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## Getting to know you: Social media personalization as a means of enhancing brand loyalty and perceived quality



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ARTICLE INFO	A B S T R A C T
Keywords:	Social media has become one of the largest environments of human interaction, with more than 80% of
Perceived personalization	Americans using social media and firm spending on social media marketing more than quadrupling in the past
Social media	decade. Yet, little is known about the effects of ad personalization in the social media context. This research
Consumer brand engagement	develops and tests a comprehensive model of personalized advertising in the development of consumer's brand
Brand attachment	percentions using 242 responses collected from Amazon Mechanical Turk Results suggest perceived percena
PLS-SEM	lization positivaly imposts concreted from random wetrained attack fields suggest perceived personal
Personalized advertising on Facebook	ization positively impacts consumer brand engagement and brand attachment, both enhance perceived quanty

and brand loyalty of brands advertised on Facebook.

#### 1. Introduction

Personalized advertising on Facebook

Social media has become a nearly-ubiquitous environment for human interaction. In fact, a recent study by the Pew Research Center on social media use in the United States found that over 80% of all Americans use at least one form of social media, and greater than twothirds use Facebook specifically-more than 75% of whom check their Facebook pages at least once a day (Smith and Anderson, 2018). Consequently, as social media use becomes increasingly common, firms seek to reach and interact with current and potential customers through social media platforms. Trends in marketing budget allocations reflect this important shift; data suggests that social media spending has increased by nearly 250% in the past ten years, with analysts expecting even more growth as firms seek to capitalize on the unique opportunities presented by social media (CMO Survey, 2018). One area of particular growing interest for marketers is using personalized advertisements based on customers' specific personal preferences, prior purchase histories, demographics, and recent searches on the Internet (Li, 2016). Personalized ads allow producers to engage consumers in just such a manner-on a personal level with the aim of developing a more effective relationship and better meeting consumers' needs.

The effectiveness of personalization is well-documented in traditional media such as direct mail (Baek and Morimoto, 2012), telemarketing (Yu and Cude, 2009), mobile messaging (Xu, 2006), and website ad personalization (Awad and Krishnan, 2006; Ho and Bodoff, 2014), but little is known about the effects of personalization in social media given its recent emergence and the disruptiveness of social media

as compared to more traditional channels (Baird and Parasnis, 2011). More precisely, while prior work on personalization in traditional marketing channels reveals increases in brand engagement and attachment, and consequently in perceived quality and brand lovalty. scholarship investigating these effects in social media is needed given the different nature of the online environment. For instance, social media is a more intimate setting than traditional channels like direct mail or telemarketing as the customer is able to interact directly with the ad and the company, and because many customers utilize social media frequently throughout the day creating an enhanced opportunity to build a customer relationship (Sashi, 2012). Further, results among emerging scholarship in this area have yet to paint a consistent picture with their findings. For instance, while some work suggests personalizing web browsing experiences increases sales (Oberoi et al., 2017), personalization on Facebook can engender brand avoidance when users become skeptical of the personalization (Tran, 2017). In other words, the intimate nature of social media may make consumers more resistant to personalization when they view it as invasive.

In light of the differences of this more intimate setting and the gap in our understanding of personalization in this space, our intent with this work is to develop and test a comprehensive model of personalization's effects on consumer brand perceptions and attitudes, namely consumer brand engagement, brand attachment, perceived quality, and brand loyalty. Toward this end, we first review literature related to social media marketing and to personalization and develop a model with the constructs mentioned above. We then develop hypotheses and report on the results of a PLS-SEM analysis of 242 observations from a

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manipulation-based survey in MTurk before concluding with a discussion and suggestions for future research.

#### 2. Literature review

Personalization can be defined as delivering personalized advertisements to individuals based upon their exclusive preferences (Li, 2016) that is used by many organizations for effective advertising and relationship management in social media and email (Montgomery and Smith, 2009). Ideally, as the relationship is cultivated, so too is the consumer's attachment and lovalty to the brand, ultimately driving consumer purchasing behaviors (Hollebeek et al., 2014). One reason that personalization can be effective—and a reason why personalization in the current online environment is increasingly important-is that firms have access to massive amounts of data on customer shopping and buying habits, website browsing, and tastes and preferences that can be analyzed and compared to similar user patterns to create customer profiles (e.g., Ansari and Mela, 2003; Lavie et al., 2010; Li, 2016; Wedel and Kannan, 2016). With this data, personalization allows firms to customize their interactions with users to highlight a specific product that the user has researched, or highlight brand features that the user is likely to find attractive.

While little research pertaining to perceived personalization in social media has accumulated so far (c.f., Sunikka and Bragge, 2009), prior work reveals that using such data to tailor email content with consumer-specific information increases engagement and sales leads (Sahni et al., 2018) and that using prior web browsing data to create a user-tailored website experience increases web sales (Oberoi et al., 2017), lending support to the influence of personalization in digital communication. With respect to social media specifically, scholars have demonstrated that advertising on Facebook fosters a degree of interactivity with users that ultimately enhances brand image and equity (e.g., Dehghani and Tumer, 2015; Logan et al., 2012). Personalization thus allows for companies and consumers to engage and interact indirectly while also increasing brand awareness, customer loyalty, customer satisfaction, and customer retention (Maslowska et al., 2016).

