



How Do AI-driven Chatbots Impact User Experience? Examining Gratifications, Perceived Privacy Risk, Satisfaction, Loyalty, and Continued Use

Yang Cheng & Hua Jiang

To cite this article: Yang Cheng & Hua Jiang (2020) How Do AI-driven Chatbots Impact User Experience? Examining Gratifications, Perceived Privacy Risk, Satisfaction, Loyalty, and Continued Use, Journal of Broadcasting & Electronic Media, 64:4, 592-614, DOI: 10.1080/08838151.2020.1834296

To link to this article: <https://doi.org/10.1080/08838151.2020.1834296>



Published online: 07 Dec 2020.



Submit your article to this journal 



Article views: 4258



View related articles 



View Crossmark data 



Citing articles: 47 View citing articles 



How Do AI-driven Chatbots Impact User Experience? Examining Gratifications, Perceived Privacy Risk, Satisfaction, Loyalty, and Continued Use

Yang Cheng ^a and Hua Jiang^b

^aDepartment of Communication, North Carolina State University, Raleigh, NC, USA; ^bS.I. Newhouse School of Public Communications, Syracuse University, Syracuse, NY, USA

ABSTRACT

This study examined how artificial intelligence (AI)-driven chatbots impact user experience. It collected survey data from 1,064 consumers who used any chatbot service from the top 30 brands in the U.S. Results indicated that utilitarian (information), hedonic (entertainment), technology (media appeal), and social (social presence) gratifications obtained from chatbot use positively predicted users' satisfaction with chatbot services of their selected brand. In contrast, perceived privacy risk associated with chatbot use reduced user satisfaction. Data also demonstrated that user satisfaction positively affected both the continued use intention of chatbot services and customer loyalty. Implications of this study are discussed.

Since its foundation as an academic field in 1956, artificial intelligence (AI) has quickly revived itself and has widely influenced people's daily lives (Russell & Norvig, 2003). AI-driven media tools such as chatbots have energized many industry sectors with commercial success in recent decades (Cheng & Jiang, 2020). As Business Insider (2020) predicted, the chatbot market will increase by 29.7% annually, jumping from 2.6 USD billion in 2019 to 9.4 USD billion in 2024. Customer service is the fastest growing industry, using chatbots with an annual growth rate of 31.6% from 2019 to 2026. AI-based chatbots transform customers' experience for good and rapidly gain their popularity by interacting with users using natural dialogue. Chatbots not only allow immediate conversations on websites, social media, or instant messaging apps at any place (Hagberg et al., 2016), but they also provide customized language mimicking human speech to improve user

CONTACT Yang Cheng  yicheng20@ncsu.edu  Department of Communication, North Carolina State University, Raleigh, NC, USA

© 2020 Broadcast Education Association

experience and cultivate customer loyalty (Huang & Rust, 2018). Worldwide, about 1.4 billion people use chatbots daily. In the U.S., 27% of adults have used chatbots for shopping at least once, and nearly 40% of them favor this kind of shopping experience (Jovic, 2020).

With the increasing role of AI chatbots in aiding business communication objectives, scholars such as Chung et al's study, (2018) began to investigate the associations between chatbot marketing efforts (e.g., problem-solving, customization, trendiness, interaction, and entertainment), communication quality, and customer satisfaction. However, the study by Chung et al's study, (2018) was limited by the generalizability of its data (157 Korean students), and it only examined a few luxury brands. Various brands have applied chatbots in their communication with customers (Forbes, 2017). For instance, fans via Fandango's chatbots can easily review their favorite movies and book tickets through bots online. Chatbot digital solutions from Microsoft also provide customers personalized information and answer open-ended questions through Azure cognitive research in both the U.S. and China (Yao, 2017). However, existing literature is limited in terms of exploring chatbots' applications in business communication. Nor is there communication research on uses and gratifications (U&G) of chatbots users, given that the focus has largely been on traditional and social media users (e.g., Ancu & Cozma, 2009; Cheng et al., 2015; Papacharissi & Mendelson, 2011). Only a few scholars, such as Brandtzaeg and Følstad (2017), have thematically content-analyzed respondents' descriptive answers about motivations to use chatbots. However, according to Bae (2018), motivations (i.e., gratifications-sought) differ from gratifications-obtained, with a significant discrepancy between them. Thus, the gratifications obtained by American customers from chatbots are yet to be fully understood. User satisfaction and intentions of continued use are crucial for long-term sustainability of chatbot services and corporate business communication. However, the current scholarship lacks empirical evidence about what type of gratifications might affect users' satisfaction and continued use online. Moreover, given that users' personal data sent to bots might be used for inappropriate commercial purposes (Sundar & Kim, 2019), we do not know how the perceived privacy risk of adopting corporate chatbot services relates to users' satisfaction online? Does user satisfaction predict the continued use of chatbot services and generate customer loyalty as well?

To examine the above-mentioned questions and fill the gaps in the literature on digital media and business communication, we drew theoretical insights from different fields (i.e., uses and gratifications, consumer research, and technology adoption), and collected 1,064 valid customer responses toward the top 30 brands in the U.S. The contributions of this study are manifold. First, it enriches current U & G research by exploring key dimensions of gratifications obtained from chatbots serving brands across different

markets (e.g., Healthtap, eBay, Starbucks, and Macy's) and how each gratification affects users' levels of satisfaction. Second, it enhances previous literature on the perceived privacy risk of smart media by examining the extent to which privacy concerns have a role in affecting user satisfaction. Third, this research extends U&G's explanatory ability in customer service domains by establishing a theoretical framework to understand the smart media effects and the ultimate impact of AI-enabled chatbots on business outcomes. These outcomes include customer loyalty and continued use of chatbot services, which are key to long-term strategic goals of corporations. Last but not least, this study provides managerial implications for professionals on how to improve the user experience of chatbots by understanding their attitudes and behavior, facilitating customers' continued use of smart media for corporate communication, and building loyal customer responses to businesses.

Literature Review

Gratifications Obtained from Chatbots

Originating from radio communication research, U&G theory has progressively evolved into an important mass communication paradigm used to understand why people use media and the gratifications that obtain through proactive media consumption (Rubin, 1983). Scholars have applied this theory in traditional media research such as television (Rubin, 1983), internet research (Diddi & LaRose, 2006; Stafford et al., 2004), cell phone (Wei & Lo, 2006), and satellite radio (Lin, 2006). For example, prior research indicates that people watch television to seek hedonic gratification (i.e., passing time, entertainment and escaping), utilitarian gratification (i.e., information seeking), and social gratification (i.e., companionship) (Rubin, 1983).

With the booming of new media technologies, scholars extended the U&G theory in the context of MySpace (Ancu & Cozma, 2009), podcast (Perks et al., 2019), Facebook (Ferris & Hollenbaugh, 2018; Papacharissi & Mendelson, 2011), and social network sites on mobile devices (Cheng et al., 2015; 2019a). For instance, research identified nuanced user motivations for using mobile messaging tools (i.e., WeChat), such as hedonic (i.e., perceived enjoyment; passing time), technological (i.e., media appeal), social (i.e., social interaction, social presence), and utilitarian gratifications (i.e., self-presentation; information documentation, and information sharing) (Gan & Li, 2018). Balakrishnan and Griffiths (2017) studied YouTube addiction and categorized four main types of gratifications, which included (1) content gratifications for information sharing and self-documentation, (2) process gratification for entertainment, passing time, and self-expression, (3)

technology gratification for medium appeal and convenience, and (4) social gratification.

