

How Question and Answer System Affects Sales of Taobao Stores

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ABSTRACT

Q&A system is a new kind of user-generated content and a new form of electronic word of mouth. More and more electronic systems have adopted Q&A system to provide customers with more information. However, as Q&A system is a new emerging system, little literature has studied how Q&A system affects stores' sales. What's more, since Q&A and customer reviews are both user-generated contents, the different effects between them remain unclear. This paper based on Taobao platform, takes earphone as an example, exploring how Q&A affects stores' sales and how Q&A affects the effect of reviews on sales. We found that Q&A and reviews separately have positive effects on sales. However, if a store has both reviews and Q&As, reviews have no significant effect. Q&A will decrease the impact of good reviews and increase the impact of bad reviews on sales. Our findings provide important practical implications for online stores.

Keywords: *Q&A system, reviews, user-generated content, electronic word of mouth, electronic platform, online sales*

1. INTRODUCTION

Q&A system is a kind of User-Generated Content (UGC). UGC reflects the opinions and experiences of a large number of active users of the product, thus benefiting from the "wisdom of crowds" [1]. It reflects the accumulation of consumers' ongoing experiences over an extended period in real environments. Several studies examine the interaction among consumers or the impact of UGC on demand/sales [2-5]. Q&A system is also a kind of electronic word of mouth (eWOM). The increasing amount of eWOM has significantly affected the way consumers make purchase decisions. On average, eWOM is positively correlated with sales, but its effectiveness differs across platform, product, and metric factors. Most research has concluded that eWOM has significant monetary effect on sales beyond other marketing mix effects [6,7]. Though the effects of UGC and eWOM on sales have been explored, there is little research studying the effect of Q&A system on sales.

For the e-commerce platforms, Q&A system and customer reviews are both UGC and eWOM. Research has examined the role of online customer product reviews, specifically looking at the characteristics of the reviews [8,9] and self-selection bias [10,11]. Recent research has also shown that customer reviews can have a positive influence on sales [7,12]. Specifically, Clemons [13] found that strongly positive ratings can positively influence the growth of product sales, and Chen [12] found that the quality of the review as measured by helpfulness votes also positively influences sales. Even though online reviews are widely discussed in the previous literature, the

implication of Q&A system is unclear. With limited insights regarding the economic implication of a Q&A system from the literature, managers are left with their own intuition to derive relative politics and managerial practices to manage such a system. This lack of guideline is particularly problematic as many small and medium websites have started to adopt the Q&A system. Therefore, studying the implications of Q&A system is very worthy of attention. This paper intends to solve the following questions:

- (1) How does Q&A influence the sales of stores on Taobao platform?
- (2) What's the relationship between Q&A and reviews? What are the differences of their impacts on sales?

2. Q&A system of Taobao

Taobao is the largest e-commerce platform in China. It has rich data of questions and answers, as well as the reviews. The Q&A system is introduced by Taobao in 2015. The Q&A system are shown to users on both the mobile client and PC client. We should first clear the mechanism of the Q&A system on Taobao platform.

Who can ask questions on Q&A system of Taobao platform? Taobao users, no matter he/she is a buyer or not. The store keeper can also ask a question, but he cannot answer the question proposed by himself. In order to prevent users from brushing questions maliciously, Taobao currently has strict restrictions on the number of questions. A user can only ask 15 questions per day.

Who can answer questions? Taobao system randomly invite no more than 20 buyers who have already bought the products to answer questions, no matter how large the

sales. The store keeper can also answer the questions, but he cannot answer the questions proposed by himself. The store keepers have no idea who will answer the questions. One question can be answered by more than one user. One user can answer more than one question. There is no limitation for the number of answers. If there is no buyer or no buyer wants to answer the question, the question will not be shown on the Q&A session.