Personalization's effects are not all positive, however; some users respond negatively to advertising that they see as personal to the point of being invasive (White et al., 2008). Indeed, when Facebook users perceive ads as personalized to them specifically, response ranges vary: some view the ads as more credible and have a positive attitude toward the personalized ad, while others view it skeptically and experience higher levels of avoidance (Tran, 2017). Likewise, another drawback facing marketing professionals is that the personalized ads may not be perceived by its recipient as personalized and vice versa: some ads that are not meant to be personalized are perceived as so (Li, 2016). One challenge for marketers, therefore, is understanding what people perceive as personalized. The goal of online personalized advertising is to customize online content to match user's needs; by matching with these needs, consumers develop positive experiences with brands (Tam and Ho, 2006). Prior work demonstrates that effective social media marketing can positively influence users' engagement (e.g., Cvijikj and Michahelles, 2013) and attachment to a brand (e.g., Jung and Soo, 2012). It stands to reason, therefore, that more positive perceptions of ad personalization will strengthen users' attitudes toward a brand, and consequently their perceptions of and loyalty to the brand itself (e.g., DelVecchio et al., 2006; Fetscherin and Heinrich, 2015). In the following section, we develop hypotheses along these lines. Fig. 1 displays this conceptual model.

#### 3. Hypothesis development

As noted above, companies have access to a substantial amount of information as it pertains to their customers due to the growth of social media, and social media provides organizations with a way to interact with and reach consumers through personalized advertising. The advantage of personalization is in this interaction: it allows the organization to form relationship with users (Blasco-Arcas et al., 2016) and, consequently, generate deeper consumer engagement (Maslowska et al., 2016). Put differently, effective personalized ads enhance consumer engagement with a brand by fostering a sense of relationship. Within the social media environment, the large amount of data available to organizations to use in personalizing social media ads enhances the ability of organizations to tailor their messages to appear more participative and should strengthen these responses. By encouraging dialogue between both the consumer and an organization, this communication allows consumers to be a part of the purchasing process (Blasco-Arcas et al., 2016). Further, when molding the message to consumer preferences, personalization plays a large part in part in differentiating the ads from spam and further benefits consumer brand engagement (Vesanen, 2007). We therefore hypothesize that personalized advertising in social media will enhance brand engagement.

# **H1.** Perceived personalization is positively associated with consumer brand engagement.

In a similar vein, as organizations develop ads based specifically on consumers' personal preferences and past purchases or recent browsing history, personalized messages can increase consumer attachment to the brand. With these ads, marketing experts can, for instance, give consumers different options of where to purchase their favorite products at the lowest prices, or increase their participation with and commitment to a product or brand (Zhang et al., 2015). When attachment is high, consumers perceive these personalization ads positively and use these messages to emotionally grow with a product (Song et al., 2016). These personalized messages may also advertise the positive reviews of a product so that consumers are able to understand that other people have also grown attached to this product (Chu and Kim, 2011). As marketers continue to collect information on consumers' attachment preferences they will be able to make these ads significantly more customized to a consumer liking, and social media serves as an ideal medium for brand attachment to develop because of the ability to customize messages and provide immediate interaction opportunities. In other words, personalization allows consumers that are not necessarily familiar with a product to develop an emotional attachment to a product, and those who have a prior affinity for a brand or product to increase their attachment to it by highlighting features relevant to the consumers. We therefore expect perceptions of personalized advertising in social media to increase consumers' brand attachment.

**H2.** Perceived personalization is positively associated with brand attachment.

Perceived quality, as it relates to consumer brand engagement, is essentially a consumer's perception of the reliability and dependability of a product or service and is tied closely to customers' preference, satisfaction, and purchase choices (Nikhashemi et al., 2017). Much as consumer brand engagement targets consumers' preferences in an attempt to stimulate a positive response, the goal of enhancing consumers' perceptions of brand or product quality is to encourage purchase and post purchase behavior such as repurchase (Nikhashemi et al., 2017). Consumer brand engagement on social media allows consumers to voice their perceived quality of a product or service is through reviews or ratings.

## **H3.** Consumer brand engagement is positively associated with perceived quality.

Brands that interact with their consumers on a regular basis through social media campaigns and public engagements tend to have higher customer loyalty and, subsequently, higher profitability (Hollebeek et al., 2014). Successful businesses typically build loyalty in several different ways, including rewards programs, public relations, or direct marketing. Social media, and specifically Facebook, has opened the door to producer-consumer communication as a means of enhancing



loyalty (Jahn and Kunz, 2012). Through social media, brands have increasingly used online brand communities hosted on a given brand's Facebook page to stay aware of changes in consumer preferences and to develop positively related brand relationship outcomes (Gummerus et al., 2012).