Based on an overview of U & G theory and associated theoretical constructs, we adopted the concept of “users” from Sundar and Limperos (2013) to describe consumers who are actively using chatbot services from top brands online. We focused on gratifications that the users actually experienced through accessing chatbot services, and logically clustered these obtained gratifications into four categories, as follows.

Utilitarian Gratification (Information)

Utilitarian gratification refers to the fulfillment of individuals’ utility needs such as information seeking or self-presentation (Papacharissi & Mendelson, 2011). In prior U & G studies, utilitarian gratification has been one of the most important outcomes (Balakrishnan & Griffiths, 2017). In this study, we focused on cognitive information needs, a typical utilitarian gratification facilitating information sharing or seeking needs via the medium, where information could be transmitted in any mode such as text, pictures, and videos. In the past, providing information on products/services/brands has been recognized as one of the basic functions of chatbots in marketing communication. In luxury branding, for instance, customers appreciated Gucci’s chatbots, as they rendered useful personalized information and valuable engagement to each customer (Sangar, 2012).

Hedonic Gratifications (Entertainment)

The second category highlights the gratification that users can obtain for fun or enjoyment to achieve emotional support. As previous research indicates, hedonic gratification is a crucial element that could explain why people use commercial websites (Stafford et al., 2004), cellphones (Wei & Lo, 2006), or mobile messaging tools (Cheng et al., 2019b; Gan & Li, 2018). AI-powered smart media such as chatbots were initially designed for entertainment by using simple machine languages to respond to user inputs online (Atwell & Shawar, 2007). Through descriptive interviews, Brandtzaeg and Følstad (2017) showed that chatbots could fulfill the human needs of killing time and seeking fun. In this study, we choose entertainment as a typical hedonic gratification that users might obtain for fun or enjoyment by interacting with chatbots.

Technology Gratification (Media Appeal)

The third category we choose is technology gratification, meaning the ability of new technology to reach individuals immediately and easily (Liu et al., 2016). Cheng et al. (2015) found that the use of social media tools on mobile devices could fulfill users’ technology gratifications to assess and respond to information at any time and anywhere. Wei and Lo (2006) adopted the

notion of technology gratifications to discuss the immediate responses that cell phones evoke among adopters. Referring to the extent to which a medium could support individuals to communicate with others in an easy and efficient way, media appeal has been considered as a technology gratification in past literature. James et al. (1995) found that media appeal increased bulletin boards' ability to reach individuals broadly. Following this approach, Liu et al. (2016) examined users' technology gratifications such as media appeal on microblogs. Balakrishnan and Griffiths (2017) stated that users achieved medium appeal by engaging on YouTube instead of other types of media. In this study, we focus on media appeals of chatbots, where the functions of interactivity and accessibility are technologically supported via various devices and platforms (Eeuwien, 2017). Moreover, compared to human agents, machine agents might be more objective, and they could solve problems more precisely and efficiently, thereby contributing to stronger medium appeals among current adopters (Sundar & Kim, 2019).

Social Gratification (Social Presence)

Social gratification is defined as a unique category in enhancing interactions between media users and others (Stafford et al., 2004). Literature has extensively discussed how social media tools could increase social gratifications such as social interactions and social presence. For instance, Xu et al. (2012) adopted social presence theory to examine the degree to which a person uses a medium to establish a psychological sense of connecting with others. They found that social presence was an important social gratification that facilitated interactions within social circles. In human-robot communication, Brandtzaeg and Følstad (2017)'s study indicated that people used "small-talk" orientated chatbots such as Jessie Humani for social interaction. Araujo (2018) also suggested that users adopted agency bots because of their social presence, the feeling that another being "(living or synthetic) also exists in the world and appears to react to you" (Heeter, 1992, p. 265). In this study, we integrated social presence in the theoretical model to capture users' social gratification obtained via chatbot services.

In sum, all four categories of gratifications-obtained mentioned above were included in the theoretical model, aiming to enrich discussions of smart media effects via examining information, entertainment, media appeal, and social presence as four dimensions.

User Satisfaction

Satisfaction is a concept that has been frequently applied to measure the degree to which products/services fulfill customers' expectations in the field of business (Chung et al's study, 2018). According to the expectance-confirmation

model, if product/service performance exceeds customer expectations, then satisfaction could occur among customers (R. L. Oliver, 1980). In communication research, user satisfaction is a crucial indicator of user experience. Defined as a general feeling of pleasure resulting from habitual media consumption behavior, satisfaction encapsulates the long-term average outcome expectations (LaRose, 2010, 2015). According to Godlewski and Perse (2010), gratifications-obtained subsequently determine how satisfied users are with their media usage. Previous research also identified that gratifications-obtained such as socialization and social support significantly influence users' satisfaction with SNSs use (Bae, 2018). Ryan et al. (2006) found a strong relationship between media appeal and satisfaction of intrinsic needs. Gogan et al.'s (2018) study demonstrated the positive and as well as correlations between utilitarian, hedonic, social gratifications, and user satisfaction. Based on the above-reviewed literature, we proposed H1.

H1: Utilitarian (information) (H1a), hedonic (entertainment) (H1b), technology (media appeal) (H1c), and social (social presence) gratifications-obtained (H1d) are positively related to user satisfaction of using chatbot services.

Perceived Privacy Risk

In addition to gratifications, this study also examined the perceived privacy risk to use chatbots, which refers to users' uncertainty about using chatbot services because of potential negative outcomes associated with the revealing of customers' personal information (Wang & Lin, 2017). For instance, scholars found that when users get access to personalization services of websites, they have concerns about the amount of collected personal information (Ho, 2006). Sundar and Marathe (2010) also mentioned that system-initiated personalization might bring the convenience of using websites, but it also increased users' privacy concerns. In the field of customer service, previous studies have indicated that new media tools such as mobile payment (Gao & Waechter, 2017), mobile banking (Farah et al., 2018), and smartwatches (Dehghani, 2018) contained a certain level of privacy risk, from user's perspective. Brands deploying chatbot services for business communication might also face the same challenges when consumers consider chatbot messaging irritating and threatening to their privacy (Eeuwen, 2017). When customers are purchasing products/service via chatbots, they might be placed in a dangerous situation with privacy invasion a when personal information—such as phone numbers, name, or address—are misused or shared with unauthorized third parties (Eeuwen, 2017).

Scholars have explored the negative consequences of privacy risk on user satisfaction. For instance, Shankar et al. (2003) demonstrated that privacy and security concerns could reduce the level of customer satisfaction with the online environment. As chatbots have often been applied for business communication or e-commerce transactions, it is reasonable to hypothesize that customers' perceived privacy risk associated with using corporate chatbots will decrease the amount of satisfaction that customers have toward chatbot services. Thus, we proposed,

H2: Users' perceived privacy risk will negatively predict their satisfaction with chatbot services.