3. MODEL

There are many factors influencing the sales of the stores in Taobao platform. Except the reviews and Q&A system, the product characteristics and store characteristics could also be correlated with product sales. We control for product fixed effects according to our selection of a "product". Since we intend to explore the effects of Q&A and reviews on sales, we control the store characteristics and product characteristics, including the store rank, the consistency of product's description, the store's service score, the store's shipping score and the product's price. Therefore, our model is as follows:

$$Sale_{ij} = \alpha X_{ij} + \beta S_{ij} + \gamma R_{ij} + \lambda QA_{ij} + \varepsilon_{ij}$$

$Sale_{ij}$: The log sale of product j of store i ;

X_{ij} matrix: The price of product j of store i ;

S_{ij} matrix: The related variables of store i , includes store rank, store's description score, store's service score, and shipping score;

R_{ij} matrix: The reviews variables of product j of store i , includes the number of reviews, the number of good reviews and the number of bad reviews;

QA_{ij} : The Q&A variable of product j of store i .

4. DATA

In this paper, we take Huawei mate9 earphone as an example to collect data from Taobao platform. At the beginning, we used Python to grab data from the pages of Taobao. But Taobao's new anti-grilled mechanism makes Python unable to work. Then we use another data collector named Bazhuayu. First, we search "huawei mate9 earphone" on Taobao platform. Taobao will show the first 100 pages of products. Each page shows the product's image, sales, name, link, and store-name. We grab all the data from the 100 pages. Second, it is about 2000 items of these 100 pages, but the data has many repetitive items. We deleted all the repetitive items and got 171 useful links.

Third, we use Bazhuayu to click each product's website link to collect the detailed product's and store's information, including *price*, *the number of reviews*, *the store rank*, *the description score*, *the service score*, and *the shipping score*. Then, by clicking the comment page, we collect the data of *the number of good reviews* and *the number of bad reviews*. Last, by clicking the Q&A page, we collect the data of *the number of questions and answers*.

5. RESULT

Figure 1 shows the scatter plots. From this figure, we can see that reviews (Figure 1-a), good reviews (Figure 1-b) and Q&A (Figure 1-d) are all correlated with sales. Then, we conduct ordinary least square regression; the results are shown in Table 1. Model 1 only has control variables. Store rank ($\beta = 0.340$, $\rho < .01$) is positively related to sales while price ($\beta = -0.267$, $\rho < .001$) is negatively related to sales. Store's description score, service score and shipping score are found no significant effects on sales. Model 2 added the number of reviews into the regression. It finds that the number of reviews ($\beta = 0.500$, $\rho < .001$) has significantly positive effect on sales. Model 3 explores the effect of Q&A on sales. It shows that Q&A ($\beta = 0.466$, $\rho < .001$) has significantly positive effect on sales. Since the reviews and Q&A are both considered as user-generated contents. Model 4 further explores if Q&A and reviews have different effects on the sales. It shows that Q&A ($\beta = 0.333$, $\rho < .01$) has significantly positive effect while the number of reviews ($\beta = 0.199$, $\rho > .05$) has no significant effect on sales. Since reviews are composed of good reviews and bad reviews, we further explored whether Q&A influence the effects of good reviews and bad reviews on sales. Model 5 first explored the respective effects of good reviews and bad reviews on sales. It shows that the number of good reviews ($\beta = 0.605$, $\rho < .001$) has positive effect while the number of bad reviews ($\beta = -0.204$, $\rho > .01$) has negative but not significant effect on sales. However, Model 6 added the variable of Q&A in the regression, we found that the positive impact of good reviews on sales decreases and the variable of bad reviews becomes significantly. What's more, negative impact of bad reviews on sales becomes large, from 0.204 to 0.328. Therefore, Q&A can decrease the impact of good reviews and increase the impact of bad reviews on sales.