Brand loyalty is a conditioned response to a product due to a favorable perception about a brand (Chaudhuri and Holbrook, 2001). Therefore, a firm frequently engages with a customer in the pre- or postpurchase process, he or she may decide to purchase that brand because of the favorable relationship with that firm (Chaudhuri and Holbrook, 2001). Consequently, many producer's budget a significant amount of money to building these consumer relationships, and often do so via social media (Baldus et al., 2015). As a result, as producers build relationships with their customers, and customer engagement increases, brand loyalty will increase.

#### H4. Consumer brand engagement is positively associated with brand loyalty.

Prior research shows that attachments with a brand are emotionallybased, and that positive feelings toward a brand drive purchase and repurchase behaviors (Park et al., 2010). Often, the reason people develop these emotions towards a brand is because of its perceived quality (Jacoby et al., 1971). These feelings can often be persuaded by the public, by the company, or by the peers of the consumer as social influence has been proven to play a role in purchasing decisions (Mangleburg et al., 2004). For instance, a consumer may see how his or her peers react to a certain product via social media; if peers are reacting positively to a brand or product, a consumer may determine if he or she wants to attach him or herself to the product or likewise, a consumer may want to distance him or herself from a product as a result of unfavorable feedback from peers (Mangleburg et al., 2004).

#### H5. Brand attachment is positively associated with perceived quality.

As noted above, brand attachment is determined by the strength of the emotional bond between a brand and a consumer (Park et al., 2010). As with brand loyalty, brand attachment is pursued by organizations because it typically predicts customer repurchase behaviors (Chaudhuri and Holbrook, 2001). Brand attachment consists of two factors, namely brand connection and brand prominence—the depth of attachment between a brand and consumer, and the extent to which positive feelings and memories about a specific brand are on one's mind, respectively (Park et al., 2010). These factors are what drive repurchase. With respect to the online environment, personalization on social media can assist consumers through the development process of brand attachment and brand loyalty. As a producer-consumer relationship continue to mature in the social environment, the emotional bond of brand attachment and brand loyalty will positively correlate. Thus

#### H6. Brand attachment is positively associated with brand loyalty.

Brand loyalty is viewed as a conditioned favorable response to a brand after a customer purchases the brand and feels happy with benefits provided by that brand. Most of the time, brand loyalty is derived when a customer is satisfied with the quality of a product (Chaudhuri and Holbrook, 2001). The origination of brand loyalty starts at the first purchase of a product, which often is made based on the perceived quality of that particular product. Being an emotional construct, brand loyalty is largely driven by how a person feels about a certain product and the quality that he or she thinks it is. In a social media context, and particularly with Facebook, consumers are able to discuss products and how they perceive the quality of products (Mangleburg et al., 2004). Based on these discussions (i.e. reviews), a consumer may decide to purchase a product because that product can give them a unique value that no other product could imitate (Chaudhuri and Holbrook, 2001). As consumers continue to come back for the same products, they start believing each product produced by that specific brand contains a unique quality that no other brand can give them. Therefore,

H7. Perceived quality is positively related to brand loyalty.

#### 4. Methodology

#### 4.1. Data collection and procedure

Participants were recruited through Amazon's Mechanical Turk. A brief introduction of the survey was given to respondents before the survey started. A question "Are you on Facebook?" was created to be sure that only those who had a Facebook account could proceed to the next section, where they were provided with the following definition of personalized advertising:

"Personalized advertising on Facebook is the process of advertising in which a retailer develops a customized ad of a product or service on Facebook based on prior customer activities on the Internet."

Based on the information given, respondents were asked whether or not they had previously encountered a personalized advertisement. Only those who answered "Yes" were eligible to participate in the rest of the questionnaire. Respondents were then assigned to see one of the personalized advertisements of four brands: Dell, Nike, American Airlines, and Texas Road House. A preamble of Texas Roadhouse advertisement was written as follows:

#### Table 1

Demographic characteristics (n = 242).

Variables		Percent		
Age				
	19 or younger	7.85		
	20–30	57.02		
	31–40	16.94		
	41–50	11.16		
	More than 50	7.02		
Gender				
	Male	47.11		
	Female	52.89		
Students vs. non-students				
	Students	56.61		
	Non-students	43.39		
Time of using Facebook per day				
	Less than 1 h	43.39		
	1–3 h	41.74		
	3–5 h	8.68		
	5–7 h	3.31		
	More than 7 h	2.89		
Income				
	Less than \$20,000	13.22		
	\$20,000-\$39,999	23.14		
	\$40,000-\$59,999	15.29		
	\$60,000-\$79,999	14.46		
	\$80,000-\$99,000	11.16		
	More than \$100,000	22.73		

"Imagine you were planning to find a good restaurant to host your graduation party with your friends. You searched online to find more information about the restaurant like menu, price, location, customer review, availability, opening time and so on. One day later when you opened your Facebook account, you recognized there was an advertisement of Texas Roadhouse displayed on your Facebook."