Continued Use of Chatbot Services

According to Bae (2018), intention refers to an individual's subjective probability that he/she will perform an actual behavior. In this study, we focused on the intentions of chatbot adopters to continue using it. This concept has been widely used in previous U & G literature to understand adopters' intentions of continued use and its relationship with user satisfaction (e.g., Chang & Zhu, 2012; R. L. Oliver, 1980; Papacharissi & Rubin, 2010). For instance, R. L. Oliver (1980) theorized that satisfaction is positively associated with future intentions. Papacharissi and Rubin (2010) indicated that user satisfaction on the internet led to more active internet use. Chang and Zhu (2012) found that user satisfaction positively influenced users' continuance intention on SNSs. Zhao and Lu (2012) supported the strong association between user satisfaction and continuous intentions of using microblogging services. Based on the above-mentioned evidence between satisfaction and intentions of continued use, we proposed,

H3: User satisfaction will positively predict continued intentions to use chatbot services.

Customer Loyalty

In addition to intentions of continued use, scholars (e.g., Fornell, 2007) believe that loyalty is an important outcome of user satisfaction. According to Godey et al. (2016), loyalty has been widely examined as a nonrandom customer behavioral response in business communication research, which describes customers' long-term commitment to "re-buy[ing] or re-patronis[ing]" their preferred brands even when they are exposed to the marketing efforts of other competitive brands (R. Oliver, 1997, p. 392). Previous research has identified the importance of user satisfaction in building loyalty among long-terms users (e.g., Bhattacharjee, 2001). For instance, the level of

satisfaction that customers feel about a service encounter could also enhance the level of trust they have toward recommendation agents (Hess et al., 2009), and subsequently their intentions to purchase the products and/or services of a brand (Lu et al., 2016). Fun and pleasure that customers perceive in using social media or chatbots can potentially result in a positive brand image, increased purchase intention, and enhanced brand awareness (Kim & Ko, 2010, 2012). Applying the reviewed literature into the context of the present study, we proposed,

H4: User satisfaction with chatbot services will positively predict customer loyalty toward the brand.

Furthermore, customer loyalty is likely to be correlated with their intentions of continued use of chatbot services. Based on agency theory, Bhattacharjee (2001) showed that loyalty incentives could significantly influence the continuance intention of using electronic commerce service. Jung and Shin (2019) also indicated that the more likely that customers become loyal to the internet specialized banks, such as keeping the intentions of repetitive purchasing behavior and the willingness to recommend to others, the more likely they will continue using such financial services. We thus proposed,

H5: Customer loyalty toward the brand will positively predict continued use intentions of its chatbot services.

Based on the above-mentioned literature, we propose H1-H5, and the theoretical linkages between key variables are provided in [Figure 1–2](#).

Method

Procedures for Data Collection

After receiving IRB approval of our research protocol, we created a survey through Qualtrics and collected data via Amazon Mechanical Turk (MTurk) in December 2018. An anonymous invitation link was sent to 1,800 participants, who lived in the U.S. with good performance (HIT approval rate > 98%) on MTurk to enforce high quality. Data collected via MTurk is of strong quality, and prior literature has also identified no statistically significant differences between an MTurk sample and other samples drawn from a professional panel or a student subject pool (Kees et al., 2017). Before participants proceeded to the main questions, instructions were given to explain what chatbots are and provide real-life examples to help participants understand the brand's chatbot services. Participants were asked to select only one brand from a list,¹ if they had used the brand's chatbot services before and they felt

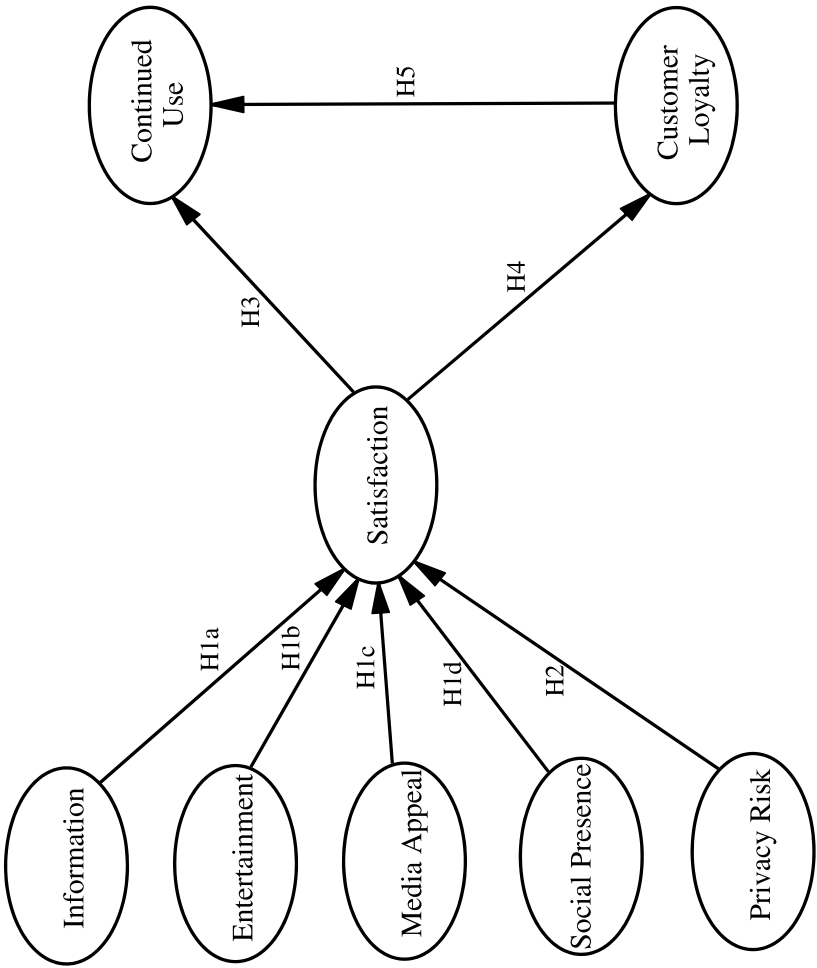


Figure 1. The conceptual model.

