

Association for Information Systems

AIS Electronic Library (AISeL)

PACIS 2019 Proceedings

Pacific Asia Conference on Information
Systems (PACIS)

6-15-2019

Internet Celebrity Endorsement: How Internet Celebrities Bring Referral Traffic to E-commerce Sites?

Ruibin Geng

Xidian University, grace.bin1207@gmail.com

Shichao Wang

Zhejiang University, oncechao1992@gmail.com

Xi Chen

Zhejiang University, chen_xi@zju.edu.cn

Follow this and additional works at: <https://aisel.aisnet.org/pacis2019>

Recommended Citation

Geng, Ruibin; Wang, Shichao; and Chen, Xi, "Internet Celebrity Endorsement: How Internet Celebrities Bring Referral Traffic to E-commerce Sites?" (2019). *PACIS 2019 Proceedings*. 193.

<https://aisel.aisnet.org/pacis2019/193>

This material is brought to you by the Pacific Asia Conference on Information Systems (PACIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in PACIS 2019 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Internet Celebrity Endorsement: How Internet Celebrities Bring Referral Traffic to E-commerce Sites?

Completed Research Paper

Ruibin Geng

Xidian University
266 Xinglong Section of Xifeng Road,
Xi'an, Shaanxi 710126
grace.bin1207@gmail.com

Shichao Wang

Zhejiang University
866 Yuhangtang Rd. (mail), Hangzhou,
Zhejiang, 310058
oncechao1992@gmail.com

Xi Chen¹

Zhejiang University
866 Yuhangtang Rd. (mail), Hangzhou, Zhejiang, 310058
chen_xi@zju.edu.cn

Abstract

Endorsement marketing has been widely used to generate consumer attention, interest, and purchase behaviors among targeted audience of celebrities. Internet celebrities who become famous by means of the Internet are more dependent on strategy intimacy to appeal to their followers. Limited studies have addressed the new business models in Internet celebrities economy: content advertising and online retailing. Our study aims to examine how Internet celebrity endorsement influencing the consumers' click-on behaviors and purchase behaviors in the context of e-commerce business. Results suggest that content marketing using Internet celebrity endorsement exhibit a significant role in bringing referral traffic to e-commerce sites but less helpful to boost sales. The impact of Internet celebrity endorsement on consumers' click-on decisions is U-shaped, but the role of Internet celebrities as online retailers will "shape-flip" such relationship to a negative linear relation. Therefore, Internet celebrity endorsement provides effective ways to bring referral traffic to e-commerce sites.

Keywords: Content marketing, Internet celebrity endorsement, e-commerce, referral traffic.

Introduction

With changing times, tracking where your customers are coming from has become technically feasible and strategically important to build a successful e-commerce business. There are two major ways customers ended up on e-commerce sites: search engine traffic and referral traffic. Search engine traffic refers to the visitors who arrive at a website by clicking search results leading to that particular website. Referral traffic, in contrast, is used to describe visitors to your site that come from direct links on other websites, such as a link on Facebook, rather than directly or from searches. According to a new website traffic report from Shareaholic.com (Zevin 2018), search drove 34.8 percent of site visits in 2017

¹ Xi Chen, School of Management, Zhejiang University, Alibaba-Zhejiang University Joint Institute of Frontier Technologies.

compared to social networks which accounted for 25.6 percent of referral traffic. A new study of over 1,000 U.S. consumers by Sumo Heavy Industries, a digital commerce strategy firm, has found a 198 percent increase in social media referral traffic to e-commerce sites between 2014 and 2015 (Bose 2016). Although organic search traffic remains top traffic source in e-commerce website, referral traffic is also important because it provides a steady source of traffic outside of search engine hits. Referral traffic drives targeted visitors to the website, which may increase revenues as they are more likely to purchase. A person who finds the website at random may find it has nothing to do with what he was looking for.

Referral traffic also helps Internet celebrities build a strong influence in niching and monetizing their content with advertisements on other businesses. Advertisers often employ celebrities to endorse a product to enhance audience attentiveness, add glamour and desirability to the product, and make the advertisement more memorable and credible (Spielman, 1981). According to McCracken (1989), a celebrity endorser is defined as “any individual who enjoys public recognition and who uses this recognition on behalf of a consumer good by appearing with it in an advertisement”. These days, the Internet has significantly changed the sources of information delivery. As a result, the advent of social media allows the masses to wrest control of fame from traditional media, creating Internet celebrities with the click of a mouse. According to CBN Data (ChinaDaily 2016), a commercial data company affiliated with Alibaba, the Internet celebrities economy was set to be worth 58 billion yuan in 2016, more than China's total cinema box office revenue in 2015.