Then respondents were asked to write what they thought about the ad that was followed by a manipulation check, "Do you think that the ad is general (1) or personalized (7)?" After that, respondents were asked to answer the main questions from the questionnaire,

#### Table 2

Loadings and validity.

demographic questions, and a validation question (a simple math question to make sure they read the questionnaire). 289 responses were collected, of which 242 were completed observations that met requirements. Demographically, the results showed that the sample was 52.89% female, young (19–30 years old: 64.88%), and largely engaged as students 56.61%. 41.74% of respondents reporting spending 1–3 h a day on Facebook (see Table 1).

A simple *t*-test was conducted using the manipulation check question to see whether the ad to which respondents were exposed was general (1) or personalized (7) with a midpoint 4. Results showed that the ad was perceived as personalized (M = 4.87, SD = 2.121, t (df=241) = 6.366, p < 0.001), lending support that the manipulation check was successful.

#### 4.2. Measurement scales

The present research adopted measurement scales from existing literature, specifically perceived personalization (Srinivasan et al., 2002), consumer-brand engagement (Hollebeek et al., 2014), brand attachment (Thomson et al., 2005), perceived quality and brand loyalty (Yoo and Donthu, 2001). Consumer-brand engagement is a secondorder construct comprised of cognitive processing (an example item is "seeing an ad of this brand on Facebook gets me to think about this brand"), affectation (an example item is "I feel very positive when I'm exposed to an ad of this brand on Facebook"), and activation (an example item is "I spend a lot of time seeing an ad of this brand on Facebook compared to other types of ads"). Brand attachment is a secondorder construct comprised of affection (affectionate, friendly, loved, peaceful), passion (passionate, delighted, captivated), and connection (connected, bonded, attached). For these two second-order constructs, all first-order indicators were averaged and the average score used as an indicator in the structural analysis after removing low or cross-loading items (Steenkamp et al., 2003). The loadings and validities are displayed in Table 2. All other latent constructs were first-order, and all measurements used 7-Likert scales with 1 being "Strongly disagree" and 7 "Strongly agree."

Items	Sample size: n = 242							
	α	CR	AVE	AVE > Corr2	Loadings	Mean	SD	t-value
Perceived personalization (Srinivasan et al., 2002)	0.863	0.9	0.644	0.644 > 0.494				
1. This ad makes purchase recommendations that match my needs.					0.805	0.804	0.026	30.928
2. I think that this ad enables me to order products that are tailor-made for me.					0.782	0.781	0.030	25.831
3. Overall, this ad is tailored to my situation.					0.808	0.808	0.028	29.093
4. This ad makes me feel that I am a unique customer.					0.810	0.810	0.023	35.942
5. I believe that this ad is customized to my needs.					0.806	0.804	0.033	24.739
Consumer-Brand Engagement (Hollebeek et al., 2014)	0.908	0.942	0.844	0.844 > 0.494				
1. Average score of items of "activation" factor					0.925	0.925	0.009	97.733
2. Average score of items of "affection" factor					0.936	0.936	0.009	102.660
3. Average score of items of "cognitive processing" factor					0.895	0.894	0.013	67.715
Brand attachment (Thomson et al., 2005)	0.96	0.974	0.926	0.926 > 0.370				
1. Average score of items of "affection" factor					0.953	0.953	0.008	119.276
2. Average score of items of "connection" factor					0.964	0.964	0.007	146.331
3. Average score of items of "passion" factor					0.970	0.970	0.004	242.404
Perceived quality (Yoo and Donthu, 2001)	0.934	0.95	0.791	0.791 > 0.328				
1. This brand is of high quality.					0.869	0.868	0.028	30.627
2. The likely quality of this brand is extremely high.					0.918	0.918	0.013	70.259
3. The likelihood that this brand would be functional is very high.					0.880	0.880	0.018	50.166
<ol><li>The likelihood this brand is reliable is very high.</li></ol>					0.883	0.882	0.022	40.756
5. This brand must be of very good quality.					0.896	0.897	0.015	60.505
Brand loyalty (Yoo and Donthu, 2001)	0.821	0.893	0.737	0.737 > 0.400				
1. I consider myself to be loyal to this brand.					0.921	0.921	0.010	95.039
2. This brand would be my first choice.					0.886	0.887	0.017	53.471
3. I will not buy other brands if this brand is available at the store.					0.761	0.759	0.049	15.559

#### 4.3. Measurement model

Compared to the covariance-based approach that could be analyzed by AMOS or LISREL, partial least square structural equation modelling (PLS-SEM) is less sensitive to the normal distribution assumption. In addition, it is more suitable to evaluate estimated parameters in more complicated multivariate relationships between exogenous and endogenous variables (Ringle et al., 2014). Therefore, PLS-SEM was selected in this research using SmartPLS 3 software (Ringle et al., 2014). All scales were measured reflectively.

