAL	0.489** (11.169)	0.456** (7.142)	0.520** (8.035)	0.523** (9.876)	0.608** (9.936)	0.386** (4.345)
ENTERT → ADVAL	0.333** (7.082)	0.366** (5.690)	0.277** (3.610)	0.327** (5.797)	0.276** (4.171)	0.420** (5.244)
IRRIT → ADVAL	-0.081 (1.838)	-0.086 (1.755)	-0.075 (1.197)	-0.015 (0.467)	--	--
CREDIB → ADVAL	0.087* (1.968)	0.110* (2.334)	0.083 (1.216)	0.028 (0.721)	0.013 (0.285)	0.086 (1.279)
R ² (ADVAL)	0.746	0.805	0.673	0.635	0.665	0.621
ENTERT → ATOAT	0.300** (4.220)	0.310* (2.915)	0.272** (2.802)	0.251** (4.702)	0.261** (3.994)	0.222* (2.434)
ADVAL → ATOAT	0.446** (6.610)	0.440** (4.343)	0.465** (5.174)	0.565** (11.105)	0.559** (8.927)	0.588** (6.739)
R ² (ATOAT)	0.492	0.512	0.463	0.575	0.572	0.581

Note. * significant 95%, ** significant 99% (two-tailed tests)

Low tenure users did not significantly differ from the basic Model 1. However, for high tenure respondents, the path coefficient for Credibility became non-significant. When we further split each subsample into male and

female respondents, we found that for low tenure male respondents Credibility lost its significance, whereas for females it did not. This result mirrors the previous results of Models 4 and 5. Among high tenure respondents we did

not detect any gender differences (Models 18 and 19). Again, these results suggest that as Twitter users of both genders become more experienced, Irritation and Credibility lose their initial significance for assessing Advertising Value, and only Informativeness and Entertainment retain their relevance.

6 Conclusions

This research contributes to our understanding of perceptions of Advertising Value among users of SNS, where there are as yet few published studies (e.g. Dao et al., 2014; Hassan, Fatima, Akram, Abbas, & Hasnain, 2013; Logan et al., 2012; Saxena & Khanna, 2013). Specifically, we found that perceived Informativeness, Entertainment and Credibility significantly influence perceptions of Advertising Value and Attitudes toward advertising in the Twitter platform. Four of our six research hypotheses were supported in all samples, one was supported in the full sample and some subsamples, and only one hypothesis received limited support. This shows the applicability of the Ducoffe model on SNS and in a Latin American context.

The results from the main sample and various subsamples indicate that Informativeness has the strongest effect on Advertising Value for Twitter ads; only in two of the subsamples did it narrowly take second place to Entertainment. The magnitude of the Informativeness path estimates is consistent with the results from the study of web advertising by Ducoffe (1996) and Brackett and Carr (2001), and the more recent study of Facebook ads by Logan et al. (2012), as shown in Table 1. Hence, Hypothesis 1 is strongly supported in all samples.

Entertainment had the second strongest effect on Advertising Value, with statistically significant effects in every sample. Furthermore, Entertainment was found to have a direct effect on Attitude toward Twitter advertising; the effect was substantial and significant across all subsamples. Thus we find strong support for both Hypothesis 2 and Hypothesis 6.

Credibility came in third for the size of its effect on Advertising Value. In addition, we found statistically significant gender effects for this predictor. Specifically, when the full sample was split into male and female respondents, Credibility was significant only among females. This finding was repeated when both the clicking subsample and the low-tenure subsample were split by gender: in both cases Credibility mattered to women but not to men. Therefore, Hypothesis 4 receives qualified support.

Lastly, Irritation came out as the weakest predictor of Advertising Value in this study, failing to reach the significance level in nearly all subsamples. A possible explanation would be that nearly half of our Millennial sample find Twitter ads irritating and refrain from clicking on them; for this subsample (Model 3) Irritation came out as a significant predictor of Advertising Value. However, slightly over half of the sample are less annoyed by Twitter ads, have clicked on them at some point, and for these, the path estimate for Irritation came out as non-significant.

In every case where Irritation was significant, the magnitude of the path coefficient took fourth place after Informativeness, Entertainment and Credibility. We would argue that Twitter's policy of protecting the user experience (Copeland, 2012), and placing relatively few ads in users' newsfeed has resulted in Irritation not being a major concern for Millennial Twitter users. Therefore, Hypothesis 3 receives only limited support. A summary of study conclusions regarding the research hypotheses is provided in Table 9.

Implications for brands and businesses advertising in the region are straightforward. Across most of our subsamples, Informativeness had the largest estimated path coefficients on Advertising Value. Millennial Twitter users thus place a premium on the informative quality of the ads Twitter displays. The implication for advertisers is that effective Promoted Tweets must provide relevant and timely product/service information. In addition, Informativeness could

be enhanced by increasing the personalization of messages the targeting options Twitter provides

(such as personal interests, keywords and behavioral targeting).

Table 9
Summary of hypotheses

Hypothesis	Model conclusion
H1 - Informativeness (+) on AdValue	Supported in all samples
H2 - Entertainment (+) on AdValue	Supported in all samples
H3 - Irritation (-) on AdValue	Limited support: among non-clicking respondents and among females with low total tweets
H4 - Credibility (+) on AdValue	Supported in full sample Supported also among female respondents, females who click on ads, and females with low tenure
H5 - AdValue (+) on Attitude	Supported in all samples
H6 - Entertainment (+) on Attitude	Supported in all samples

Entertainment had the second strongest influence on Advertising Value. Moreover, the direct effect of Entertainment on Attitude was significant and remarkably consistent across all subsamples. The implication is that writing witty, funny or entertaining promoted tweets positively influences users' assessment of Twitter ads and their general attitude toward Twitter advertising.