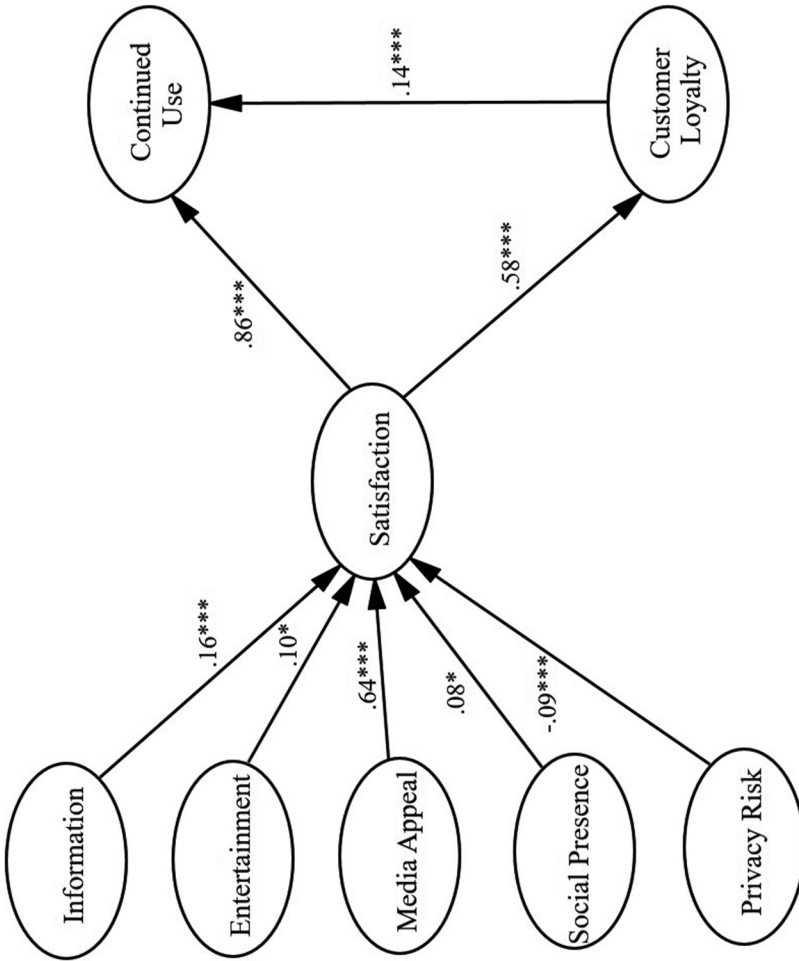


Figure 2. $\chi^2 = 1606.22$, $df = 439$, $\chi^2/df = 3.66$, SRMR = .05, RMSEA = .050 [90% CI = .047-.053], CFI = .95; $n = 1,064$. *** $p < .001$; ** $p < .01$; * $p < .05$.

most comfortable to answer questions about the services. Filter questions were applied to enroll only adopters of corporate chatbot services. Several attention questions were also set up to ensure survey quality. Our survey recorded 1,064 valid responses, and each participant received a one-dollar payment for completing the survey.

Sample Characteristics

The mean age of our 1,064 participants (48.1% male; 51.5% female; 4% other) was 35.54 ($SD = 10.89$). As for race/ethnicity, 70.5% of the participants self-identified as Caucasian/White (non-Hispanic) ($n = 750$) and 11.7% as Black/African American (non-Hispanic) ($n = 125$), with 7.8% as Asian American/Pacific Islander ($n = 83$), 6.3% as Latino/Hispanic Native ($n = 67$), 1.9% as American/American Indian ($n = 20$), and 1.8% as other ($n = 19$). A total of 234 participants (22.0%) reported their annual household income range as 20,001 USD to 40,000 USD followed by 40,001 to 60,000 USD ($n = 222$; 20.9%), 60,001 USD to 80,000 USD ($n = 211$; 19.8%), 100,001 USD and higher ($n = 130$; 12.2%), 80,001 USD to 100,000 USD ($n = 127$; 11.9%), 20,000 USD or under ($n = 120$; 11.3%), and prefer not to say ($n = 20$; 1.9%). In terms of participants' highest level of education, three largest groups included 476 Bachelor's degree in college (4-year) (44.7%), 198 some college but no degree (18.6%), and 144 Master's degree (13.5%). The top three corporate chatbot services that participants selected included Bank of America ($n = 128$; 12.0%), Microsoft ($n = 123$; 11.6%), and PayPal ($n = 79$; 7.4%).

Independent and Dependent Measures

All items in our survey (listed in Table 2) used a seven-point Likert-type scale (e.g., "strongly disagree" = 1 to "strongly agree" = 7). We used three questions from Cheng et al. (2015) to measure participants' information needs ($\alpha = .76$), four items from Chung et al's study, (2018) for entertainment ($\alpha = .88$), three items (Gan & Li, 2018) for media appeal ($\alpha = .83$), four items (Araujo, 2018) for social presence ($\alpha = .92$), and three items (Eeuwen, 2017) for privacy risk ($\alpha = .89$). We adopted the scale from Chung et al's study, (2018) ($\alpha = .94$) to measure participants' satisfaction associated with

¹The list consists of the following brands: 1-800-FLOWERS, Airbnb, Bank of America, Burger King, Disney, Domino's pizza, eBay, Expedia, Fandango, Fitbit, H & M, HealthTap, Hellmann's and Best Foods, Lyft, Microsoft, Nordstrom, Macy's, PayPal, Pizza Hut, Sephora, Starbucks, Staples, Taco Bell, Tommy Hilfiger, Trulia, Uber, UPS, Victoria's Secret, and Whole Foods. All corporations were top ranked in a 2017 list of Best Bots for Brands & Businesses developed by Fortune 500 brands (<http://kuudesign.com/100-best-bots-chatbots-and-voice-experiences-for-brands>).

using the selected brand's chatbot services. Four items from Godey et al. (2016) ($\alpha = .87$) were used to measure customer loyalty toward their selected brand. Finally, to measure participants' continued use of the selected brand's chatbot services, we adopted the 3-item scale that Gan and Li (2018) developed ($\alpha = .81$).

Data Analysis

Structural equation modeling (SEM) with Mplus was used for data analysis. To determine the data-model fit in the analyses, we followed the criteria that Hu and Bentler (1999) proposed – Comparative Fit Index (CFI) $\geq .96$ and Standardized Root Mean Square Residual (SRMR) $\leq .10$, or Root Mean Square Error of Approximation (RMSEA) $\leq .06$ and SRMR $\leq .10$.

Results

Preliminary Data Analyses

Descriptive Statistics

We used the following breakdown of scale points to describe the values of all variables – 'low (1.00–2.50)'; 'moderately low (2.51–3.99)'; 'neutral (4)', 'moderately high (4.01–5.49)', and 'high (5.50–7.00)'. Results of the descriptive analysis indicated that overall, participants demonstrated moderately low or high gratifications-obtained from chatbot use ($M_{\text{information}} = 4.88$, $SD = 1.25$; $M_{\text{entertainment}} = 3.94$, $SD = 1.57$; $M_{\text{media appeal}} = 4.88$, $SD = 1.37$; $M_{\text{social presence}} = 3.91$, $SD = 1.56$). Participants perceived a moderately low level of privacy risk ($M_{\text{privacy risk}} = 3.83$, $SD = 1.62$). In addition, participants reported moderately high levels of satisfaction ($M_{\text{satisfaction}} = 5.23$, $SD = 1.28$), customer loyalty ($M_{\text{customer loyalty}} = 5.18$, $SD = 1.18$), and continued use ($M_{\text{continued use}} = 4.74$, $SD = 1.31$). Correlations between variables ranged from $-.07$ to $.73$ (see Table 1).

Control Variables

Results of hierarchical linear regression analyses revealed the significant predictors for all the latent variables in our proposed model: frequency of using the corporate products/services, satisfaction with the corporate products/services, frequency of using corporate chatbot services, selected brand, gender, and age. The aforementioned variables were thus controlled for in running our SEM model.

Table 1. Descriptive statistics (Alpha, mean, standard deviation, and correlations) (n = 1,064).

	Alpha	M	SD	Information	Entertainment	Media Appeal	Social Presence	Privacy Risk	Satisfaction	Customer loyalty	Continued Use
Information	.76	4.88	1.25	1.00							
Entertainment	.88	3.94	1.57	.55**	1.00						
Media Appeal	.83	4.88	1.37	.41**	.48**	1.00					
Social Presence	.92	3.91	1.56	.44**	.65**	.54**	1.00				
Privacy Risk	.89	3.83	1.62	.12**	.20**	-.01	.16**	1.00			
Satisfaction	.94	5.23	1.28	.50**	.49**	.73**	.52**	-.07*	1.00		
Customer loyalty	.87	5.18	1.18	.42**	.41**	.51**	.41**	-.04	.60**	1.00	
Continued Use	.81	4.74	1.31	.50**	.57**	.66**	.59**	-.01	.73**	.58**	1.00

**Correlation is significant at $p < .01$ (2-tailed). *Correlation is significant at $p < .05$ (2-tailed).

Table 2. Results of the measurement model, AVE & CR.