The conceptual model was tested through two stages: measurement model and structural model (Anderson and Gerbing, 1988). The measurement model of all the related constructs was tested by assessment of three key criteria: reliability, convergent validity, and discriminate validity (Chin and Newsted, 1999). We used three assessment indices to examine reliability: internal component reliability, composite reliability, and factor loadings. Findings indicated that all three indices exceeded required cut-off values. More specifically, the ranges of internal component reliability, and factor loadings were 0.821–0.960, 0.893–0.926, and 0.761–0.970, respectively.

Convergent validity was assessed through average variance explained (AVE) with an expected value of greater than 0.5. Results showed that AVEs of all latent variables were satisfactory (0.644–0.926); therefore, the requirements for convergent validity were fulfilled (Hair et al., 2010). Discriminant validity was tested by comparing AVEs of one construct to squared correlation (measured by Pearson's correlation coefficient) of that construct with other constructs in the model. Discriminant validity is established only when AVEs are greater than the squared correlation (Fornell and David, 1981). Results confirmed that these requirements were met, so discriminant validity was established (see Table 2).

#### 4.4. Structural model

Structural model analysis, conducted as a second step after the measurement model was validated, was employed to test all relationships proposed in the conceptual model. An assessment of the structural model revealed that  $R^2$  of 0.264 (brand attachment), 0.494 (consumer brand engagement), 0.231 (perceived quality), and 0.551 (brand loyalty) showed that perceived personalization was a strong predictor. Bootstrapping resampling procedures based on 5000 samples were implemented to test directions and significant levels of estimated path coefficients of the model. Goodness of fit of the path coefficients was analyzed through means of asymptotic t-statistics generated through this analytical procedure. Standard errors were examined through *t*-tests (Sellin and Keeves, 1997).

Path coefficients were estimated by evaluating the inner model (or structural model) of PLS-SEM analysis. Those coefficients and their significances were used to test hypothesized relationships. Findings indicated that all hypotheses were supported. In particular, perceived personalization had significant impact on consumer brand engagement ( $\beta = 0.703$ , p < 0.01), and brand attachment ( $\beta = 0.514$ , p < 0.01). Consumer brand engagement had significant effect on perceived quality ( $\beta = 0.261$ , p < 0.01) as well as brand loyalty ( $\beta = 0.334$ , p < 0.01). Brand attachment had significant effect on perceived quality ( $\beta = 0.275$ , p < 0.01) and brand loyalty ( $\beta = 0.264$ , p < 0.01). Finally, perceived quality had positive influence on brand loyalty ( $\beta = 0.316$ , p < 0.01). Therefore, the results lend evidence that all hypotheses were supported (see Table 3 and Fig. 2).

#### 4.5. Post-hoc mediation analysis

As a post hoc analysis, we also tested mediation effect using Hayes' (2013) PROCESS although no hypotheses were developed. The results showed that brand attachment mediated the relationship between perceived personalization and perceived quality while consumer brand

Table 3	
Hypotheses	testing.

	Loadings	Mean	SD	t-value	P values	Hypotheses
PER - > BEN	0.703	0.704	0.031	22.742	0.000	H1: supported
PER - > ATC	0.514	0.515	0.046	11.065	0.000	H2: supported
BEN - > QUA	0.261	0.261	0.066	3.943	0.000	H3: supported
BEN - > LOY	0.334	0.336	0.064	5.222	0.000	H4: supported
ATC - > QUA	0.275	0.276	0.066	4.193	0.000	H5: supported
ATC - > LOY	0.264	0.264	0.060	4.430	0.000	H6: supported
QUA - > LOY	0.316	0.316	0.057	5.561	0.000	H7: supported

Note: PER: perceived personalization, BEN: consumer brand engagement, ATC: brand attachment, QUA: perceived quality, LOY: brand loyalty.

engagement did not. However, both brand attachment and consumer brand engagement mediated the relationship between perceived personalization and brand loyalty (see Table 4). Also, a multiple group analysis was performed to compare two groups: product (Dell and Nike) and service (Texas Road House and American Airlines). However, there is no significant difference between two groups except that the effect of perceived quality on brand loyalty is marginally higher for product than for service (see Table 5).

#### 4.6. Competitive models

Although all the hypotheses in the model (hereafter called Original Model or OM) were supported by the data, the question of directionality of those relationships was not answered. In particular, some might argue that higher perceived quality leads to stronger customer brand engagement or brand attachment, rather than the opposite (stronger customer brand engagement or brand attachment leads to higher perceived quality). To answer this question, three competitive models were developed. Their model fit indices were compared to those of Original Model.

Competitive Model 1 (CM1) argues that perceived quality and brand loyalty each is associated with consumer brand engagement and brand attachment. Competitive Model 2 (CM2) suggests that perceived quality and brand loyalty each is associated with consumer brand engagement and brand attachment. However, perceived quality also leads to brand loyalty (this relationship does not exist in CM1). Competitive Model 3 (CM3) postulates that perceived quality is associated with consumer brand engagement, brand attachment and brand loyalty. And consumer brand engagement and brand attachment also result in brand loyalty (see Fig. 3). Model fit indices, presented in Table 6, indicated that Original Model has the best fit ( $\chi^2_{(145)}$  = 382.123; CFI = 0.938, TLI = 0.927, RMSEA = 0.082) compared with that of three competitive models (CM1, CM2, and CM3).