There are two main business models in the Internet celebrities economy: content advertising and online retailing. In content advertising, internet celebrities are paid to advertise products to their followers to help advertised products reach a large user base. By building out such referral traffic, Internet celebrities should be cautious to cite product links in their content for their own followers to click on and view, because they are uncertainty about the target audience’s attitude about the products. Another online retailing business model allows Internet celebrities to sell self-branded products to potential buyers among followers via e-commerce platforms, which provides a large overlap between the target audience of Internet celebrities and the potential consumers of products. However, advertisement on self-branded products may reduce the credibility of Internet celebrities. The different roles of Internet celebrities in content marketing will significantly influence audience attitudes and behavioral intentions. Therefore, it is important to examine how consumers make responses to content marketing with Internet celebrities as independent endorsers or as e-commerce retailers.

Celebrity endorsement has been widely adopted in marketing practice and well-studied in literature. Many studies show strong support for the use of celebrity endorsements, arguing that celebrities help make brands recognizable and create a positive brand attitude (Petty, Cacioppo, & Schumann, 1983), enhance the likelihood of purchase (Friedman & Friedman, 1979), foster brand loyalty, and positively impact word-of-mouth (Bush, Martin, & Bush, 2004). Hoffner and Cantor (1991) also point out that people emulate the appearance and behavior of the media celebrities that they admire. Celebrities, such as film stars, musicians, and sporting icons, receive the fame and public attention accorded by the mass media and their status is often associated with wealth and opportunities to earn revenue. However, Internet celebrities who become famous by means of the Internet are more dependent on strategy intimacy to appeal to their followers. The relationship between Internet celebrities and their followers is more equal and less stable in contrast to that between movie stars and fans. Limited studies have addressed the new business models in Internet celebrities economy.

Our study aims to examine how Internet celebrity endorsement influencing the consumers’ click-through behaviors and purchase behaviors in the context of e-commerce business. Particularly, we distinguish two business models in the Internet celebrities economy. First, the Internet celebrities act as independent endorsers to make product recommendation. Second, the Internet celebrities act as e-commerce retailers and advertising self-branded products to their followers. The empirical dataset is provided by Taobao, one of the largest content marketing and e-commerce platforms in the world. Results suggest that content marketing using Internet celebrity endorsement exhibit a significant role in bringing referral traffic to e-commerce sites but less helpful to boost sales. On the one hand, the impact of Internet celebrity endorsement on consumers’ click-on decisions is U-shaped, but insignificant with regard to consumers’ purchase decisions. On the other hand, Internet celebrities acting as online retailers will reduce the click-through rate on the product advertisement in contract to Internet celebrities acting

as independent endorsers. Furthermore, repetitive impression of endorsement will reinforce the negative impact of Internet celebrities recommending self-branded products.

The remainder of this paper is organized as follows. In section 2, we briefly review the relevant literature and discuss how our work extend the existing research. In section 3, we describe the empirical context for our data. In section 4, we adopt two panel logit models that capture the impact of Internet celebrity endorsement. Section 5 makes a further discussion on the empirical results. Section 6 draws conclusions.

Literature Review

Existing papers have studied a wide range of topics related to how user-generated content (UGC) or word of mouth (WOM) affects individual consumer behavior (Ghose and Ipeiritis 2011; Zhu and Zhang 2010). For example, Dewan and Ramaprasad (2009) employ the Granger Causality methodology and two-stage least squares analysis to examine the relationship between music blog buzz and album sales. Ghose and Ipeiritis (2011) re-examine the influence of reviews on product sales, and find that the extent of subjectivity, informativeness, readability, and linguistic correctness in reviews matters in influencing sales. In addition to users, marketers also generate contents aiming to advertise their products. A few studies have examined how marketer-generated content (MGC) can influence product sales (Godes et al. 2005; Dellarocas 2006). For example, Dellarocas (2006) develops an analytical model to study the economic impact of firms' posting anonymous messages to Internet-based opinion forums in disguise as customers. The result of their analysis is that strategic manipulation can either decrease or increase the information value of online forums to consumers relative to the case where no manipulation takes place.

There is growing evidence that consumers are influenced by opinion leaders before making a variety of purchase decisions. An opinion leader, who is generally more interconnected and has a higher social standing, can deliver product information, provide recommendations, give personal comments, and supplement professional knowledge, which may help companies boost sales (Chaney, 2001). With the popularity of social media, there appears more and more Internet celebrities serving as a role of opinion leader to some extent. There are four main accepted theoretical perspectives explaining why and how a celebrity endorser can have an effect on consumer behaviors, including source credibility model (Hovland et al. 1953), source attractiveness model (McGuire 1985), product match-up hypothesis (Fokan 1980; Kamins 1990), and meaning transfer model (McCracken 1989). According to Pornpitakpan (2004), a highly credible source is more persuasive than a less credible source in influencing audience attitudes and behavioral intentions.