Factors/Latent Variables	Indicators/Scale items	Standardized Loadings	AVE & CR
Information	Helps to understand events happening about the company.	.69***	AVE = .52 CR = .76
	Provides recommendations on the company's products/services.	.73***	
	Provides information that helps my purchasing decisions.	.74***	
Entertainment	It is fun and enjoyable to share a conversation with this company's chatbot service agent.	.88***	AVE = .72 CR = .89
	I was absorbed in the conversation with this company's chatbot service agent.	.86***	
	I enjoy choosing products more if they are recommended by this company's chatbot service agent than if I choose them myself.	.81***	
Media Appeal	Using chatbot service agents is more efficient than other forms of communication.	.74***	AVE = .63 CR = .84
	Chatbot service agents save a tremendous amount of time.	.83***	
	Using service agents can save more time than making a call with the human agent.	.81***	
Social Presence	You are interacting with an intelligent being?	.88***	AVE = .73 CR = .92
	You are not alone?	.81***	
	You are in the store with an intelligent being?	.83***	
Perceived Privacy Risk	An intelligent being is responding to you?	.90***	AVE = .75 CR = .90
	My information can be used in a way I do foresee (Reverse coded).	.86***	
	The information I submit can be misused.	.91***	
User Satisfaction	There is too much uncertainty associated with shopping through its chatbot service agent.	.82***	AVE = .76 CR = .94
	I am satisfied with this company's chatbot service agent.	.90***	
	I am content with this company's service agent.	.90***	
Customer Loyalty	This company's chatbot service agent did a good job.	.88***	AVE = .60 CR = .86
	This company's chatbot service agent did what I expected.	.78***	
	I am happy with this company's chatbot service agent.	.89***	
Continued Use	I intend to keep purchasing products/services from this brand.	.64***	AVE = .51 CR = .76
	I will recommend this brand to others.	.80***	
	I will expand using other products/services of the brand.	.82***	
	I consider myself to be loyal to the brand.	.83***	AVE = .51 CR = .76
	I will continue to use this company's chatbot service agent.	.79***	
	I will use this company's chatbot service agent for other purposes than my current usage.	.64***	
	I will explore the company's other chatbot services than the one(s) that I'm currently using.	.70***	

$\chi^2 = 1556.51$, $df = 369$, $\chi^2/df = 4.22$, SRMR = .06, RMSEA = .055 [90% CI = .052-.058], CFI = .95, $n = 1,064$.
 AVE = Average Variance Extracted; CR = composite reliability; *** $p < .001$.

Measurement Model

As shown in Table 2, our CFA model achieved good data-model fit ($\chi^2 = 1556.51$, $df = 369$, $\chi^2/df = 4.22$, $SRMR = .06$, $RMSEA = .055$ [90% CI = .052-.058], $CFI = .95$, $n = 1,064$). Moreover, average variance extracted (AVE) and composite reliability (CR) values were computed to assess discriminant validity and internal consistency of the measures.

Hypothesis Testing

As shown in Figure 2, the hypothesized structural model demonstrated good fit with the collected dutilitarian benefits in online brand communitiesata: $\chi^2 = 1606.22$, $df = 439$, $\chi^2/df = 3.66$, $SRMR = .05$, $RMSEA = .050$ [90% CI = .047-.053], $CFI = .95$; $n = 1,064$

H1 to H5 (Direct Effects)

As hypothesized in H1a to H1d, a strong positive effect of uses and gratifications-obtained upon customers' satisfaction with using the selected brand's chatbot services was observed [$\beta = .16$, $p < .001$, H1a supported; $\beta = .10$, $p < .05$, H1b supported; $\beta = .64$, $p < .001$, H1c supported; $\beta = .08$, $p < .05$, H1d supported]. Second, customers' perceived privacy risk associated with use of corporate chatbot services had a negative and direct effect on their satisfaction with the brand's chatbot services [$\beta = -.09$, $p < .001$, H2 supported]. Consistent with the prediction in H3, a positive effect of customers' satisfaction toward chatbot use upon continued use of the brand's chatbot services was found [$\beta = .86$, $p < .001$, H3 supported]. We also found satisfaction toward chatbot use to be significantly associated with customers' loyalty toward the selected brand [$\beta = .58$, $p < .001$, H4 supported]. Finally, as predicted in H5, customer loyalty and continued use were significantly associated [$\beta = .14$, $p < .001$, H5 supported].

Indirect Effects

Results of the mediation tests with a bias-corrected bootstrapping procedure ($N = 5,000$ samples) indicated that user satisfaction and customer loyalty were significant mediators. Results of the significant indirect effects are presented in Table 3.

Discussion

Based on data from 1,064 consumers who used any chatbot service from the top 30 brands in the U.S., we find that four typical gratifications positively predict user satisfaction. In contrast, perceived privacy risk reduces the level of users' satisfaction with chatbots. Data also demonstrated that user

Table 3. Results of Mediation Analysis with Structural Equation Modeling.

Mediation analysis	Estimate	S.E.	Z	BC 95% CI	
				Lower	Upper
Indirect 1: Information→Satisfaction→Customer Loyalty	.09	.02	3.78***	.05	.14
Indirect 2: Entertainment→Satisfaction→ Customer Loyalty	.06	.03	1.86*	.00	.12
Indirect 3: Media Appeal→Satisfaction→ Customer Loyalty	.37	.03	11.10***	.31	.43
Indirect 4: Social Presence→Satisfaction→ Customer Loyalty	.05	.03	1.92*	.00	.10
Indirect 5: Privacy Risk→Satisfaction→ Customer Loyalty	-.06	.01	-4.03***	-.08	-.03
Indirect 6: Information→Satisfaction→Continued Use	.14	.04	3.73***	.07	.21
Indirect 7: Entertainment→Satisfaction→Continued Use	.09	.05	1.84*	-.01	.18
Indirect 8: Media Appeal→Satisfaction→Continued Use	.55	.04	13.71***	.47	.63
Indirect 9: Social Presence→Satisfaction→Continued Use	.07	.04	1.96*	.00	.14
Indirect 10: Privacy Risk→Satisfaction→Continued Use	-.08	.02	-3.97***	-.12	-.04
Indirect 11: Satisfaction→Customer Loyalty→Continued Use	.08	.03	2.88**	.03	.14
Indirect 12: Information→Satisfaction→ Customer Loyalty→Continued Use	.01	.01	2.32*	.01	.03
Indirect 13: Entertainment→Satisfaction→ Customer Loyalty→Continued Use	.01	.01	1.62	.00	.02
Indirect 14: Media Appeal→Satisfaction→ Customer Loyalty→Continued Use	.05	.02	2.77**	.02	.09
Indirect 15: Social Presence→Satisfaction→ Customer Loyalty→Continued Use	.01	.01	1.48	.00	.02
Indirect 16: Privacy Risk→Satisfaction→ Customer Loyalty→Continued Use	-.01	.00	-2.40*	-.02	-.00

Note: $\chi^2 = 1606.22$, $df = 439$, $\chi^2/df = 3.66$, SRMR = .05, RMSEA = .050 [90% CI=.047-.053], CFI = .95; $n = 1,064$. BC 95% CI: Bias-corrected 95% bootstrapped confidence interval (CI) based on 5,000 resamples. * $p < .05$, ** $p < .01$, *** $p < .001$.

satisfaction could positively affect both the continued use of chatbot services and customer loyalty. Implications of this study were discussed.

