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SPILOVER EFFECT OF CONTENT MARKETING IN E-COMMERCE

PLATFORM UNDER THE FAN ECONOMY ERA

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Abstract:

As the proliferation of social media and live streaming, online celebrity endorsement is a common practice of content marketing in e-commerce platform. Despite the prevalent use of social media and online community, empirical research investigating the economic values of user-generated-content (UGC) and marketer-generated-content (MGC) still lags. This study seeks to contribute theoretically and practically to an understanding of how online celebrity endorsement and fans interaction behaviors affect e-commerce sales. We adopt cross-sectional regression to assess the economic value of online celebrity endorsement, and we employ panel vector autoregressive model to explain the dynamic relationship between marketers' and consumers' content marketing behaviors and e-commerce product sales. Empirical results highlight that the interaction within fans community has spillover effect on content marketing under "Fan Economy" era.

Keywords:

Online celebrity endorsement, content marketing, e-commerce sales, interaction behaviors, the Fan Economy

1. Introduction

As the proliferation of social media and live streaming, the cost of people rising to fame has significantly decreased. Millions of people participate in content generation via the Internet. Only a few of them who may rise to fame derived from distinctive social image as much as from their contributed content. We define the one who has become famous by means of the Internet as online celebrity. E-commerce sellers are well aware of the positive influence of celebrity-worship on purchase intent that online celebrities can bring persuasive messages to consumers. A growing number of online celebrity endorsers, acting as a typical marketer, generate content on social media or other online communities (hereafter termed as marketer-generated content (MGC)) to engage consumers actively. The enormous potential earning from a large group of followers (fans) attracted by an online celebrity manifests the power of the "Fan Economy".

The “Fan Economy” is, in its broadest sense, referring to the value and revenue generated via interactions between individual fans (especially “super fans”) and fan communities, with the celebrities (and their generated content or production) that they follow (Liang and Shen 2016). The academic literature in advertising provides ample evidence of the positive effects of using celebrities on both advertisement and brand evaluations (Erdogan 1999; Hambrick and Mahoney 2011; Hung et al. 2011). A widely accepted explanation for celebrity endorser effects has been that celebrities bring credibility to content marketing. However, the secondary sales growth arisen from fan communities interaction tends to be ignored, which can be regarded as the spillover effect of content marketing in e-commerce platform.

This study seeks to contribute theoretically and practically to an understanding of how online celebrity endorsement and fans interaction behaviors affect e-commerce sales. Despite the prevalent use of social media and online community, empirical research investigating the economic values of user-generated-content (UGC) and marketer-generated-content (MGC) still lags. Prior UGC studies are largely preoccupied with various aspects of online reviews or word-of-mouth (WOM) after purchase, such as review volume (Chevalier and Mayzlin 2006; Duan et al. 2008), review subjectivity (Goes et al. 2014), and readability (Ghose and Ipeirotis 2011). Existing research has shed little light on the contention between the two complicated roles of consumers and marketers in inducing purchases. In previous research context, consumers and marketers are regarded as two independent communication channels to promote purchase (Goh et al. (2013); Trusov et al. (2009); Albuquerque et al. (2012)). However, in the “Fan Economy” context, there exist strong consumer-marketer (i.e. celebrity versus fans) relationship, which induces value transfer to the endorsed products. Consumers, once merely passive recipients of marketing campaigns, are now shifting as active members of fan communities, and participant with content marketing via posting, commenting, or sharing to ensure the success of products in the marketplace. Thus, the literature lacks a rigorous quantification of the value of recurring engagement by consumers (i.e. fans) and marketers (i.e. online celebrities) under the “Fan Economy” context.

The objective of our study is to assess the impacts of online celebrity endorsement and fans community interaction on e-commerce sales. We firstly conduct a cross-sectional regression to quantify the population-averaged effect of online celebrity endorsement. The results demonstrate the first research question about whether online celebrity endorsers can bring additional increase of sales or not. We also employ a panel data regression based on the data of marketer’s content generation behaviors and consumer’s interaction behaviors in fans community to explore a brand new content marketing mechanism under “Fan Economy” era. We address the potential endogeneity problem by employing a panel vector autoregression (PVAR) model (Holtz-Eakin et al. 1988) estimated by Generalized Least Square (GLS) (Orsini et al. 2006), and study the dynamic relationship between marketers’ or consumers’ activities and e-commerce sales. The results explain the second research question about how diversified content marketing channels and frequent interaction within fan communities may contribute to economic values.