Ohanian (1990) has synthesized the previous literature on celebrity endorsement and proposed three distinct dimensions of celebrity endorser credibility: expertise, trustworthiness, and attractiveness. Expertise refers to the extent to which a communicator is perceived to possess knowledge, skills, qualifications, or experience and is therefore considered to provide accurate information. Trustworthiness refers to the audience's confidence that the source provides information in an objective and honest manner, and attractiveness refers to how physically attractive, elegant, or likable the source is to the audience. Therefore, endorsers who are perceived to be knowledgeable, reliable, and attractive are considered credible and, in turn, induce consumers' positive attitudinal and behavioral responses to the brand and the product (Ohanian, 1991). Scholars have shown that using famous celebrities to endorse products is generally more effective than using non-celebrities to generate positive responses from consumers (Atkin & Block, 1983; Freiden, 1984; Kamins, 1989). Moreover, these credible endorsers can produce more favorable attitudes toward the advertisement (Goldsmith, Lafferty, & Newell, 2000; Lafferty, Goldsmith, & Newell, 2002) and intent to purchase the product (Lafferty & Goldsmith, 1999; Ohanian, 1991).

Our analysis of Internet celebrity endorsement differs from the previous research in two ways. First, the mechanism about how Internet celebrities influencing the consumers' attitudes and behavior intentions are different from celebrities who receive status of fame and attention from the mass media. Internet celebrities are more closely connected with consumers because of their intensive use of social media. The income of Internet celebrities mostly comes from their followers. Hence, the relationship

between Internet celebrities and their followers is more equal and less stable in contrast to that between movie stars and fans. Therefore, it is uncertainty about whether Internet celebrity endorsement can effectively boost referral traffic to e-commerce sites. Second, there exist two business models in the Internet celebrities economy: content advertising and online retailing. Consumers might response significantly different when Internet celebrities play different roles in the content marketing campaign. Thus, we distinguish the roles of Internet celebrities as independent endorsers and as online retailers when investigating the impact of content marketing.

Data and Context

We obtained the empirical data of content marketing from one of the largest leading e-commerce platforms in the world. We randomly selected 74,020 active users from the e-commerce platform (accounting for 1/3000 of the total active user base). We focus on the product category of facial mask to investigate the impact of Internet celebrity endorsement. We collected the content reading, product click-on, and purchase behaviors of the sample users for two months from June 2018 to July 2018. Figure 1 and Figure 2 plot the time trend of daily content read volume, product click volume, product purchase volume over the observation period. Conditional on reading the Internet celebrities endorsed content, consumers' click-on behaviors on products bring referral traffic to e-commerce retailers. Moreover, conditional on reading the Internet celebrities endorsed content, consumers' purchase decisions directly contribute to the economic value of Internet celebrity endorsement. The features related to Internet celebrities, endorsed facial mask products, and online retailers are also collected (see summary statistics in Table 1)