#### 5. Discussion

A growing body of literature investigates the effects of personalization in traditional media (Baek and Morimoto, 2012; Goldsmith and Freiden, 2004; Gurau et al., 2003; Kim et al., 2001); however, research examining personalization's impact on social media has yet to accumulate. This work was undertaken in response to recent calls for research investigating the effects of personalized advertising on (Kaplan and Haenlein, 2010).

The current research sheds light into the underlying mechanisms that enhance perceived quality of and loyalty to four brands (Dell, Nike, Texas Roadhouse, and American Airlines) that are advertised on Facebook. Specifically, higher consumer brand engagement and stronger brand attachment are driven by perceived personalization in social media advertising. More precisely, the results from an online customer panel show that perceived personalization has significant influence on consumer brand engagement and brand attachment, each of which has significant effects on perceived quality and brand loyalty.



Fig. 2. Structural model. Note: PER: perceived personalization, BEN: consumer brand engagement, ATC: brand attachment, QUA: perceived quality, LOY: brand loyalty.

#### Table 4

Mediation test.

	path a <sup>a</sup>	path b	path c'	indirect effec	indirect effect <sup>b</sup> (95% CI)		indirect effect <sup>b</sup> (95% CI)		
	X - > M	$M - > Y_X$	$X - > Y_M$	effect	lower	upper			
PER - > BEN - > QUA	0.70***	0.14	0.20**	0.96	- 0.01	0.21	0.10		
PER - > ATC - > QUA	0.51***	0.25***	0.20**	0.13	0.05	0.20	0.13***		
PER - > BEN - > LOY	0.70***	0.29***	0.57***	0.20	0.10	0.32	0.20***		
PER - > ATC - > LOY	0.51***	0.32***	0.57***	0.17	0.10	0.25	0.17***		

Note: \*significance level: \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001; 95% confidence interval with 1000 bootstrap samples.

1.....

 $a^{a}$  path a = effect of independent variable on mediator, path b = effect of mediator on dependent variable, path c' = direct effect of independent variable on dependent variable while mediator is controlled.

<sup>b</sup> Indirect effect of independent variable on dependent variable applying bootstrapping technique.

Table 5			
Droduct	and	comico	anmanian

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Product	Service

		Product		Service		Product - Service		
		Coef	p-values	Coef	p-values	Coef	p-values	
I	PER - > BEN	0.606	0.000	0.777	0.000	0.171	0.998	
ł	PER - > ATC	0.437	0.000	0.608	0.000	0.170	0.971	
H	BEN - > QUA	0.071	0.442	0.462	0.000	0.391	0.998	
H	BEN - > LOY	0.348	0.000	0.369	0.000	0.020	0.563	
A	ATC - > QUA	0.250	0.006	0.245	0.017	0.005	0.490	
A	ATC - $>$ LOY	0.230	0.005	0.303	0.000	0.073	0.742	
(	QUA - > LOY	0.402	0.000	0.236	0.005	0.166	0.069	

Note: Multiple Group Analysis (PLS-MGA) with 5000 bootstrapping samples.

Perceived quality is also significantly related to brand loyalty. In other words, all seven hypotheses are supported.

Beyond the explanatory mechanism set forth, this work also demonstrates that social media is a rich environment for advertisers to engage with consumers on a personalized level-an especially important finding given the vast levels of social media usage among consumers and the increasing utilization of the social media platform by firms. Though the scenarios and questions in this work were tailored to social media-to Facebook, specifically-and did not include direct comparisons of social media to other, traditional forms of personalized advertising, a common language coefficient (Krasikova et al., 2018) allows us to draw some conclusions about the effectiveness of personalization on social media above and beyond other platforms. Following McGraw and Wong (1992), we compared the likelihood that participants recognize personalization in the social media context against findings of perceived personalization from a sample of other contexts (namely email, direct mail, telemarketing, and text message; Baek and Morimoto, 2012). Assuming normally distributed populations in the two samples, respondents were better than 80% more likely to rate the advertisements on social media higher in terms of perceived personalization than advertisements through other channels ( $CL_g$  = 0.81, z = -0.89, single-tail probably = 0.187) (See Appendix A). While caution should always be observed when comparing findings across



Fig. 3. Competitive models. Note: PER: perceived personalization, BEN: consumer brand engagement, ATC: brand attachment, QUA: perceived quality, LOY: brand loyalty.

Table 6

Model fit comparison.