Theoretical Implications

This study enriches extant U & G research along the following dimensions. Although a number of AI-based chatbots have changed the nature of our media consumption and habits (Forbes, 2017), we have scant evidence about customers' gratifications of corporate chatbot services. Since the increasing integration of artificial intelligence into business communication has offered gratifications opportunities to meet various customer needs in innovative ways, our study advances the traditional U & G approach by exploring four main categories of gratifications-obtained on commercial chatbots of top brands, namely social (social presence), hedonic (entertainment), utilitarian (information), and technology gratifications (media appeal). Results identified media appeal as the most common and prominent gratifications-obtained of chatbots services. If chatbots could afford convenient and efficient customer service to save more time than making a call with human agents, users would

maintain a high level of satisfaction, which further leads to greater intentions of continued use of such chatbot services. This is consistent with the findings from Gan and Li (2018), highlighting the salient role of technology gratifications (media appeal) in the communication process.

Results also demonstrated that fulfilling information needs was an important gratifications of chatbot services. As a useful business information tool, chatbots serve utilitarian purposes such as delivering news about the company, giving recommendations on products or services, and providing information that helps with purchasing decisions. Further, such informational functions significantly determine user satisfaction and indirectly affect continued use and customer loyalty, consistent with previous literature (e.g., Han et al., 2018; Papacharissi & Rubin, 2010). According to Han et al. (2018), perceived utilitarian benefits in online brand communities significantly determine business outcomes such as customer satisfaction and continued usage. Compared to technology and utilitarian gratifications of chatbots, social presence and entertainment demonstrated weak ties with user satisfaction and continued use in our data, thus reinforcing results from previous U & G research (e.g., Cheng et al., 2015; Gan & Li, 2018). Providing social presence and entertainment was still relevant for user experience of AI tools as customers prefer human-like social interaction, enjoyment, and fun from chatbots' services, but the effects of these two gratifications on user satisfaction and continued use appear to be limited.

Second, this study enhances our understanding of perceived privacy risk and its impact on user satisfaction with chatbots. Results of this study demonstrated that, while on one hand, users benefited from varieties of gratifications such as information needs and entertainment that the artificial intelligence technology could bring. On the other hand, they were concerned about privacy risk since their information might be misused, or used in a way that they could not foresee, fueling uncertainty associated with the shopping process via chatbot services. Further, data from the SEM model confirmed that perceived privacy risk was a key determinant that prevented customer satisfaction in businesses and could decrease continuous use intentions as well (Gao & Waechter, 2017). If commercial privacy protections cannot meet users' expectancy and their perceived privacy risk increases, according to the expectancy confirmation model (R. L. Oliver, 1980), it would be difficult to accomplish a high level of customer satisfaction, which may further preclude continued intentions to use chatbot services and customer loyalty.

Last but not least, this research extends U&G's explanatory ability in customer service domains, and subsequently broadens the scope of the U&G approach in business communication. Much of the current U & G literature focuses on technological features of media (e.g., Dehghani, 2018) and ignores connections with important business outcomes, such as user satisfaction and customer loyalty. Despite the recognized significance of

using chatbots to engage customers in marketing communications such as luxury branding (Chung et al's study, 2018), few studies consider the impact of technology gratifications on business outcomes. Given the limited resources to build up and understand chatbot services, our integrated model offers a set of crucial factors that chatbot providers can maneuver to boost user satisfaction and loyalty, and further enhance user consumers' continuous adoption intentions. Gratifications such as entertainment, information, social presence, and media appeal in chatbot design significantly influence customer perceptions of marketing service and intentional behavior. User satisfaction and loyalty could be achieved through long-term habitual media-use behavior (Kim & Ko, 2012; LaRose, 2010, 2015; R. L. Oliver, 1980).

Practical Implications

This study provides insights into the applications of chatbots for business communication and offers guidance on how to improve customer experience and furnish strategies that successfully promote continued use of chatbot services. Results first indicated that smart media appeal plays a significant role in affecting customer satisfaction. Corporate service providers should ensure that users can get access to chatbots easily, and saving customers' time to solve problems efficiently is the key to meet or go beyond their expectations. Second, results identified that privacy risk is a major concern that reduces customer satisfaction of chatbot services, thus corporations and media developers should closely regulate the safety of users' data for commercial use. Last, to cultivate the intentions of continued use and long-term loyalty among customers, brand managers need to understand users' motivations to improve the level of satisfaction with chatbot services.

Limitations and Directions for Future Research

Although this pioneering study contributed to the uses and effects of smart media in business communication, several limitations need to be mentioned. First, this study did not explore the phenomenon of a privacy paradox with chatbots. As Sundar and Kim (2019) stated, individuals might trust machines more than humans with personal information, with users providing more personal information even when they are concerned about privacy. Future research might study this phenomenon and examine relationships between privacy concerns, machine heuristics, and privacy protection behaviors such as discontinuance of using AI-powered chatbots. Second, media users might not need ongoing intention formation to develop media habits (Kahneman, 2011). Instead, their needs may be constantly evolving with new media technologies, as modern digital media transform their user experience (Sundar, 2008). The actual user behavior can be activated by affordance cues of AI-powered tools,

thus further research might examine the application of U & G 2.0, a new approach suggesting that traditional U & G scales (i.e., “U&G 1.0”) might not fully capture people’s motivations of using social media (Sundar & Limperos, 2013). Third, the sample of this study included only adopters of chatbot services in the U.S. and may not have been fully representative of Hispanic and Latino Americans, people with high school or less than a high school degree, or families with annual household income less than 20k USD. Future research might specifically target minorities or low-income and education groups. Last but not least, since we logically clustered gratifications under each category, future studies should empirically verify this structure. There are also likely reciprocal causations between satisfaction, continued usage intentions, and customer loyalty. Scholars should further extend this cross-sectional study and conduct experiments to test these causal links.

Notes on contributors

Yang Cheng (Ph.D., University of Missouri) is an assistant professor at North Carolina State University. Her research interests include artificial intelligence and social media, public relations, and crisis communication. Her publications have appeared in journals such as *New Media & Society*, *Journal of Public Relations Research*, and *Journal of Contingencies and Crisis Management*.

Hua Jiang (Ph.D., University of Maryland) is an associate professor in the public relations department of the S.I. Newhouse School of Public Communications, Syracuse University. Jiang’s primary research interests include employee communication, social media engagement, corporate social responsibility/corporate social/political advocacy, relationship/reputation management, and mental health campaigns.

