Effects of Facebook Like and Conflicting Aggregate Rating and Customer Comment on Purchase Intentions

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Abstract. The conflict between an aggregate rating and a customer's comment oftentimes cause consumers' negative feelings on the quality of a product. The purpose of this study was to investigate whether such conflict influenced an individual's purchase intentions. Particularly, this study looked at how social influence mediated the effects of a conflicting aggregate rating and a customer's comment on purchase intention. To achieve the goal, an online mixed factorial experiment was conducted with one hundred and eighty-four student volunteers. The independent variables of interest were: consistency of aggregate rating and customer comment and number of Facebook likes. The dependent variable was purchase intention. In this study, participants were mainly recruited through the social groups on Facebook. Participants were instructed to provide their degrees of purchase intentions to snack food on our experimental website (containing pages reflecting differing treatment conditions under the independent variables). Results of the experiment showed that the conflict between a aggregate rating and a customer's comment, as well as the number of Facebook likes respectively had significant impacts on purchase intentions. Results of this study have implications on the design of social interfaces on social commerce websites.

Keywords: Aggregate rating · Customer comment · Purchase intention

1 Introduction

Web 2.0 has transformed e-commerce from a product-oriented environment to a social environment [1]. The transformation resulted in the birth of social commerce consisting of communities of customers with similar interests, passions, and goals [2]. In a social commerce environment, customers have access to social knowledge and experiences to support better understanding of purchase intentions and purchase decisions [3]. According to Ng. [4], social commerce involves the use of social media to support social interactions and communications on user generated content (e.g., customer's ratings and reviews). Sellers want to convert customers into brand advocates (e.g., turning Facebook likes into paying customers), whereas customers want to make better informed purchase decisions (e.g., getting a good deal from checking Facebook likes). The aims of the two parties can be achieved through customers' sharing and expressing experiences [5]. These social interactions and communications enable word-of-mouth marketing, product advocacy for a brand, and social capital building.

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Customer reviews are an important resource for users to buy a product, do business, and/or choose a hotel. These reviews became a useful asset for purchase decisions [6]. They typically supplement the product descriptions and/or expert reviews provided by electronic commerce companies. They have been shown to have a positive influence on product sales [6].

The presence of customer reviews on a website has been shown to improve customer perception of the social presence of a website [7]. They create a sense of community among frequent shoppers [8]. A customer review typically consists of a numerical star rating and an open-ended consumer-authored comment. Both information provide valuable product information to a web shopper.

- **A numerical star rating** usually ranges from one to five stars. A very low rating (one star) indicates an extremely negative view of a product, whereas a very high rating (5 stars) reflects an extremely positive view of a product. A three star rating reflects a moderate view of a product. Re-search has demonstrated that customer ratings have the potential to add value for a prospective customer. Positive ratings can positively influence the growth of product sales [9].
- **Consumer-authored comments** are written in a free-text format that reflects decision-making process of product purchases, and experiences and preferences of product usages, etc. Research showed that consumer-authored comments are not presented properly and are technologically poor. Web users/shoppers oftentimes need to browse massive amount of text information in order to find a particular piece of product information [10].

In social commerce, not all customer reviews are helpful to a user in making a purchasing decision [8]. What makes web users/shoppers frustrated is that a comment is not reflective of its corresponding numerical star rating. Research showed that a negative consumer comment may become unfavorable while the aggregate rating is positive. For example, Qiu et al. [11] found that the presence of a conflicting aggregated rating decreased comment credibility and diagnosticity. However, early re-search in social cognition held an opposite stance. Borgida and Nisbett [12] showed that people tended to regard base rate data (statistical summaries) as if they were uninformative and relied more on individuating data (people's comments) if both data were presented at the same time. In other words, social cognition researchers believed that the presence of a conflicting aggregate rating has little impact on comment adoption.

In fact, people are most confident in decisions when information is highly disgnostic. The consistency between a particular comment and other comments influenced customers' perception credibility perception and adoption intention of a target comment [13]. The inconsistent findings of Qiu et al. [11] and Borgida and Nisbett [12] suggest that more research are needed to discern the effects of the consistency of aggregate rating and consumer comment on purchase decisions and behavior.