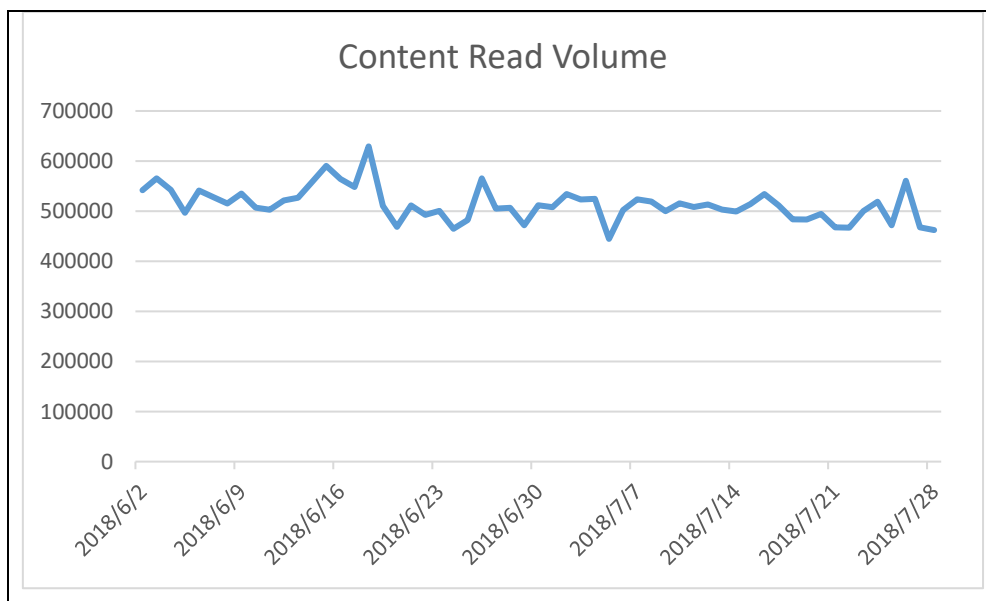


Figure 1. Time Trend of Content Read Volume

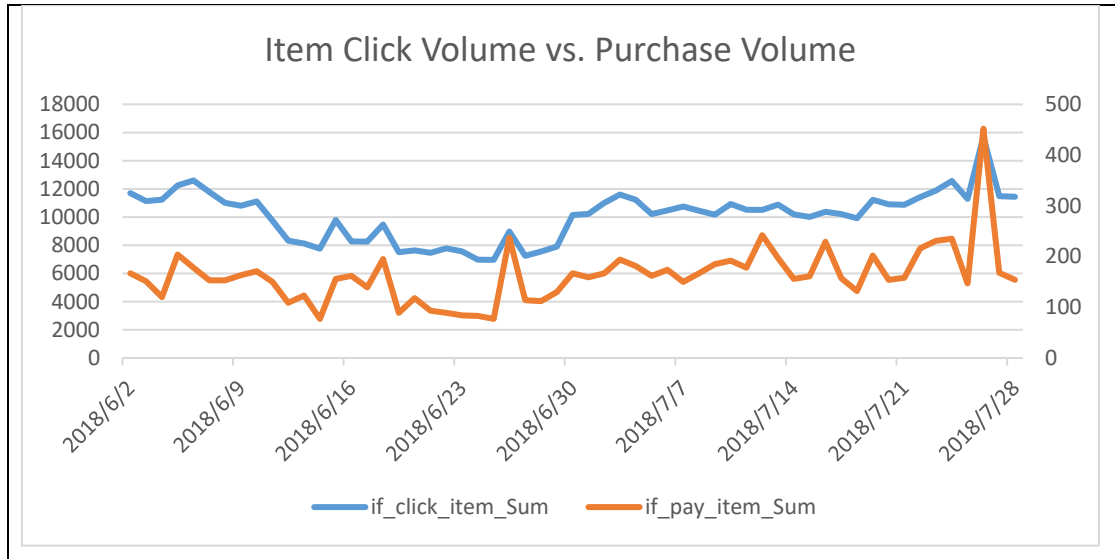


Figure 2. Time Trend of Item Click Volume, and Item Purchase Volume

Table 1. Summary Statistics

Variable	Description	Mean	Std. Dev.
if_click_item	Whether consumer clicks on the product recommended by the endorser	.011888	.1083824
if_pay_item	Whether consumer purchases the product recommended by the endorser	.0004477	.0211552
exposed_time	How many times consumer has being recommended for the product	7.584636	21.39165
is_retailer	Whether endorsers is also the retailer of the product	.2370791	.4252917
reserve_price	The price of the product	210.7071	285.9387
promoted_status	Whether the product is under promotion	.6695363	.4703807
popularity	How many times the product has been added in wish list	98111.12	184690.7
bc_seller	Whether the product is sold by a business seller from Tmall (1) or a customer seller from Taobao (0)	.6797097	.4665887
dsr_fw	The rating score of the product on service attitude	4.853263	.0364463
dsr_wl	The rating score of the product on delivery speed	4.851158	.0376981
dsr_zl	The rating score of the product on match degree of description	4.875524	.0407015
daren_age	The age of the endorser	29.06727	7.387759
daren_gender	The gender of the endorser	.7985391	.4010921
fans_cnt	The number of followers of the endorser	564543.5	1317482

uv_1w	The number of active followers who visit the endorser within the last 7 days	31805.88	59527.64
v_mission_cop_cat	How many categories of products the endorser has recommended	13.65833	13.43607
v_mission_cop_seller	How many retailers the endorser has cooperated with	89.28404	179.823
v_mission_cop_times	How many times the endorser has participated in content marketing	312.9265	669.1378
v_mission_repeat_seller	How many retailers the endorser has cooperated with more than once	38.76787	87.15019