The remainder of this paper is organized as follows. Section 2 reviews the literature related to celebrity endorsement and content generation. Section 3 describes the data and research context. Section 4 provides the model and estimation results. Section 5 and 6 offer a discussion and conclusion.

2. Literature Review

Celebrity endorsement advertising has been recognized as a prevailing marketing technique (McCracken 1989). The literature on endorser effects is rich, providing insights into the efficacy of endorser effects, the underlying processes, and the conditions under which endorser effects may be strengthened. The dominant explanations for endorser effects provided in literature include source credibility, affect transfer, and image congruence (Mittelstaedt et al. 2000). Source credibility states that celebrities equip advertising content with authority and believability so that communication from the source will be regarded as attractiveness, trustworthiness, and expertise (Stone et al. 2015). Affect transfer refers to the lateral process through which celebrities improve brands awareness and brand familiarity among consumers (Halonen-Knight and Hurmerinta 2010). Image congruence maintains that messages conveyed by celebrity image and the product features should be congruent for effective content marketing (Miciak and Shanklin 1994). The strength of online celebrity endorsement on content marketing is evident, thus we hypothesize that:

Hypothesis 1. The sales performance of online celebrity endorsed products will be significantly better than those without online celebrity endorsement.

Many papers have examined how online content can influence product sales. Major efforts focus on the outcomes of user-generated content (UGC) or word of mouth (WOM), such as consumers' reviews, ratings, and blogs (Dellarocas 2003; Chevalier and Mayzlin 2006). For instance, Dhanasobhon et al. (2007) study how the number of helpful votes on reviews and the reputation of reviewers influence the relationship between book ratings and book sales. Zhu and Zhang (2010) consider how product and consumer characteristics moderate the relationship between consumer reviews and product sales. On the other hand, several prior studies emphasize users' online interactions may also affect the generation of ratings, and therefore product sales. Goes et al. (2014) apply both panel data and flexible matching methods to explain how the interaction among online users influences their participation behavior. Based on those findings, as many websites become increasingly "social", the content readers are no longer silent (Dellarocas and Wood 2008). For example, readers may "like" the content or share it through social networks. In other words, sites that corporate social features allow unprecedented ease for content generators to interact with their audience or "fans". For this reason, the interaction within fans community should not be ignored when considering the effectiveness of content marketing. We therefore propose following hypothesis:

Hypothesis 2. The interaction within fans community may positively influence the e-commerce sales.

A few studies have examined how firms can play a role in manipulating or controlling the user-generated content and online word of mouth. Dellarocas (2006) develops an analytical model to study the economic impact of firms' posting anonymous messages to Internet opinion forums in disguise as customers. Godes et al. (2005) summarizes four roles that firms can play in managing the social interactions among consumers: observer, moderator, mediator, and participant. Although firms' activities are considered in these studies, they are still conducted anonymously for the purpose of creating user-generated content. In this study, we are taking a step further and study how marketers can directly generate online content to boost sales. According to marketing literature that studies the effect of traditional advertising on sales, a marketing action can affect the sales performance of a brand or a firm in six ways: contemporaneous effects, carry-over effects, purchase reinforcement, feedback effects, firm-specific decision rules, and competitive reactions (Dekimpe and Hanssens 1995). In general, advertising often has an immediate effect on sales. Goh et al. (2013) propose that consumers influence purchase through both informative and persuasive interactions, whereas marketers influence it only through persuasive communication. However, those ideas above no longer apply to the "Fan Economy" context, in which celebrity-worship bonds loyalty fans (as consumers) with online celebrity (as marketers). The efficiency of content marketing under "Fan Economy" era will be greatly enhanced by both the content generation effort of markers and the interaction between marketers and consumers.

Hypothesis 3a. The content generation efforts of marketers will significantly influence the e-commerce sales.