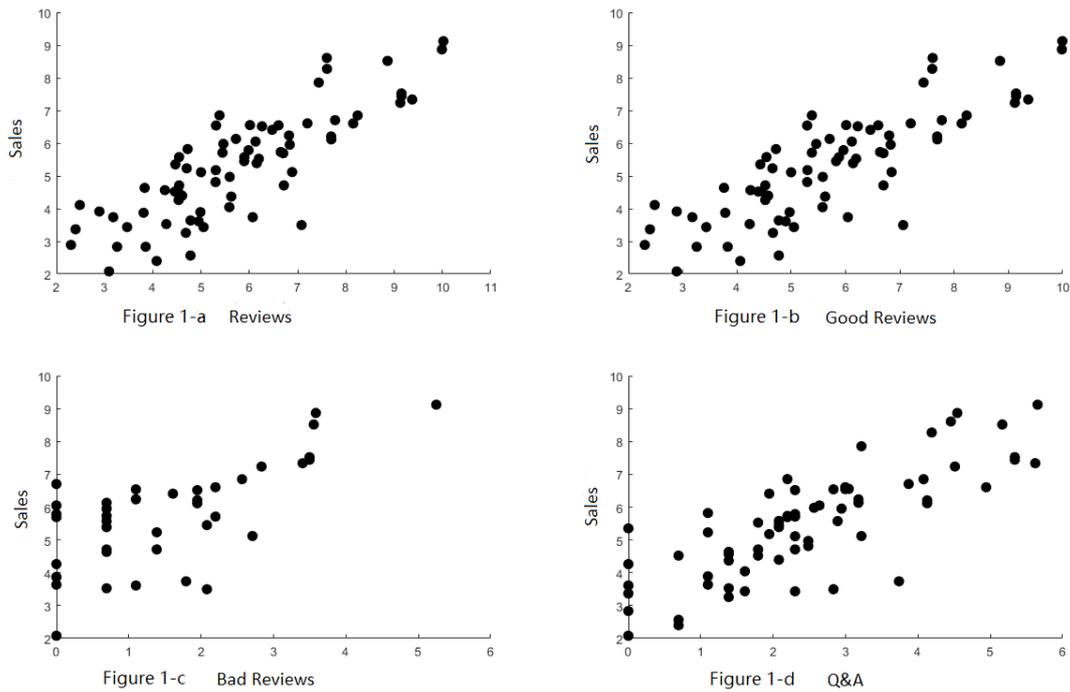


Figure 1 The scatter plot of earphone

Table 1 The regression results

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Q&A			0.466*** (.084)	0.333** (.131)		0.370*** (.133)
Reviews		0.500*** (.100)		0.199 (.153)		
Good reviews					0.605*** (.158)	0.342** (.178)
Bad reviews					-0.204 (.229)	-0.328* (.224)
Store rank	0.340** (.094)	0.188** (.087)	0.183** (.085)	0.167* (.085)	0.182*** (.087)	0.154* (.084)
Store's description score	-0.187 (.280)	-0.322 (.245)	-0.298 (.236)	-0.321 (.236)	-0.338 (.245)	-0.344 (.234)
Store's service score	0.219 (.279)	0.332 (.243)	0.349 (.235)	0.357 (.234)	0.343 (.243)	0.377 (.232)
Store's shipping score	0.256 (.225)	0.189 (.195)	0.099 (.191)	0.117 (.191)	0.194 (.195)	0.117 (.189)
Price	-0.267*** (.098)	-0.204** (.085)	-0.241*** (.082)	-0.223*** (.083)	-0.200** (.086)	-0.221*** (.082)
-cons	0.211** (.089)	0.327*** (.080)	0.363*** (.079)	0.366*** (.079)	0.328*** (.081)	0.372*** (.078)
Product fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	171	171	171	171	171	171
R-square	0.4391	0.496	0.527	0.539	0.4943	0.553

6. CONCLUSION

This paper gained several conclusions. First, the Q&A system has a positive impact on sales of stores on Taobao platform. Second, if a store only has reviews without Q&As, the number of reviews is positive to its sales. However, if the store has both reviews and Q&As, the number of reviews has no significant effect. Third, if a store only has reviews without Q&As, the number of good reviews has significantly positive effect while the number of bad reviews has no significant effect on sales. However, if the store has both reviews and Q&As, the Q&A will reduce the positive impact of reviews and increase the negative impact of reviews on sales. The findings have important implications for online stores. Since the number of Q&A can influence the effect of reviews on sales, on the one hand, if a store has no reviews, the keepers should try to ask questions to increase the number of Q&A. On the other hand, the store keepers should try to solve the bad reviews especially when the store has Q&As.

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