Model and Results

We apply two panel logit models to estimate the click-through rate and purchase rate of content marketing through Internet endorsement (see equation (1)). To be specific, we use y_{ijkt} as dependent variable to denote whether user i click on (or purchase) the product k recommended by Internet celebrity j at time t . The independent variables we are interested in are $expose_times_{ikt}$ and $is_retailer_{jt}$. $expose_times_{ikt}$ measures how many times user i has been recommended for product k till time t , which indicates the lasting impression of advertisement on consumers. We also add the quadratic form $expose_times_{ikt}^2$ to examine whether the Internet celebrity endorsement has nonlinear relationship with consumers' attitudes and purchase decisions. $is_retailer_{jt}$ is an indicator that equals 1 if Internet celebrity j is also the online retailer of the endorsed product at time t , and 0 otherwise. The features of product k , such as price and ratings, and the characteristics of Internet celebrity j , such as age, gender, and followers, are used as control variables. $Time_t$ captures the evolution of time trends. The consumer-level fixed effect u_i is added to control for time-invariant unobserved heterogeneity across users.

$$\begin{aligned} \text{logit}(y_{ijkt}) = & \beta_0 + \beta_1 \text{exposed_times}_{ikt} + \beta_2 \text{exposed_times}_{ikt}^2 + \beta_3 \text{is_retailer}_{jt} + \beta_4 \text{exposed_times}_{ikt} \\ & \times \text{is_retailer}_{jt} + \beta_5 \text{exposed_times}_{ikt}^2 \times \text{is_retailer}_{jt} + \text{Controls} + \text{Time}_t + u_i + \varepsilon_{it} \end{aligned} \quad (1)$$

The estimation results are shown in Table 2. Column (1) and (3) present the main effects of Internet celebrity endorsement and the role of endorser. Column (2) and (4) add interaction term of the two independent variables to see if there exist moderating effect. Results indicate that Internet celebrity endorsement and the role of endorser will only have significant impact on consumers' willingness to click on the product, but insignificant to determine consumers' purchase decisions. Specifically, the repeated exposure of products in content marketing has a U-shape relationship with consumers' click-through rate. Such quadratic relationship indicates that consumers' attitudes to product will change from negative to positive with the repeated appearance of Internet celebrities endorsed content advertisement. The turning point is calculated as 1.625. In addition, the role of Internet celebrities as online retailers will significantly decrease the probability that consumers click on the product recommended. The moderating effect of Internet celebrities' role in content marketing shift the Internet celebrity endorsement effect from the U-shaped relationship into negative linear relationship. Thus, consumers will continue to have a negative attitude towards the content advertisement of Internet celebrities who are selling self-branded products.

Table 2. Estimation Results of Panel Logit Models

	(1)	(2)	(3)	(4)
VARIABLES	if_click_item	if_click_item	if_pay_item	if_pay_item
exposed_time_log_dm	-0.130836***	0.012801	0.055949	0.143818

	(0.031099)	(0.036227)	(0.210745)	(0.263583)
exposed_time_log_dm_sq	0.039585***	0.009373	0.058543	0.058471
	(0.013240)	(0.014514)	(0.107533)	(0.123067)
is_retailer	-0.166294*	-0.166014*	-0.240829	-0.012705
	(0.089500)	(0.097734)	(0.708737)	(0.754202)
isRetailerXExposedTimeLgDm		-0.419292***		-0.178130
		(0.063309)		(0.417867)
isRetailerXExposedTimeLgDmSq		-0.041343		-0.627197
		(0.049338)		(0.460313)
reserve_price_log	-0.072891***	-0.075417***	-0.229764	-0.220618
	(0.023019)	(0.023037)	(0.159336)	(0.160159)
promoted_status	-0.103201***	-0.082244**	-0.119698	-0.133356
	(0.036261)	(0.036391)	(0.236487)	(0.238029)
popularity_log	-0.102200***	-0.104555***	0.099302	0.095020
	(0.008394)	(0.008413)	(0.060683)	(0.061226)
bc_seller	-0.420418***	-0.423688***	-1.604472**	-1.538418**
	(0.084695)	(0.084642)	(0.680593)	(0.688638)
dsr_fw	1.991789	1.825403	-9.095462	-8.631267
	(1.605890)	(1.616927)	(15.646538)	(15.837735)
dsr_wl	-0.701028	-0.561575	-0.709408	-0.313990
	(1.122762)	(1.149263)	(12.263572)	(12.385574)
dsr_zl	-1.332352	-1.220133	16.565046**	15.867803*
	(1.005021)	(1.002843)	(8.436291)	(8.512729)
daren_age	0.007553***	0.007157***	-0.029774	-0.029279
	(0.002398)	(0.002400)	(0.018822)	(0.018947)
daren_gender	0.102236**	0.108363**	-0.226876	-0.199330
	(0.049471)	(0.049371)	(0.360378)	(0.363168)
fans_cnt_log	0.085061***	0.078669***	0.324479**	0.341164**
	(0.018511)	(0.018557)	(0.155248)	(0.157617)
uv_1w_log	-0.073993***	-0.066315***	0.028172	0.023832
	(0.010464)	(0.010567)	(0.079436)	(0.081299)
v_mission_cop_cat_log	0.242504***	0.228669**	-0.453458	-0.504708
	(0.093750)	(0.093661)	(0.696843)	(0.702344)
v_mission_cop_seller_log	-0.021189	0.011816	0.999173*	1.102541**
	(0.075796)	(0.075938)	(0.532581)	(0.541871)
v_mission_cop_times_log	-0.186796***	-0.200908***	0.297872	0.314244
	(0.064673)	(0.064789)	(0.523372)	(0.526071)
v_mission_repeat_seller_log	0.228884***	0.216334***	-0.974459	-1.092430*
	(0.068526)	(0.068402)	(0.608474)	(0.612250)