Hypothesis 3b. The interaction behaviors between marketers and consumers will also significantly influence the e-commerce sales.

3. Data and Context

Our data is obtained from one of the largest "consumer to consumer" (C2C) e-commerce platform in China, Taobao. We focus on "waist sellers", whose sales rank is in the middle of the long tail distribution, rather than "head sellers" and "tail sellers". Because "waist sellers" are the most promising candidates for "head sellers" with the greatest potential to further increase the number of successful transactions in the whole platform. It is these middle-ranking sellers who are urgently to participate in content marketing and promote their products. We collect the transaction data of 56,060 waist sellers in June 2017 whose main business is women's wear industry in which online celebrities take important roles in guiding consumption.

The dataset contains three aspects of information: basic characteristics of the sellers, transaction history, and content marketing behaviors. The basic characteristics of sellers include online shop duration, star rating level, detailed seller ratings (DSR), total number of followers, and whether the seller has invited online celebrities to conduct content marketing or not. The transaction history includes daily user visits (UV), daily sales amount, and daily

conversion rate (i.e. the ratio between the number of visits to an online store and the number of purchases made in one day). The daily information about content marketing behaviors includes the number of interaction behaviors between sellers and fans, the number of share behaviors of fans, the number of like behaviors of fans, the number of comment behaviors of fans, as well as the number of marketing content in different types (such as daily item content number, daily list content number, daily costume matching content number, daily video content number, daily live streaming content number, daily posting content number, daily questions and answers (Q&A) content number, and daily buyers show content number).

4. Models and Results

We first adopt classical regression based on cross-sectional data to examine whether online celebrities endorsement will shift the sales significantly when controlling the observed characteristics heterogeneity across different waist sellers. The dependent variables associating with sales performance include the log transformation of average daily user visits, the log transformation of average daily sales amount, and the average log odds of purchase event that is calculated by the ratio of positive conversion rate against negative conversion rate (i.e. $\ln(p/(1-p))$). In addition, we also add another dependent variable, the log transformation of the number of daily new followers of seller, which is extremely important to complete the closed loop of fan economic ecosystem. The independent variables we are interested in is the indicator about whether sellers invited online celebrities to join content marketing, and the count of daily generated content in average. Control variables include online shop duration, star rating level, detailed seller ratings (DSR), and total number of fans. The descriptive statistics about the variables used in the cross-sectional data regression are shown in Table 1.

VARIABLES	N	mean	sd	min	max
UV_avg	56,060	3,164	7,327	0	241,986
Sales_amount_avg	56,060	4,543	13,076	0.0100	1.923e+06
Conversion_rate_avg	56,060	0.0239	0.0516	0	1
New_followers_avg	56,060	27.22	106.6	0	5,349
Celebrity_endorse_avg	56,060	0.181	0.385	0	1
SNS_content_count_avg	56,060	0.346	0.583	0	8.500
Shop_open_time_avg	56,060	1,621	949.3	32	5,125
Star_rating_avg	56,060	10.66	1.891	-1	19
DSR_avg	56,060	4.725	0.281	0	5
Total_followers_avg	56,060	22,246	69,976	0	4.287e+06

Table 1. Summary Statistics of Variables in Cross-sectional Data Regression

We then make further investigation in how marketers' content marketing behaviors and consumers' interaction behaviors may affect the four outcome variables mentioned above. Marketers' strategic behaviors on the choice of content types and the interaction with fans are

considered as important antecedent variables. In addition, the interaction within fans communities may also generate spillover effect on product sales. Thus, we run a panel vector autoregression (PVAR) model in which each dependent variable is a linear function of its own previous value, other associating independent variables, and individual-specific effects. The weekly averaged content marketing behaviors and interaction behaviors are regarded as independent variables corresponding to the contemporary sales outcomes as dependent variables, which implies the quick response and frequent updating features of e-commerce. In addition, the lagged sales outcome variable at previous time period is used to control for time-series autocorrelation and endogeneity issues. In this longitudinal setting, we aggregated the data using a one-week time window to construct a balanced panel dataset, which allows all time-invariant individual effects to be defined as either fixed or random effects. Such time-invariant effects cannot be captured apart from coefficient parameters using pure cross-sectional data (Hsiao 2005). In our context, the time-invariant unobserved effect represents the seller's unobserved attributes that could affect customer's decision about whether or not to buy, such as product quality and customer service capacity. Those unobserved attributes may be correlated with the measured regressors. Thus, we employ a fixed effect model specification. We also conduct Hausman test to verify that fixed effect model outperform the alternative specification of random effect (p-value = 0.0000). The descriptive statistics about the variables used in the panel data regression are shown in Table 2.