ORCID

Yang Cheng  <http://orcid.org/0000-0002-0321-7956>

References

- Ancu, M., & Cozma, R. (2009). MySpace politics: Uses and gratifications of befriending candidates. *Journal of Broadcasting & Electronic Media*, 53(4), 567–583. <https://doi.org/10.1080/08838150903333064>
- Araujo, T. (2018). Living up to the chatbot hype: The influence of anthropomorphic design cues and communicative agency framing on conversational agent and company perceptions. *Computers in Human Behavior*, 85, 183–189. <https://doi.org/10.1016/j.chb.2018.03.051>
- Atwell, E., & Shawar, B. A. (2007). Chatbots: Are they really useful? *LDV Forum*, 22, 29–49. http://www.jlcl.org/2007/_Heft1/Bayan/_Abu-Shawar/_and/_Eric/_Atwell.pdf

- Bae, M.-Y. (2018). Understanding the effect of the discrepancy between sought and obtained gratifications on social networking site users' satisfaction and continuance intention. *Computers in Human Behavior*, 79, 137–153. <https://doi.org/10.1016/j.chb.2017.10.026>
- Balakrishnan, J., & Griffiths, D. M. (2017). Social media addiction: What is the role of content in YouTube? *Journal of Behavioral Addictions*, 6(3), 364–377. <https://doi.org/10.1556/2006.6.2017.058>
- Bhattacharjee, A. (2001). An empirical analysis of the antecedents of electronic commerce service continuance. *Decis. Support Syst.*, 32(2), 201–214. [https://doi.org/10.1016/S0167-9236\(01\)00111-7](https://doi.org/10.1016/S0167-9236(01)00111-7)
- Brandtzaeg, P. B., & Følstad, A. (2017, November 22–24). *Why people use chatbots* [Paper presentation]. Proceedings of the 4th International Conference on Internet Science, Thessaloniki, Greece.
- Business Insider. (2020). *The latest market research, trends, and landscape in the growing AI chatbot industry*. <https://www.businessinsider.com/chatbot-market-stats-trends>
- Chang, Y. P., & Zhu, D. H. (2012). The role of perceived social capital and flow experience in building users' continuance intention to social networking sites in China. *Computers in Human Behavior*, 28(3), 995–1001. <https://doi.org/10.1016/j.chb.2012.01.001>
- Cheng, Y., Chen, Y. R., Hung-Baesecke, R., & Jin, Y. (2019a). When CSR meets mobile SNA users in mainland China: An examination of gratifications sought, CSR motives, and relational outcomes in natural disasters. *International Journal of Communication*, 13, 319–341
- Cheng, Y., & Jiang, H. (2020). AI-powered mental health chatbots: Examining users' motivations, active communicative action, and engagement after mass-shooting disasters. *Journal of Contingencies and Crisis Management*, 28, 339–354. <https://doi.org/10.1111/1468-5973.12319>
- Cheng, Y., Jin, Y., Hung-Baesecke, R., Chen, Y. R. (2019b). Mobile corporate social responsibility (mCSR): Examining publics' responses to CSR-based initiatives in natural disasters. *International Journal of Strategic Communication*, 13(1), 76–93. doi:10.1080/1553118X.2018.1524382
- Cheng, Y., Liang, J. W., & Leung, L. (2015). Social network service use on mobile devices: An examination of gratifications, civic attitudes and civic engagement in China. *New Media & Society*, 17(7), 1096–1116. <https://doi.org/10.1177/1461444814521362>
- Chung, M.-J., Ko, E.-J., Joung, H.-R., & Kim, S.-J. (2018). Chatbot e-service and customer satisfaction regarding luxury brands. *Journal of Business Research*, 117, 587–595. <https://doi.org/10.1016/j.jbusres.2018.10.004>
- Dehghani, M. (2018). Exploring the motivational factors on continuous usage intention of smartwatches among actual users. *Behaviour & Information Technology*, 37(2), 145–158. <https://doi.org/10.1080/0144929X.2018.1424246>
- Diddi, A., & LaRose, R. (2006). Getting hooked on news: Uses and gratifications and the formation of news habits among college students in an internet environment. *Journal of Broadcasting & Electronic Media*, 50(2), 193–210. https://doi.org/10.1207/s15506878jobem5002_2
- Euwen, M. (2017). *Mobile conversational commerce: Messenger chatbots as the next interface between businesses and consumers* [Master's thesis]. University of Twente. http://essay.utwente.nl/71706/1/van%20Euwen_MA_BMS.pdf

- Farah, M. F., Hasni, M. J. S., & Abbas, A. K. (2018). Mobile-banking adoption: Empirical evidence from the banking sector in Pakistan. *International Journal of Bank Marketing*, 36(7), 1386–1413. <https://doi.org/10.1108/IJBM-10-2017-0215>
- Ferris, L. A., & Hollenbaugh, E. E. (2018). A uses and gratifications approach to exploring antecedents to Facebook dependency. *Journal of Broadcasting & Electronic Media*, 62(1), 51–70. <https://doi.org/10.1080/08838151.2017.1375501>
- Forbes. (2017). *How chatbots improve customer experience in every industry: An infograph*. Forbes Inc. <https://www.forbes.com/sites/blakemorgan/2017/06/08/how-chatbots-improve-customer-experience-in-every-industry-an-infograph/#26dd9ae67df5>
- Fornell, C. (2007). *The satisfied customer: Winners and losers in the battle for buyer preference*. Palgrave Macmillan.
- Gan, C., & Li, H. (2018). Understanding the effects of gratifications on the continuance intention to use WeChat in China: A perspective on uses and gratifications. *Computers in Human Behavior*, 78, 306–315. <https://doi.org/10.1016/j.chb.2017.10.003>
- Gao, L., & Waechter, K. A. (2017). Examining the role of initial trust in user adoption of mobile payment Service: An empirical investigation. *Information Systems Frontiers*, 19(3), 525–548. <https://doi.org/10.1007/s10796-015-9611-0>
- Godey, B., Manthiou, A., Pederzoli, D., Rokka, J., Aiello, G., Donvito, R., & Singh, R. (2016). Social media marketing efforts of luxury brands: Influence on brand equity and consumer behavior. *Journal of Business Research*, 69(12), 5833–5841. <https://doi.org/10.1016/j.jbusres.2016.04.181>
- Godlewski, L. R., & Perse, E. M. (2010). Audience activity and reality television: Identification, online activity, and satisfaction. *Communication Quarterly*, 58(2), 148–169. <https://doi.org/10.1080/01463371003773358>
- Gogan, W., Zhang, Z.-Q., & Matemba, E.-D. (2018). Impacts of gratifications on consumers' emotions and continuance use intention: An empirical study of Weibo in China. *Sustainability*, 10(9), 1–20. <https://doi.org/10.3390/su10093162>
- Hagberg, J., Sundstrom, M., & Egels-Zandén, N. (2016). The digitalization of retailing: An exploratory framework. *International Journal of Retail & Distribution Management*, 44(7), 694–712. <https://doi.org/10.1108/IJRDM-09-2015-0140>
- Han, M., Wu, J., Wang, Y., & Hong, M. (2018). A model and empirical study on the user's continuance intention in online China brand communities based on customer-perceived benefits. *Journal of Open Innovation: Technol, Market, and Complexity*, 4(4), 46. <https://doi.org/10.3390/joitmc4040046>
- Heeter, C. (1992). Being There: The subjective experience of presence. *Presence: Teleoperators and Virtual Environments*, 1(2), 262–271. <https://doi.org/10.1162/pres.1992.1.2.262>
- Hess, T. J., Fuller, M., & Campbell, D. E. (2009). Designing interfaces with social presence: Using vividness and extraversion to create social recommendation agents. *Journal of the Association for Information Systems*, 10(12), Article 1. <https://doi.org/10.17705/1jais.00216>
- Ho, S. Y. (2006). The attraction of Internet personalization to Web users. *Electronic Markets*, 16(1), 41–50. <https://doi.org/10.1080/10196780500491162>
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Huang, M. H., & Rust, R. T. (2018). Artificial intelligence in service. *Journal of Service Research*, 21(2), 155–172. 1094670517752459. <https://doi.org/10.1177/1094670517752459>

