

Gender differences in consumers' perception of online consumer reviews

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Abstract Since the early days of the Internet, gender gap has existed in using the Internet, and it is particularly evident for online shopping. Females perceive higher level of risk for online shopping, and as a result, they tend to hesitate to make purchase online. Online consumer reviews can effectively mitigate such perceived risk by females and thereby attract them to buy online. This study investigates the effect of online consumer reviews on consumer's purchase intention. In particular, we examine whether there are gender differences in responding to online consumer reviews. The results show that the effect of online consumer reviews on purchase intention is stronger for females than males. The negativity effect, that consumers are influenced by a negative review more than by a positive review, is also found to be more evident for females. These findings have practical implications for online sellers to guide them to effectively use online consumer reviews to engage females in online shopping.

Keywords e-Business · Electronic word-of-mouth · Online consumer reviews · The gender gap · Purchase intention

1 Introduction

There is a significant gender gap in consumers' use of the Internet and online shopping. Females are found to invest less efforts and time in using the Internet, and they tend to be less familiar with many web applications [5, 40, 44, 49, 52, 53, 56].

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This apparent gender gap in Internet use can be intimately associated with different online shopping behaviors between males and females. Females show higher level of privacy concerns in using the Internet, and their perceived risk of online shopping is greater than males [21, 37]. It is known that perceived risk negatively affects purchase intention of consumers [48, 54]. All of these may be viewed as a reason for females' unfavorable attitudes towards online shopping [25, 32, 36, 43], and may explain why males tend to be more active online shoppers than females [44, 49].

It is important to consider the gender gap in online shopping, as females' participation can improve the sustainable growth of online shopping. Internet usage has become more popular among females in these days, and the population of female Internet users is increasing to the level of male users [7, 53, 56]. In addition, females tend to be more active shoppers in the offline shopping environment, and as such, it is reasonable to expect that they can become as involved online shoppers as males currently are [2, 3, 53, 56].

To tap the potential of female consumer segment in online shopping market, perceived risk of online shopping by female consumers should be reduced. It is known that recommendations from acquaintances contribute to reducing perceived risk of online shopping, and especially so for female consumers. According to prior research, recommendations from friends reduce the perceived risk of online shopping for female consumers more than for male consumers, because females tend to rely upon word-of-mouth information [9, 21, 33]. Thus, it is expected that a proper use of recommendations can encourage females to engage in online shopping and, thereby, contribute to closing the gender gap on online shopping [21].

In the online shopping environment, online consumer reviews play a role of recommendations and word-of-mouth. It has been shown that they can be used to reduce consumers' perceived risk of online shopping and stimulate their purchase intention by providing useful product information [10, 28, 42]. Online consumer reviews are generated by users—so termed UGC, User-Generated Content—and those users are fellow consumers who have used and experienced the products. With that premise, consumers tend to perceive online consumer reviews more credible than other information [4, 11, 12, 28, 42, 50]. Prior research on the role of online consumer reviews in online shopping found that they contribute to increasing product sales by positively affecting consumers' buying behaviors [13, 16, 17].

This study examines whether there are significant gender differences in perceiving and responding to online consumer reviews. Specifically, this study considers two research questions. The first question is if an online consumer review affects purchase intention of females more than males. In answering the first question, it should be noted that consumers' perception can potentially be different depending on review valence, and thus, it warrants an investigation on a relationship between gender and review valence. So our second question is whether the moderating role of review valence on the effects of an online consumer review is different between male and female.

2 Theoretical backgrounds and hypotheses

2.1 The gender gap on online shopping

At the early stage of the Internet, almost all the users were males [38, 53, 55, 56]. This is due to the fact that males have been leading computer-related technologies both as developers and users, and Internet cultures began to grow up around males rather than females [38, 55]. The Internet at the early days began to advance as a boy toy, and 95% of Internet users were males in 1990's [38, 53].

As the Internet has evolved from a technology gizmo for tech-savvy users to a common, everyday tool, the male-dominance in the Internet has faded out to much degree. The population of female users has been growing up continuously, and it is now comparable to that of male users [53, 56]. The gender gap of Internet use has gotten much narrower.

Although the gender gap seems narrower than ever, it is limited to Internet access [5, 40, 53, 56]. While there is no more gender gap in Internet access, male and female users still have significant differences in Internet usage patterns and frequencies at a fine scale [5, 26, 40, 52, 53, 56]. There is little evidence to conclude that the gender gap on the Internet diminished completely. Males are more intense Internet users, and tend to use the Internet more frequently than females [31, 39, 47]. Also males tend to think that they are familiar with Internet-related cultures and activities regardless of whether it is actual or not, and it can be said that the gender gap in Internet usage still exists [5, 26, 40, 52, 53, 56].