Ordinary Least Square (OLS) method is used to estimate the effects of online celebrity endorsement and content generation count on sales performance and online store popularity, which reflects the actual economic value of content marketing practices. Results demonstrate that collaboration with online celebrities will not only increase the UV of online store by 4.842 ($10^{0.685}$), but also introduce extra sales amount of 2.328 ($10^{0.367}$). Furthermore, a seller will get 5.082 ($10^{0.706}$) more followers on average with the help of online celebrity. Meanwhile, the count of generated content is also positive related with online store UV, sales amount, and the number of new followers. All of the above estimation results are consistent with our expectations. Nevertheless, The negative coefficients of online celebrity endorsement (-0.236) and content generation counts (-0.225) in the regression on conversion rate indicate the low quality of traffic introduced by online celebrities or content marketing effort. The observed growth of sales is at the expense of larger exposure of products with the content, rather than accurately targeting the potential high value consumers. The estimation results of the cross-sectional regression on the four dependent variables are shown in Table 3.

VARIABLES	N	mean	sd	min	max
UV	40,516	3,897	7,686	0	260,729
Sales_amount	40,516	5,199	10,273	1	495,454
Conversion_rate	40,516	0.0182	0.0332	0	1
New_followers	40,516	33.4	133	0	8,516
SNS_interact_cnt	40,516	2.109	37.17	0	4,338
SNS_share_cnt	40,516	0.0677	2.912	0	576
SNS_favor_cnt	40,516	1.084	12.38	0	1,086
SNS_comment_cnt	40,516	0.831	28.11	0	3,151
Item_cnt	40,516	0.012	0.964	0	144
List_cnt	40,516	0.000444	0.0263	0	2
Match_cnt	40,516	0.00106	0.0463	0	5
Video_cnt	40,516	0.000444	0.0222	0	2
Live_cnt	40,516	0.00042	0.043	0	8
Post_cnt	40,516	0.00128	0.0421	0	2
Week	40,516	2.5	1.118	1	4

Table 2. Summary Statistics of Variables in Panel Data Regression

VARIABLES	UV_log	Sale_amount_log	Conversion_log_odds	New_followers_log
	coef	coef	coef	coef
Celebrity_endorse	0.685*** (0.154)	0.367*** (0.134)	-0.236*** (0.0688)	0.706*** (0.158)
SNS_content_count	0.880*** (0.0125)	0.811*** (0.0117)	-0.225*** (0.0068)	0.942*** (0.0151)
Shop_open_time	-0.000226*** (7.65E-06)	1.87e-05** (7.71E-06)	-0.000132*** (4.62E-06)	-7.57e-05*** (7.09E-06)
Star_rating	0.333*** (0.00455)	0.0342*** (0.00472)	0.0302*** (0.00323)	0.143*** (0.00478)
DSR	0.593*** (0.0415)	0.668*** (0.057)	-0.560*** (0.0287)	0.489*** (0.03)

Total_followers	6.89e-07*** (1.53E-07)	1.25e-06*** (1.71E-07)	-1.33e-06*** (1.61E-07)	3.66e-06*** (4.30E-07)
Constant	0.438** (0.212)	3.485*** (0.292)	-1.575*** (0.148)	-2.253*** (0.161)
Observations	56,019	56,060	55,961	56,060
R-squared	0.228	0.136	0.098	0.277

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3. Estimation Results of Cross-Sectional Data Regression