Models	Chi square	df	р	CFI	TLI	RMSEA
Original Model (OM) Competitive Model 1 (CM1)	382.123 444.921	145 146	0.000 0.000	0.938 0.922	0.927 0.908	0.082 0.085
Competitive Model 2 (CM2)	391.593	144	0.000	0.935	0.923	0.084
Competitive Model 3 (CM3)	526.467	146	0.000	0.900	0.883	0.104

studies, the substantial difference found here suggests that personalization may well be more potent in the social media context. As discussed above, this stands to reason as social media platforms are inherently built around personal interaction. That is, the highly interactive nature of social media as opposed to more traditional advertising media (e.g., direct mail, email) makes it a truly unique environment for advertisers to engage with consumers, and the common language coefficient reported here suggests that users are more likely to recognize that personalization in the social media environment.

#### 5.1. Theoretical implications

This work has a number of theoretical implications. First, the current research contributes to advertising and branding scholarship by providing better understanding of perceived personalization on social media. Particularly, consistent with what is found in traditional media (Baek and Morimoto, 2012; Dijkstra, 2005), this research reveals a substantial influence of personalization on perceived quality and brand loyalty through consumer brand engagement and brand attachment. Online advertisers could develop personalized messages on Facebook through a variety of viewer's characteristics, including gender, location, purchase history, status (e.g., students or professionals). This research has utilized one of those features - viewer's prior interaction on Internet. The findings indicate that this type of personalization significantly changes customer attitudes toward the advertised brands posted on Facebook. In other words, an advertisement on Facebook could be associated with positive outcomes as long as the ad is perceived to be personalized.

Second, we would submit that personalization should be part of a successful marketing and advertising strategy. However, empirical findings from past literature are not consistent: some confirm that personalization creates positive outcomes while others suggest otherwise. In assisting to solve these inconsistent perspectives, it is imperative to have a better understanding of the mechanism of personalization. Our study was developed to accomplish that goal by investigating a mechanism underscoring the role of personalized advertising on Facebook as well as the effects of that strategy.

Third, to our best knowledge this study is among the first attempts to explore antecedents (i.e., perceived personalization) and consequences (perceived quality and brand loyalty) of consumer brand engagement in social media. The growth of consumer brand engagement is expected to continue, primarily because of the meteoric growth of social media and the ability of brands to personally interact with their consumers. In addition, consumer brand engagement gives the consumer a voice, ultimately developing a two-way road in consumer-brand communication (Hollebeek et al., 2014; Malthouse and Hofacker, 2010). As the bond between consumers and brands strengthen, both customer satisfaction and sales growth should continue to increase. Building on the branding literature, this research supplies a missing piece of the puzzle by emphasizing that, in social media, perceived personalization is a key driver of consumer brand engagement which results in perceived quality and brand loyalty.

Forth, prior research examines how brand attachment influences consumer purchase behavior (Park et al., 2010; Akçura et al., 2004). As consumers become more attached to a product, they continue to repurchase not only that particular product, but also extensions of that product (Esch et al., 2006). The stronger the emotional relationship between brands and consumers, the more likely brands are to experience financial success. This research substantiates existing branding literature by proposing both driver (i.e., perceived personalization) and outcome (perceived quality and brand loyalty) conditions of brand attachment in social media. In today's highly social online environment, brands are now using personalized messages to stimulate brand attachment by positioning personalized ads so that their products remain on the mind of their consumers (Park et al., 2010).

Lastly, although we did not hypothesize mediation effects, post-hoc analysis reveals that brand attachment mediates the relationship between perceived personalization and perceived quality while consumer brand engagement does not. But both brand attachment and consumer brand engagement mediate the relationship between perceived personalization and brand loyalty.

#### 5.2. Managerial implications

The managerial implications of this work are threefold. First, our study is one of the first implemented after IBM team up with Facebook to bring advertising technology to a higher level. This project enables online advertisers to post ads on users' Facebook, and customize the ads in accordance with their interactivity on Internet. This unique feature, as evidenced by the findings of this research, can be used as a strategic marketing tool for online companies to motivate customers to stay engaged with and attached to the brands that ultimately improve perceived quality and brand loyalty to those brands.

Second, social commerce, defined as businesses built on internetbased social media that are open for users to be actively involved in buying and selling products or merchandize in online communities and markets (Stephen and Toubia, 2010), has grown by 43% annually. Investment in social commerce has increased drastically over the last few years (CMO Survey, 2018), and the use of social media has achieved near-ubiquitous levels (Smith and Anderson, 2018). Facebook is a great platform that social commerce firms could capitalize on to reach out to customers and promote their brands (Rudolph, 2015). Corroborated by this research, personalized advertising plays a role in helping social commerce firms to accomplish advertising and marketing goals, thereby contributing to success of their business.

Finally, social media as an alternative medium for advertising is not always advocated by advertising experts. In Hoffman and Fodor's (2010) study examining social media metrics, the authors suggest online firms consider moving away from social networking sites since, as the authors argue, ownership of the brand is transferred from a firm to networked users. However, this study has offered a counter-argument supporting the fact that social media could be used as a great promotion tool to help customers be more engaged in and attached to the advertised brands. This goal could be obtained through personalization. Brand managers who seek a solution to promote their brands could strengthen the bonds between customers and brands through customizing their ads.