- James, M. L., Wotring, C. E., & Forrest, E. J. (1995). An exploratory study of the perceived benefits of electronic bulletin board use and the impact on other communication activities. *Journal of Broadcasting & Electronic Media*, 39(1), 30–50. <https://doi.org/10.1080/08838159509364287>
- Jovic, D. (2020). *The future is now – 37 fascinating chatbot statistics*. Smallbizgenius. <https://www.smallbizgenius.net/by-the-numbers/chatbot-statistics/#gref>
- Jung, J.-H., & Shin, J.-I. (2019). The effect of choice attributes of internet specialized banks on integrated loyalty: The moderating effect of gender. *Sustainability*, 11(24), 7063. <https://doi.org/10.3390/su11247063>
- Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus and Giroux.
- Kees, J., Berry, C., Burton, S., & Sheehan, K. (2017). An analysis of data quality: Professional panels, student subject pools, and Amazon's Mechanical Turk. *Journal of Advertising*, 46(1), 141–155. <https://doi.org/10.1080/00913367.2016.1269304>
- Kim, A. J., & Ko, E. (2010). Impacts of luxury fashion brand's social media marketing on customer relationship and purchase intention. *Journal of Global Fashion Marketing*, 1(3), 164–171. <https://doi.org/10.1080/20932685.2010.10593068>
- Kim, A. J., & Ko, E. (2012). Do social media marketing activities enhance customer equity? An empirical study of luxury fashion brand. *Journal of Business Research*, 65(10), 1480–1486. <https://doi.org/10.1016/j.jbusres.2011.10.014>
- LaRose, R. (2010). The problem of media habits. *Communication Theory*, 20(2), 194–222. <https://doi.org/10.1111/j.1468-2885.2010.01360.x>
- LaRose, R. (2015). The psychology of interactive media habits. In S. S. Sundar (Ed.), *The handbook of the psychology of communication technology* (pp. 356–383). Wiley. <https://doi.org/10.1002/9781118426456.ch16>
- Lin, A. C. (2006). Predicting satellite radio adoption via listening motives, activity, and format preference. *Journal of Broadcasting & Electronic Media*, 50(1), 140–159. https://doi.org/10.1207/s15506878jobem5001_8
- Liu, I. L. B., Cheung, C. M. K., & Lee, M. K. O. (2016). User satisfaction with microblogging: Information dissemination versus social networking. *Journal of the Association for Information Science and Technology*, 67(1), 56–70. <https://doi.org/10.1002/asi.23371>
- Lu, B., Fan, W., & Zhou, M. (2016). Social presence, trust, and social commerce purchase intention: An empirical research. *Computers in Human Behavior*, 56, 225–237. <https://doi.org/10.1016/j.chb.2015.11.057>
- Oliver, R. (1997). *Satisfaction: A behavioral perspective on the consumer*. McGraw Hill Companies Inc.
- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460–469. <https://doi.org/10.2307/3150499>
- Papacharissi, Z., & Mendelson, A. (2011). Toward a new(er) sociability: Uses, gratifications and social capital on Facebook. In S. Papathanassopoulos (Ed.), *Media perspectives for the 21st century* (pp. 212–230). Routledge.
- Papacharissi, Z., & Rubin, A. (2010). Predictors of Internet use. *Journal of Broadcasting & Electronic Media*, 44(2), 175–196. https://doi.org/10.1207/s15506878jobem4402_2

- Perks, G. L., Turner, S. J., & Tollison, C. A. (2019). Podcast uses and gratifications scale development. *Journal of Broadcasting & Electronic Media*, 63(4), 617–634. <https://doi.org/10.1080/08838151.2019.1688817>
- Rubin, A. M. (1983). Television uses and gratifications: The interactions of viewing patterns and motivation. *Journal of Broadcasting*, 27(1), 37–51. <https://doi.org/10.1080/08838158309386471>
- Russell, S. J., & Norvig, P. (2003). *Artificial intelligence: A modern approach* (2nd ed.). Prentice Hall.
- Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The motivational pull of video games: A self-determination theory approach. *Motivation and Emotion*, 30(4), 347–363. <https://doi.org/10.1007/s11031-006-9051-8>
- Sangar, K. (2012). *Gucci – Social media marketing strategies using internet and social networking sites*. SlideShare.net. <http://www.slideshare.net/AngelKritiSangar/gucci-social-mediemarketing-strategies-using-internet-social-networking-sites>
- Shankar, V., Smith, A. K., & Rangaswamy, A. (2003). Customer satisfaction and loyalty in online and offline environments. *International Journal of Research in Marketing*, 20(2), 153–175. [https://doi.org/10.1016/S0167-8116\(03\)00016-8](https://doi.org/10.1016/S0167-8116(03)00016-8)
- Stafford, T. F., Stafford, M. R., & Schkade, L. L. (2004). Determining uses and gratifications for the Internet. *Decision Sciences*, 35(2), 259–288. <http://doi.org/10.1111/j.00117315.2004.02524.x>
- Sundar, S. S. (2008). The MAIN model: A heuristics approach to understanding technology effects on credibility. In M. J. Metzger & A. J. Flanagin (Eds.), *Digital media, youth, and credibility* (pp. 72–100). The MIT Press. <https://doi.org/10.1162/dmal.9780262562324.073>
- Sundar, S. S., & Kim, J. (2019). Machine heuristic: When we trust computers more than humans with our personal information. *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 538, 1–9. <https://doi.org/10.1145/3290605.3300768>
- Sundar, S. S., & Limperos, M. A. (2013). Uses and grats 2.0: New gratifications for new media. *Journal of Broadcasting & Electronic Media*, 57(4), 504–525. <https://doi.org/10.1080/08838151.2013.845827>
- Sundar, S. S., & Marathe, S. S. (2010). Personalization versus customization: The importance of agency, privacy, and power usage. *Human Communication Research*, 36(3), 298–322. <https://doi.org/10.1111/j.1468-2958.2010.01377>
- Wang, E. S., & Lin, R.-L. (2017). Perceived quality factors of location-based apps on trust, perceived privacy risk, and continuous usage intention. *Behaviour & Information Technology*, 36(1), 2–10. <https://doi.org/10.1080/0144929X.2016.1143033>
- Wei, R., & Lo, V. (2006). Staying connected while on the move: Cell phone use and social connectedness. *New Media & Society*, 8(1), 53–72. <https://doi.org/10.1177/1461444806059870>
- Xu, C., Ryan, S., Prybutok, V., & Wen, C. (2012). It is not for fun: An examination of social network site usage. *Information & Management*, 49(5), 210–217. <https://doi.org/10.1016/j.im.2012.05.001>
- Yao, M. (2017). *100 best bots for brands & business*. TOPBOTS. <https://www.topbots.com/100-best-bots-brands-businesses/>
- Zhao, L., & Lu, Y. (2012). Enhancing perceived interactivity through network externalities: An empirical study on micro-blogging service satisfaction and continuance intention. *Decision Support Systems*, 53(4), 825–834. <https://doi.org/10.1016/j.dss.2012.05.019>