The PVAR model with fixed effect specification enables us to estimate the factors that may affect the evolvement of daily user view, daily sales amount, daily conversion rate, and the number of daily new followers. Such factors are categorized into two classes. First is content types. We surprisingly find that live streaming, the latest popular online social networking channel, has significantly negative impact on sales amount and the conversion rate of the advertised products, comparing with other content marketing channels. One of the reliable explanations is the large cash flow generated during the live broadcast prevent the fans of celebrities from spending more money on advertising products. In addition, the content for costume matching recommendation will attract additional user view as well as new followers of the brand, but fail to efficiently convert readers into buyers. Thus, negative coefficient of costume matching content count is observed in our empirical data. Meanwhile, content forms of list, video, and post have positive effects on sales amount. Majority of content marketing channels fail to increase the conversion rate of advertising products, except for item promotion content. Item promotion content is generated specifically for recommending a single released product without excessive modification, thus the odds of purchase event is relatively high. Second is interaction behaviors. We find that the interaction behavior between marketers and consumers will significantly increase sales amount, but significantly reduce the conversion rate. The fact is in accordance with the results from cross-sectional model, which indicates that celebrities' interaction with fans is not an efficient way to target the potential consumers of the advertising product. In contrast, the interaction within fans community, such as like and comment the content, or share it through social networks, will positively increase both sales amount and conversion rate. The interaction behaviors among consumers will produce effective information flow to consumers who are more likely to buy. However, those interaction behaviors do not contribute too much to user view and new follower growth, in addition to the fact that SNS sharing behavior can attract more new followers of the brand. The estimation results of the panel vector autoregression on the four dependent variables are shown in Table 4.

VARIABLES	UV_log coef	Sale_amount _log coef	Conversion _log_odds coef	New_followers _log coef
Lagged_outcome (t-1)	0.989*** (0.00039)	0.987*** (5.55E-06)	0.990*** (4.04E-05)	0.942*** (0.0016)
Item_cnt	-0.00267 (0.00298)	0.00257 (0.00161)	0.00465*** (0.00034)	-0.0037 (0.00424)
List_cnt	0.0981 (0.128)	0.143*** (0.0522)	0.00603 (0.0368)	0.0982 (0.181)
Match_cnt	0.185** (0.0845)	0.000606 (0.0603)	-0.212*** (0.00166)	0.316*** (0.12)
Video_cnt	-0.0265 (0.129)	0.0993*** (0.0239)	0.00218 (0.0327)	-0.0229 (0.183)
Live_cnt	0.0267 (0.0634)	-0.0591*** (0.00309)	-0.0805*** (0.00613)	0.129 (0.0901)
Post_cnt	0.0727 (0.0687)	0.0428** (0.0214)	-0.0512*** (0.0159)	0.00649 (0.0975)
SNS_interact_cnt	0.00085 (0.00121)	0.000981*** (0.00034)	-0.00126*** (0.00034)	0.00264 (0.00172)
SNS_share_cnt	0.00937 (0.0068)	0.0233*** (0.00116)	0.0117*** (0.00087)	0.0277*** (0.00967)
SNS_favor_cnt	-0.000432 (0.00126)	0.000692** (0.00035)	0.000767** (0.00034)	-0.00144 (0.00178)
SNS_comment_cnt	-0.000778 (0.00129)	0.000892** (0.00035)	0.00149*** (0.00037)	-0.00243 (0.00183)

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4. Estimation Results of Panel Vector Autoregression

5. Discussion

According to the empirical results, content marketing using celebrity endorsement exhibit a very deterministic role to direct and increase traffic to e-commerce platform. Our study has three notable findings. First, we empirically verified that online celebrity endorsement and their content generation counts exert significant positive effects to average daily user view,

average daily sales amount, and average number of new fans. However, the effects of online celebrity endorsement and content generation counts on conversion rate are significantly negative, which is contrary to our expectation (hypothesis 1). Conversion rate represents the willingness-to-pay of consumers. The negative effects of online celebrity endorsement and content generation counts on conversion rate indicate that “waist sellers” fail to target their potential buyers (as numerator) via content marketing, but introduce too much invalid user views (as denominator). As a matter of fact, although “waist sellers” make great effort in content marketing, the readers who are attracted by content or online celebrity are not interested in the products sold by the e-commerce sellers. More sophisticated product and celebrity match-up strategies are needed.