time_index	0.003534*** (0.001212)	0.003901*** (0.001212)	0.008883 (0.007709)	0.009142 (0.007823)
Observations	220,412	220,412	1,302	1,302
Number of consumer_id	1,019	1,019	96	96
Log Likelihood	-15474.076	-15433.755	-245.79796	-243.8841

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Our empirical study is conducted based on the active audience of the Internet celebrities who at least read one content advertisement of the product. One can argue that consumers who are willing to read content generated by Internet celebrities will also have high intention to purchase. Thus, the Internet celebrity endorsement effect might be overestimated. In order to evaluate the potential selection problem in our empirical study, we further undertake propensity-score matching technique (DiPrete and Gangl 2004) to correct for selection bias. We first select a control group of consumers who never read content generated by Internet celebrities but click on or purchase the products in the category of facial mask, and then apply propensity score matching approach to match active audience of Internet celebrities with consumers in control group based on observables including consumer profiles (e.g. age, gender, purchasing power, buyer credit, buyer level, and activity score) and product features (e.g. price, rating score, *etc.*). Table 5 illustrates the descriptive statistics of observables in treatment and control groups after matching. Based on the matched data, we repeat the estimation of two panel logit models in Table 6. Since consumers in the control group never read content generated by Internet celebrities, variables related to the characteristics of Internet celebrities are not included in the model. Results suggest consistent findings on the relationship between Internet celebrity endorsement and consumers' click-on and purchase decisions. As a result, this approach provides complementary robustness checks about the U-shape relationship of Internet celebrity endorsement.

Table 5. Descriptive Statistics of Observables after Matching

Variable	control group			treatment group		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
is_exposed	185,354	0	0	185,354	1	0
age	185,354	4.589386	1.719149	185,354	4.607751	1.481205
gender	185,354	1.162214	0.371026	185,354	1.161032	0.371039
purchase_power	185,354	3.471169	1.679946	185,354	3.486059	1.581753
buyer_credit	185,354	375.1506	533.5421	185,354	382.9405	575.3476
buyer_level	185,354	4.893231	1.966308	185,354	4.950673	1.913172
activity_score	185,354	780.7666	344.9041	185,354	787.3284	344.5893
reserve_price_mean	185,354	211.2387	400.2066	185,354	209.9694	262.233
popularity_mean	185,354	69027.65	157682.8	185,354	70590.07	152102.4
item_point_mean	185,354	2.971893	2.531062	185,354	2.970408	2.534924
promoted_status_mean	185,354	0.697849	0.421527	185,354	0.678209	0.417612
bc_seller	185,354	0.650129	0.47693	185,354	0.649929	0.476993
dsr_fw_mean	185,354	4.852136	0.059045	185,354	4.855292	0.038675
dsr_wl_mean	185,354	4.849073	0.060237	185,354	4.853086	0.039528

dsl_zl_mean 185,354 4.874807 0.05391 185,354 4.873815 0.044158

Table 6. Robustness Check based on Propensity Score Matching

VARIABLES	(1)	(2)
	if_click_item	if_pay_item
exposed_time_log_dm	-0.881029*** (0.035297)	0.141626 (0.381487)
exposed_time_log_dm_sq	0.289256*** (0.025554)	0.536301 (0.445663)
reserve_price_log	-0.038381** (0.017788)	-0.124997 (0.157612)
promoted_status	-0.158361*** (0.030568)	0.055985 (0.317418)
popularity_log	-0.033182*** (0.006210)	0.158549** (0.066077)
bc_seller	-0.226993*** (0.062179)	-1.106403 (0.731487)
dsl_fw	1.676202** (0.817147)	-2.825555 (8.354694)
dsl_wl	-1.341028** (0.556527)	-0.206112 (7.291386)
dsl_zl	0.298790 (0.635611)	6.020649 (6.802586)
time_index	-0.002784*** (0.000830)	0.014332 (0.009648)
Observations	174,828	313
Number of consumer_id	3,919	99
Log Likelihood	-19092.28	-95.387012