Additionally, we also recommend that brand managers could find another way to make their ads more personalized. The personalized advertising created in this research is made based on prior search activities. However, other options are possible. Facebook provides functions as "Liked" or "Shared" which could be adapted into personalized features. Brand managers should take those observations into consideration since personalized advertisements, no matter how personalization is created, could create positive reactions to the brands (Maslowska et al., 2016).

#### 5.3. Limitations and future research

Although our research has theoretical and practical contributions, it is not without limitations. One such limitation is our conceptualization of perceived personalization. Our study investigates the role of personalization using cross-sectional data and test whether manipulation check works through a simple *t*-test. A limitation of this method is that this is not an ideal method to explain causality relationship between related constructs (i.e., the fact that A is related to B does not mean that A causes B). Future research should adopt a different method such as experimental design in which respondents are randomly assigned to one of the two conditions (personalized versus control). Results among two conditions are compared to measure how perceived personalization could change customer perception of the advertised brands.

A second potential limitation surrounds the context of the study. While the work sets forth and supports a model of brand perceptions following exposure to social media advertising personalization, we were not able to directly compare the effects of personalization in social media as opposed to direct channel personalization. Though we would suggest that the social media environment is unique and distinct given its interaction-based structure, and that the findings addressed in the discussion section suggest differences in perceptions from the social media context as opposed to other contexts, more work is necessary to explore in greater detail how the social media context affects user perceptions. An opportunity for future research, then, is in direct comparison of these contexts within a single study.

Finally, the current research uses online data collected from Amazon Mechanical Turk and tests the conceptual model using that data set. Although there is an increasing body of research that collects data from MTurk (Tran, 2017; Ross et al., 2010; Huff and Tingley, 2015), attitudes toward using this type of data are mixed. Future research should incorporate data from more representative groups of customers or viewers, such as students, or millennials who account for majority of social media users. Alternatively, we suggest that future research employ multiple studies with each using different groups of users, thereby improving generalizability.

#### Appendix A

We used Baek and Morimoto's (2012) observed a mean of 2.57 and standard deviation of 1.46 for the item "This personalized advertising on [MEDIA TYPE] makes purchase recommendations that match my needs," where the different media types sampled include email, direct mail, telemarketing, and text message, as a representative item (hereafter called sample B where personalized ads are used on traditional media), and our mean value of 4.87 (SD = 2.121) from the item "Do you think that the ad is general or personalized" (called sample A where personalized ads are used in social media).

Z values for common language coefficients of this nature are estimated by subtracting the difference between the observed means from zero and dividing this difference by the squared sum of the variances. Subtracting the resultant p-value from one produces the area under the normal distribution for which a randomly sampled personalized ad from social media is more likely to be recognized as personalized than is traditional media from Baek and Morimoto's sample, namely email, direct mail, telemarketing, and text message. Detailed calculating procedure is presented as follows.

Following the guideline, we first estimate the distribution of different score between sample A and B. This distribution assumed to be normal since both A and B are normal. Its mean is estimated by subtracting sample B's mean from sample A's mean (mean(dif) = mean(A) – mean(B) = 4.87 - 2.57 = 2.3). Its standard deviation is calculated by taking square root of sum of both samples' variances (SD(dif) = squared root (Var(A) + Var(B)) = square root (1.46<sup>2</sup> + 2.12<sup>2</sup>) = 2.57).

McGraw and Wong (1992) define CL as the probability of obtaining a different score greater than zero in the distribution. In our comparison, CL is the probability of obtaining a social-minus-traditional score greater than zero in a normal distribution with a mean of 2.3 and a standard deviation of 2.57.

This probability corresponds to the probability of a standardized difference score greater than -0.89, which is the standardized difference score corresponding to a different score of 0 in the distribution of social-minus-traditional score differences, z = (0 - 2.3)/2.57 = -0.89. The upper tail probability associated with this value, p = 0.81, corresponds to CL and can be calculated using the unit normal curve (Note that this p is CL, and is not p value usually used to test hypothesis. Further explanation of CL is summarized in the following paragraph.)

"The proposed common language statistic (referred to hereafter as CL) converts an effect into a probability. For continuous data, it is the probability that a score sampled at random from one distribution will be greater than a score sampled from some other distribution. For a concrete example, consider the situation in which a sample of young adult men is compared with a sample of women the same age on the variable height to determine the magnitude of the difference between the population of males and females represented by the samples. Data available from the National Center for Health Statistics (1987) indicate that men have an average height of 69.7 in. and that women have an average height of 64.3 in., with standard deviations of 2.8 and 2.6 in., respectively, on the basis of samples of 988 men and 1066 women. From these sample data, we can estimate that in any random pairing of young adult males and females, the probability of the male being taller than the female is 0.92, or in simpler terms yet, in 92 out of 100 blind dates among young adults, the male will be taller than the female." (McGraw and Wong, 1992, page 361).

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