Second, the estimation results of our model provide evidence that different content marketing channels lead to diversified effects on sales performance and online store popularity. Although live streaming is the most popular social networking channel, it is less effective than other content marketing in terms of improving sales amount and conversion rate. Advertising content in forms of list, post, and costume matching can either increase sales amount or attract more user views and new followers. However, only item-specific promotion content can positively drive conversion rate. The findings suggest that e-commerce sellers can benefit from diversified content marketing channels in different ways, including online store popularity, brand exposure, sales amount, and conversion rate. The optimal operation of content marketing is to make the combination of different channels more effective than addition.

Third, the interaction behaviors (shares, likes, and comments) within fans community will give rise to the spillover effect of content marketing on sales performance. Meanwhile, the power of fans community can also help to increase the popularity of the online store (i.e. the growth of seller’s fans). On the contrary, the interaction behaviors between marketers and consumers are less effective to target potential buyers of the product. According to Goh et al. (2013), the communication across consumers are both informative and persuasive. The interaction within fans community will produce an effective information flow from content readers (seeding in the market) to potential buyers. This finding provide a solid theoretical foundation for e-commerce sellers to exploit the value-generation potential of fans community and their social networks. On the other hand, the celebrity-worship can only generate one-way persuasive influence from celebrity to fans. The interaction behaviors between online celebrities and their fans will enhance this persuasive effect, but the success of transferring celebrity worship to brand loyalty mainly relies on the active interaction within fans community. In summary, the significant distinction between ordinary marketers and online celebrity endorsers is that the fans community of online celebrity has large spillover effect on sales.

Our study expands IS literature by quantifying the value of recurring engagement in e-commerce content marketing by both marketers (i.e. online celebrities) and consumers (i.e.

fans). The predominant emphasis of prior UGC studies on the association between content and purchase intent may have unwittingly concluded in the misconception that sellers can only passively react. Even though marketers can generate content, the role of MGC and its impact is significantly underestimated. By actively engaging online celebrity in content marketing, the role of marketers can be actually transformed from a passive and reactive one to a proactive and influential one. “Fan Economy” propose a new business model to better reap the economic values from social media communities.

We also complement the marketing and advertising literature with online celebrity endorsement phenomenon. According to the theory of endorsement, celebrities are regarded as being able to add premium value to specific objects, events, and issues and hence render these items more valuable or effective. The reputation of online celebrities who rise to fame via Internet are more likely to be attributed to the efforts of their fans. Thus, fans of online celebrities are active contributors to the content marketing campaign, rather than passive recipients. Our empirical research provides an efficient way for e-commerce sellers to strategically capitalize on consumer networks and their social interactions with online celebrity. We emphasize the importance role of fan community in content marketing.

Our work can also provide implications to practitioners, especially to e-commerce sellers. In fact, e-commerce platforms have always been eager for more traffic directed from content platforms. Unlike the business sellers in B2C market, consumer sellers in C2C market do not have brand goodwill. The celebrity endorser effects are much easier to be achieved. Our studies provide useful guidelines for e-commerce sellers to collaborate with online celebrities. First, we empirically assess the economic value of online celebrity endorsement to e-commerce sales. Although online celebrity endorsement brings additional user views, sale amount, and new followers, the conversion rate decreases significantly. It indicates that waist sellers fail to target their potential consumers with the help of celebrity endorsers. In order to improve the efficiency of endorser effects, product and celebrity image match-up principles should be emphasized. Second, we recognize the key factors that determine the success of content marketing in e-commerce platform. Waist sellers can achieve better performance of content marketing by using diversified content marketing channels in optimal combination and by encouraging the interaction between marketers and consumers as well as interaction within fans community, which has an important role for the healthy development of fan economy ecosystem.

6. Conclusion

In this paper, we devoted to understanding whether and how online celebrities as content marketers and fans as seeding consumers affect e-commerce sales, which will provide broader insights for marketer-generated content and celebrity endorsement. We adopt cross-sectional regression to assess the economic value of online celebrity endorsement, and we employ panel vector autoregressive model to explain the dynamic relationship between marketers’ and consumers’ content marketing behaviours and e-commerce product sales.

Empirical results highlight that the interaction within fans community has spillover effect on content marketing under “Fan Economy” era.

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