In the field of social commerce, one of the most influential models for illustrating the intention–behaviour relationship is Ajzen's theory of planned behaviour (TPB) [14–16]. This theory proposes that behaviour is influenced by intention, and that intention is determined by attitudes, subjective norms, and perceived behaviour control. Generally speaking, individuals will intend to perform a behavior when they evaluate

it positively and/or when they are influenced by social pressure. The relationships among attitude, intention, and behavior proposed by TPB were applied in many fields. For example, Kim and Njite [17] applied TPB to investigate why people chose eco-friendly restaurant. Kim and Njite found that subjective norm played an important role in purchase intention. Shin [14] analyzed consumer behaviours in social commerce from the perspective of social influence. Shin created a model to validate the relationship between the subjective norm and trust, social support, attitude, and intention. Shin found that the subjective norm is a key behavioural antecedent to use social commerce. The above research suggests that social pressure and influence play a key role in enabling successful purchases. In current social commerce, such influence could have come from the "like" buttons (e.g., Facebook's like, Google's +1, Twitter's follow) [18, 19].

From the above, it is imperative to understand whether social influence comes into play in affecting purchase intention when customer ratings and comments are inconsistent. The aims of this study are as follows: (1) investigate whether the conflicts between an aggregate rating and a consumer comment influenced an individual's purchase intentions; (2) examine how Facebook likes impacted purchase intentions when there was a conflict between an aggregate rating and a consumer comment. An online experiment was conducted with one hundred and eighty-four participants. Participants were engaged in buying snack on our developed social commerce website. Results of this study show implications on the design of social interfaces on social commerce websites. Our work takes a novel approach to study how Facebook likes (i.e., social influence) mediated the effects of a conflicting aggregate rating and a consumer comment on purchase intention.

2 Method

2.1 Participants

Purposeful sampling was used to select information-rich participants for the experiment. In our study, participants were required to have experiences of purchasing products on social commerce websites and visited relevant websites for at least once per month. To recruit participants, the information about the experiment was posted on differing social groups on Facebook. A total of 184 student participants (82 males, 102 females, average age: 23) voluntarily joined the experiment. No compensation was provided for participating in the experiment.

2.2 Experimental Design and Equipment

The independent variables of the study were: (1) consistency of aggregate rating and customer comment (with two levels, consistent, and inconsistent); (2) number of Facebook likes (with four levels, zero, five, ten, and fifteen). The dependent variable was purchase intention. Participants' ratings on purchase intentions were analyzed with SAS 9.4 software.

The experimental design is shown in Table 1. In our study, eighty-seven participants were exposed to the "consistent rating-comment" condition. Ninety-seven participants were exposed to the "inconsistent rating-comment" condition. Figure 1 shows an example of the experimental condition. As illustrated in Fig. 1, every condition contained (1) an image of snack, (2) an aggregate 5 star rating, (3) a Face-book like icon with the number on the side (either 0, 5, 10, or 15), (4) product descriptions, and (5) a customer's comment (either positive or negative).

Table 1. The experimental design of the study (mixed factorial design)

		Number of Facebook likes			
		0	5	10	15
Consistency of aggregate rating and customer comment	Consistent: 5 stars with a positive customer comment	P1–P87	P1–P87	P1–P87	P1–P87
	Inconsistent: 5 stars with a negative customer comment	P88–P184	P88–P184	P88–P184	P88–P184

Note: P denotes participant

Fig. 1. An example of the experimental page: snack with a high aggregate rating, a positive customer comment, and 0 Facebook like).

2.3 Procedure

An online experiment was conducted. All experimental conditions were transformed into differing web pages. To increase the response rate and to reduce the effort for completing the experiment, we separated all experimental conditions into two sub-categories with two separate links under our posts on Facebook. One link contained all "inconsistent rating-comment" conditions. The other contained all "consistent rating-comment" conditions. The following describes the procedure of the experiment:

After clicking on the link of our experiment, participants were shown an instructional page containing the purpose of the study, descriptions of the experiment, as well as the information about the risks, benefits, and compensation for joining the study. After agreeing to participate in the experiment, participants were randomly presented with web pages containing differing experimental conditions. Participants were asked to take their time to respond to each of the conditions with their degrees of purchase intentions (from 1 to 5, 1 being very low, 5 being very high). Two questions associated with purchase intention were presented:

- I will buy this snack.
- Buying this snack is a good choice.

Every condition was shown on a web page one at a time. Participants were notified the end of the experiment as soon as they responded to all questions.