This gender gap in Internet environment is evident in the case of online shopping. Gender differences appear in consumers' online shopping behaviors in the same manner as Internet uses [44, 49]. Males are more likely to buy products and services through online shopping, and also their attitudes towards online shopping are more positive than females [44, 49]. It is found that males have a tendency to trust and be satisfied with consequences of online shopping, and as a result, they take more advantages of online shopping [44, 49].

One of the most important obstacles driving consumers away from buying online is the perceived risk of online shopping. The reason why females' participation in online shopping is lower than males is due to the fact that females' perceived risk of online shopping and its consequences is greater than that of males [21]. In particular, females are more likely to have concerns about online privacies and securities when dealing with online sellers [3]. Consumers using online shopping have to provide their private information such as credit card numbers, addresses, phone numbers, and females tend to perceive much more risk than males in disclosing their privacies [3, 25, 32, 36, 43]. Shimp and Bearden [48] and White and Truly [54] argued that an increase of perceived risk has a negative correlation with a willingness to buy. Therefore, it can be assumed that females' perceived risk of disclosing privacies makes them feel uncomfortable to buy online. With that, we establish a hypothesis on gender and purchase intention on online shopping:

H1: Purchase intention of females to buy online is less than that of males

2.2 Gender and recommendations from others

Use of recommendations is one of effective ways to reduce consumers' perceived risk of buying a product. It is because of consumers' perception that other consumers have more useful information about the product than themselves [6]. This is true for both offline and online shopping environment. In particular, product recommendations can help consumers reduce their search cost and stimulate them to buy online [18, 23, 46]. Therefore, it can be said that an effective use of online recommendations help consumers reduce their perceived risk of online shopping and stimulate them to buy online.

Females are more likely to rely on and receptive of opinions from others than males, and their higher desire to be socially connected with others leads to active participation in word-of-mouth communications [9, 19, 33]. Especially, Garbarino and Strahilevitz [21] found that a recommendation from friends about a certain product have a stronger effect on females than males reducing perceived risk of online shopping and increasing a willingness to buy online. That is, there are significant gender differences on the perception of recommendations from others. Thus, it can be assumed that females have higher tendencies to refer to other consumers' opinions about products on their decision making and that offering recommendations influences females more than males to encourage them to buy online.

The reason for gender differences in accepting others' opinions may be explained in terms of the selectivity theory and socialization by each gender group. According to the selectivity theory, female are known to attempt to process information in a more comprehensive and effortful manner than males [33, 35]. While males are more likely to depend on heuristics than detailed information processing and use a selectivity strategy to minimize time and efforts, females are more likely to consider as much available information as possible and even try to get information which is not directly related to their purposes [29]. They tend to pay attention to not only their individual interests but also communal information and deal with information more deliberately.

Also, a desire to be socially connected with others may explain gender differences in referring to recommendations from others. Traditionally, being socially connected has been emphasized for females, while males have been encouraged to be independent [51]. This can be one of the important reasons why females use e-mails more frequently than males [22, 30]. Similarly, females are different from males in the ways they describe themselves [8, 15]. While males try to distinguish their separateness from others, females describe themselves in terms of socialization and reveal their connectedness with others. That is, it can be said that the difference in socialization might influence the way males and females deal with recommendations from others.

2.3 Gender and online consumer reviews

Online consumer reviews are sort of electronic word-of-mouth which is generated and delivered by consumers who have purchased and used products [42]. Consumers tend to perceive that online consumer reviews are more informative than product information from marketers or experts in terms of credibility and relevance [4, 11, 28,

42, 50]. They reveal more positive attitudes towards UGC than PGC (Producer Generated Content) [12]. It can be said that online consumer reviews have been used to support consumers' information search behaviors as one of useful decision aids, like the feedback mechanism and recommendation systems seen in the online shopping environments.

Online consumer reviews are a free sales assistant which can satisfy consumers' idiosyncratic tastes by offering them credible and persuasive product recommendations [11]. It is found that online consumer reviews can help consumers reduce perceived risk of negative consequences of online shopping and influence their attitude towards products and purchase intention [10, 28, 42]. Also, it is possible for sellers to benefit from using online consumer reviews as an important antecedent and consequent of product sales [13, 16, 17]. That is, properly managing and controlling online consumer reviews can definitely contribute to improving product sales of sellers by positively affecting consumers' buying behaviors and decision makings.