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Discussion

According to the empirical results, content marketing using Internet celebrity endorsement exhibit a significant role in bringing referral traffic to e-commerce sites but less helpful to boost sales. Our study has three notable findings. First, the impact of Internet celebrity endorsement on consumers' click-on decisions is U-shaped, but insignificant with regard to consumers' purchase decisions. This finding is contradictory with the wear-out effect of advertisement impression in marketing literature. The aim of traditional advertisement is to increase the awareness of the product, while Internet celebrity endorsement influence consumers' attitudes to the product based on credibility. The trust of consumers on the product will be increased if they get recommendation from multiple credible sources. Thus, we observe consumers' attitudes change from negative to positive with the repeated deepening of the impression of Internet celebrity endorsement.

Second, Internet celebrities acting as online retailers will reduce the click-through rate on the product advertisement in contrast to Internet celebrities acting as independent endorsers. The role of Internet celebrities in content marketing is irrelevant to consumers' purchase decisions. This finding can also be explained by the credibility of Internet celebrities. According to Pornpitakpan (2004), a highly credible source is more persuasive than a less credible source in influencing audience attitudes and behavioral intentions. Selling self-branded product undermines the credibility of Internet celebrities as a recommender. Internet celebrities as online retailers will arouse consumers' negative emotional states, such as skepticism in their motivation to make recommendation, thus result in resistant responses.

Third, repetitive impression of endorsement will reinforce the negative impact of Internet celebrities recommending self-branded products. Results suggest that the relationship between Internet celebrity endorsement and consumers' click-on decision changes from non-linear to negative linear when the role of Internet celebrities changes from independent endorsers to online retailers. Haans et al. (2016) term this phenomenon "shape-flip" as the shape of the curve flips from a U-shape to a straight line with the moderation effect of the role of Internet celebrities. One of the possible explanation of this "sharp-flip" phenomenon is that the content generated by Internet celebrities acting as online retailers is regarded as advertisement. As illustrated in advertisement literature, repeated advertisement impression has wear-out effect on consumers. Therefore, Internet celebrities acting as online retailers are not suitable for adopting repeated advertising strategies.

Examining how Internet celebrity endorsement brings referral traffic to e-commerce sites is of great importance from Information Systems (IS) perspective. First, referral traffic is a good supplement to search traffic for e-commerce business. More traffic implies more sales opportunities to e-commerce retailers. The top-down nature of search traffic allocation leads to the long tail challenge to run e-commerce business. However, referral traffic is able to disentangle the limitation of search engine and make point-to-point traffic transmission. Second, Internet celebrity endorsement provides a new channel of traffic relocation in e-commerce platform. E-commerce platform operators usually direct traffic through technology-based recommender systems. In contrast to artificial intelligence algorithm, Internet celebrity endorsement as manual recommender channel brings better user experience. Moreover, the interaction between Internet celebrities and consumers will increase user engagement and enhance platform competitiveness. Our study also carries important practical implications to both e-commerce retailers and Internet celebrities. When pursuing content-driven e-commerce, Internet celebrities have to ensure not to harm their credibility, while e-commerce retailers have to overcome the problem of free riding.

Conclusion

In this paper, we devoted to understanding how Internet celebrity endorsement will affect consumers' attitudes and behaviors in e-commerce platform, which provides broader insights for content marketing and e-commerce business. Our empirical study highlights the different roles of Internet celebrities in two business models: content advertising and online retailing. The results suggest that repeated impression of Internet celebrity endorsement will increase click-through rate unless the endorser is selling self-branded products. The directions of future research might focus on the moderating effect of consumer characteristics on Internet celebrity endorsement.

Acknowledgements

This work is supported by the National Natural Science Foundation of China (Nos. 91546107), Zhejiang Natural Science Foundation (Nos. LR16G020001), and MOE (Ministry of Education in China) Project of Humanities and Social Sciences (Nos. 19YJC630042). The authors are grateful to the editor and reviewers for their invaluable and insightful comments that have greatly helped to improve this work.