Irritation had a statistically significant effect only among respondents who reported never clicking on a Twitter ad, and users with low total tweets, although Model 9 showed it was really only a concern for female users. Hence, the majority of our Millennial sample did not take issue with Twitter ads, which suggests the platform provides an interesting opportunity to advertisers, particularly in light of recent industry reports of user fatigue with Facebook ads (Tassi, 2013) and some research studies where Irritation has been a significant antecedent of Advertising Value (Hassan et al., 2013). Another relevant finding is that as users gain more experience with Twitter, measured as both tenure and total posted tweets, Irritation becomes non-significant as a predictor of Advertising Value. This suggests that users' initial concerns with advertising tend to diminish as they make more use of Twitter, presumably because of a positive user experience.

Finally, the study found that Credibility is significant only among females and users with

lower total tweets. The implication for advertisers, particularly those catering to women, is that writing copy that reinforces the Credibility of the promoted tweet (say by mentioning independent reviews or money-back guarantees) will make the ad more effective among female users. Given concerns about Millennial scepticism toward conventional advertising (Schawbel, 2015), this finding is welcome news for brands.

A few limitations of the study should be acknowledged. Chief among them is the use of a student sample, albeit a large one. This was not our original intent. When we launched this study we planned to use Twitter to directly invite potential respondents to take our survey using the @mention message option. One of the authors had just completed research on event discussion on Twitter (Núñez, 2013) which provided us with lists of geolocalized Twitter usernames centered on Mexico City (124,504 users). These are local users who participated in noteworthy discussions of events, which sometimes became local trending topics. Hence, they can be considered probabilistic samples of Twitter users around Mexico City. We drew a stratified sample from this population and started to manually invite users to take our survey, but very shortly we found our account blocked by Twitter who construed our contacting non-followers as spamming and only removed the block when we promised to discontinue

our contacting behavior. Facing this restriction, we decided to invite respondents through their Twitter contacts, in effect a snowball sample, using our own students as recruiters.

Although precluded from using a probabilistic sample, a survey of university students is still relevant for this research. Millennials are a key segment for many brands, and industry surveys report that the age distribution of Twitter participants strongly favors teen and young adults (AMIPCI, 2013). Still, some caution must be exercised when generalizing results from this study.

First, for brands advertising in Mexico and Latin America, Twitter is among the largest and fastest-growing SNS. Second, the results of this study, and other industry reports (Tassi, 2013), suggest user irritation with ads is lower than on Facebook, the leading SNS. Third, by targeting Millennials this study contributes to our knowledge of a key demographic, not only in Mexico but around the world (Smith, 2011). Moore (2012, p. 436) has pointed out that “technology drives global homogeneity among worldwide population within the Millennial age group”. Fourth, this research extends results from previous studies of Internet advertising perceptions among Hispanic consumers, a key market segment in the U.S. (Korgaonkar, Silverblatt, & O’Leary, 2001).

Two important implications for the Twitter platform itself should be mentioned. First, we would argue that the company’s policy of protecting the user experience, and avoiding excessive advertising, could explain why 59% of users in our sample had clicked on ads at some point and did not have Irritation as a significant predictor of Advertising Value. It is very likely that our survey respondents had experience with Facebook ads, and were able to compare advertising clutter among both platforms.

Second, the fact that smartphone penetration is very high among our Millennial sample implies a positive outlook for mobile Twitter advertising, which has grown rapidly

in the last year and now makes up 90% of ad revenues (Emarketer, 2016c).

As for future research, the authors would welcome opportunities to extend and contrast these results with Spanish-speaking Millennial samples from other Latin American countries or even to develop and validate a Portuguese translation of the Ducoffe scales. The fact that the survey can be delivered through Google Forms, in both desktop and smartphone screen sizes makes such studies fairly straightforward, and research on user perceptions of social media advertising is still in its infancy.

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Appendix: Original and Translated Scale Items for Measures

<i>Twitter advertising...</i>	<i>La publicidad en Twitter...</i>
Informativeness (Ducoffe, 1996) is a good source of product information supplies relevant product/service information provides timely information	es una buena fuente de información de productos y servicios proporciona información relevante de productos y servicios proporciona información oportuna
Entertainment (Ducoffe, 1996) is entertaining is enjoyable is fun to use	es entretenida es agradable es divertida de usar
Irritation (Ducoffe, 1996) is too insistent* is annoying is irritating	es demasiado insistente* es molesta es irritante
Credibility (Brackett & Carr, 2001; MacKenzie & Lutz, 1989) is trustworthy is believable / is credible is convincing	es confiable es creíble es convincente
Advertising Value (Ducoffe, 1996) is useful is valuable is important	es útil es valiosa es importante
Attitude toward Twitter advertising (Alwitt & Prabhaker, 1994) helps me to find products/services that match my personality and interests helps me know which brands have the features I am looking for is a good way to learn about what products/services are available	me ayuda a encontrar productos y servicios que coinciden con mi personalidad e intereses me ayuda a conocer qué marcas tienen las características que yo busco es una buena manera de enterarse de los productos y servicios disponibles

*new item irr1, eventually discard

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Contribution	Enrique Murillo	María Merino	Adriana Núñez
1. Definition of research problem	√	√	√
2. Development of hypotheses or research questions (empirical studies)	√	√	
3. Development of theoretical propositions (theoretical work)	√	√	
4. Theoretical foundation / Literature review	√	√	
5. Definition of methodological procedures	√	√	√
6. Data collection	√		√
7. Statistical analysis	√		
8. Analysis and interpretation of data	√	√	
9. Critical revision of the manuscript	√	√	
10. Manuscript writing	√	√	