3 Results and Discussion

Descriptive statistics were conducted on the treatment conditions. Results are shown in Table 2. It appears that participants gave lower ratings if an aggregate rating did not match with a customer comment (Mean = 2.8, SD = 0.94). With regards to the number of Facebook likes, it appears that, no matter whether or not an aggregate rating and a customer comment were conflicted, participants provided higher purchase intentions to higher numbers of Facebook likes.

A mixed two way ANOVA was conducted with PROC GLM in SAS 9.4. Results of the analysis showed that both Consistency of aggregate rating and customer comment and Number of Facebook likes significantly influenced participants' purchase intentions. There was no interaction between Consistency of aggregate rating and customer comment and Number of Facebook likes. This suggests that the number of Facebook likes did not mask the effect of Consistency of aggregate rating and customer comment.

In other words, if an aggregate rating is consistent with a customer's comment, a product received higher purchase intentions no matter whether the number of Facebook likes was high or low. Results of the analysis also suggest that no matter whether an aggregate rating conflicted with a customer comment, a higher number of Facebook likes increased an individual's purchase intentions (Table 3).

Table 2. Descriptive statistics: mean ratings of the treatment levels under the independent variables.

Independent variables		n	Mean (Standard deviation)	
Consistent: 5 stars with a positive customer comment	0 Facebook like	87	3.20 (0.82)	3.33 (0.88)
	5 Facebook likes	87	3.23 (0.83)	
	10 Facebook likes	87	3.33 (0.85)	
	15 Facebook likes	87	3.55 (0.97)	
Inconsistent: 5 stars with a negative customer comment	0 Facebook like	97	2.77 (0.98)	2.80 (0.94)
	5 Facebook likes	97	2.68 (0.90)	
	10 Facebook likes	97	2.85 (0.93)	
	15 Facebook likes	97	2.91 (0.95)	

Table 3. Statistical output for the mixed two-way ANOVA

Source	DF	Type III SS	Mean square	F value	*p* value
Consistency of aggregate rating and customer comment	1	50.390	50.390	29.31	0.000
Participant	182	312.904	1.719		
Number of Facebook likes	3	8.429	2.810	5.32	0.001
Consistency of aggregate rating and customer comment * Number of Facebook likes	3	1.121	0.374	0.71	0.548
Number of Facebook likes * Participant	546	288.296	0.528		
Total	735	661.14			

Overall, the consistency of an aggregate rating and a customer comment as well as Facebook likes are the driving force for purchase intentions. To increase the revenue, social commerse websites should prevent the happening of the conflict. A good example can be found in the Amazon rating-review system. For every customer comment, Amazon places an interface at the bottom, "Was this review helpful to you?" If a comment does not reflect the true aggrgate rating from most customers and shoppers/web users answer no to the question, it could be pushed downwards on the product review page.

In addition, social commerce websites could develop interfaces to let customers being aware of other customers' feedback, opinions, comments, or even impressions on a product of interest. The idea here is to introduce social influence. An example could be that if an individual wants to buy a particular skateboard, social commerce websites might want to show the number of likes/dislikes from people who are extreme sports athletes, instead of general shoppers/users on the websites.

4 Conclusion

The purposes of this study were to (1) investigate whether the conflicts between an aggregate rating and a consumer comment influenced an individual's purchase intentions; (2) examine how Facebook likes impacted purchase intentions when there was a conflict between an aggregate rating and a consumer's comment. An online experiment was conducted with one hundred and eighty-four participants. Participants were engaged in buying snack on our developed social commerce website.

Results of the study indicated that consistency of an aggregate rating and a customer's comment, as well as the number of Facebook likes significantly affected participants' purchase intentions. Particularly, if an aggregate rating is consistent with a customer's comment, a product received higher purchase intentions (no matter whether the number of Facebook likes was high or low).

Research showed purchase intention is highly correlated with purchase behavior. Although other factors could have influenced purchase behavior, the insight obtained from this study was valuable to the design of social interfaces on social commerce websites. Social commerce websites should put more emphasis on designing for social influence. The benefit is not simply the sales revenue for the websites. Customers also get an idea of the quality of products, decision supports, and even prevent the lose for buying unwanted products.

Our work takes a novel approach to study how Facebook likes (i.e., social influence) mediated the effects of a conflicting aggregate rating and a consumer comment on purchase intention. The outcomes of this study are limited by the type of product used in the experiment. The product price was fixed in the experiment which could have affected our results. In addition, the participants were mainly college students. To improve the ecological validity, further studies are needed to recruit other groups of participants and look at more variables that might also influence online purchase intentions and behavior.

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