References

- Atkin, C., & Block, M. 1983. Effectiveness of celebrity endorsers. *Journal of Advertising Research*, 23, 57–61.
- Bose S. 2016. Social Media Referrals to eCommerce Sites Have Increased 198 Percent <https://smallbiztrends.com/2016/10/social-media-for-ecommerce-sites.html> Retrieved 2019-02-19.
- Bush, A. J., Martin, C. A., & Bush, V. D. 2004. Sports celebrity influence on the behavioral intentions of generation Y. *Journal of Advertising Research*, 44, 108–119.
- Chaney, I. M., 2001. Opinion leaders as a segment for marketing communications. *Marketing Intelligence & Planning* 19(5), 302-308.
- ChinaDaily. 2016. "China's Internet celebrity economy bigger than cinema". http://www.chinadaily.com.cn/china/2016-09/17/content_26812402.htm. Retrieved 2019-02-19.
- Dellarocas, C. 2006. Strategic manipulation of internet opinion forums: Implications for consumers and firms. *Management science*, 52(10), 1577-1593.
- Dewan, S., Ramprasad, J., 2009. Chicken and egg? Interplay between music blog buzz and album sales. PACIS 2009 Proceedings. Paper 87.
- DiPrete, T. A., & Gangl, M. 2004. 7. Assessing Bias in the Estimation of Causal Effects: Rosenbaum Bounds on Matching Estimators and Instrumental Variables Estimation with Imperfect Instruments. *Sociological methodology*, 34(1), 271-310.
- Forkan, J., 1980. Product matchup key to effective star presentations. *Advertising Age* 51, 42.
- Freiden, J. B. 1984. Advertising spokesperson effects: An examination of endorser type and gender on two audiences. *Journal of Advertising Research*, 24, 33–41.
- Friedman, H. H., & Friedman, L. 1979. Endorser effectiveness by product type. *Journal of Advertising Research*, 19, 63–71.
- Ghose, A., & Ipeirotis, P. G. 2011. Estimating the helpfulness and economic impact of product reviews: Mining text and reviewer characteristics. *IEEE Transactions on Knowledge and Data Engineering*, 23(10), 1498-1512.
- Godes, D., Mayzlin, D., Chen, Y., Das, S., Dellarocas, C., Pfeiffer, B. & Verlegh, P. 2005. The firm's management of social interactions. *Marketing Letters*, 16(3), 415-428.
- Goldsmith, R. E., Lafferty, B. A., & Newell, S. J. 2000. The impact of corporate credibility and celebrity credibility on consumer reaction to advertisements and brands. *Journal of Advertising*, 29, 43–54.
- Haans, R. F., Pieters, C., & He, Z. L. 2016. Thinking about U: Theorizing and testing U-and inverted U-shaped relationships in strategy research. *Strategic Management Journal*, 37(7), 1177-1195.
- Hoffner, C., & Cantor, J. 1991. Perceiving And Responding To Mass Media Characters. In J. Bryant, & D. Zillman (Eds.), *Responding to the screen: Reception and reaction process*. pp. 63–102.
- Hovland, C. I., Janis, I. L., & Kelley, H. H., 1953. *Communication and persuasion: Psychological studies of opinion change*. New Haven, CT, US: Yale University Press.
- Kamins, M. A. 1989. Celebrity and noncelebrity advertising in a two-sided context. *Journal of Advertising Research*, 29, 34–42.
- Kamins, M. A., 1990. An investigation into the “match-up” hypothesis in celebrity advertising: When beauty may be only skin deep. *Journal of Advertising* 19(1), 4-13.
- Lafferty, B., Goldsmith, R. E., & Newell, S. J. 2002. The dual credibility model: The influence of corporate and endorser credibility on attitudes and purchase intentions. *Journal of Marketing Theory and Practice*, 10, 1–12.
- McCracken, G. 1989. Who is the celebrity endorser? Cultural foundations of the endorsement process. *Journal of consumer research*, 16(3), 310-321.
- Ohanian, R. 1990. Construction and validation of a scale to measure celebrity endorsers' perceived expertise, trustworthiness, and attractiveness. *Journal of Advertising*, 19, 39–52.
- Ohanian, R. 1991. The impact of celebrity spokesperson's perceived image on consumers' intention to purchase. *Journal of Advertising Research*, 31, 46–52.
- Petty, R. E., Cacioppo, J. T., & Schumann, D. 1983. Central and peripheral routes to advertising effectiveness: The moderating role of involvement. *Journal of Consumer Research*, 10, 135–146.
- Pornpitakpan, C. 2004. The persuasiveness of source credibility: A critical review of five decades' evidence. *Journal of applied social psychology*, 34(2), 243-281.
- Spielman, H. M. 1981. The celebrity sell: Making it work. *Marketing Times*, 28, 13–14.

- Zevin C. 2018 Pinterest, Google, & Instagram big winners as Facebook share of visits falls 8% in 2017. <https://www.shareaholic.com/blog/search-engine-social-media-traffic-trends-report-2017/>
Retrieved 2019-02-19.
- Zhu, F., & Zhang, X. 2010. Impact of online consumer reviews on sales: The moderating role of product and consumer characteristics. *Journal of marketing*, 74(2), 133-148.