Considering that females are more likely to be influenced by recommendations from others than males, we can assume that the use of online consumer reviews as online recommendations has a stronger effect on females than males. Consequently, females would have more positive attitudes towards referring to online consumer reviews on their purchasing decisions, leading to following hypotheses.

H2-1: A positive review has a stronger positive effect on purchase intention of females than of males

H2-2: A negative review has a stronger negative effect on purchase intention of females than of males

It is found that consumers perceive that negative information is more useful and informative than positive information [1, 34], and this phenomenon is termed as the negativity effect. This negativity effect can be understood as the degree to which a negative review influences a consumer more than a positive review. Chevalier and Mayzlin [13] found that product sales is influenced by negative reviews more than by positive ones. It implies that consumers' perception of an online consumer review can be different depending on review valence. Prior research investigated consumers' response to online consumer reviews across review valence. Park and Lee [41] argued that consumers tend to think that negative electronic word-of-mouth is more credible, and Sen and Lerman [45] found that a negative online consumer review has a stronger effect on consumers than a positive one.

This study will investigate whether a negative review has a stronger effect on consumers' purchase intention compared to a positive one. In other words, the extent to which a negative review decreases consumers' purchase intention of a product would be higher than the extent to which a positive review increases purchase intention. Also, from H2-1 and H2-2, the negativity effect is expected to be more apparent for females than males. While H2-1 and H2-2 imply that females might be influenced by online consumer reviews more than males, they do not examine the impact of online consumer reviews can be different across review valence. So, this study examine whether this negativity effect reveals differently depending on gender. The following hypotheses can be established to identify a moderating role of review valence on the gender differences in the effects of an online consumer review on consumers' purchase intention.

- H3-1: A negative review has a stronger effect on purchase intention of consumers than a positive review
- H3-2: Degree to which a negative review influences a consumer more than a positive review does is greater for females than males

3 Research design and method

3.1 Design and subjects

The goal of this study is to identify whether there are significant gender differences on consumers' purchase intention after reading online consumer reviews and whether review valence can moderate those effects of online consumer reviews. An online experiment is designed to test five hypotheses established in the study. A 3×2 factorial design with three types of review valence (positive/negative/no review) and gender (male/female) is set up to create six different experimental conditions. Seventy five participants took part in each of six conditions, and the total of four hundred fifty participants joined in an online experiment.

Only undergraduates and graduates participated in the experiment, because most consumers who use the Internet frequently and have done online shopping are young adults under the age of thirty [20, 27]. In particular, Gallagher et al. [20] mentions that undergraduate students are good samples for analyzing online consumer behaviors, because they are one of the heaviest Internet users.

Online consumer reviews used for the experiment are generated from actual online consumer reviews on the Internet. Opinions of a reviewer to recommend a product or not are included in the generated reviews, along with objective information about a product to help participants gain enough knowledge. A positive review recommends participants to buy a product, and a negative review recommends participants not to buy a product.

A digital camera is chosen as a subject product for the experiment, as electronics are one of the most favored product categories on online shopping by consumers. It is expected that the participants can understand the contents of the reviews about a digital camera without major difficulty. Although electronics such as a digital camera is well known to consumers on online shopping, they are relatively more sophisticated than other products [42]. It needs more time for consumers to become a skilled user, and as a result, many consumers tend to rely on online consumer reviews before purchasing electronics [42].

3.2 Variables

Gender and review valence are used for an online experiment as independent variables. Two hundred twenty five males and the same number of females participated in the online experiment. Each of the male and female participants is divided into three groups in the experiment. A control group is offered no review, and two experimental groups are offered with a positive review and a negative review respectively. In the experiment, the participants in the experimental groups first read the provided

Table 1 A research design

| | Experimental groups | | A control group |
|---------|---------------------|-------------------|-----------------|
| | A positive review | A negative review | No review |
| Males | <i>n</i> = 75 | <i>n</i> = 75 | <i>n</i> = 75 |
| Females | <i>n</i> = 75 | <i>n</i> = 75 | <i>n</i> = 75 |

review, and then, their purchase intention is measured. For the control group, the participants' purchase intention is measured without any review offered in order to examine whether an online consumer review influences the participants' purchase intention. The experimental setting is shown in Table 1.

The participants who read a positive review would perceive that the reviewer evaluates the product positively and recommend it. In contrast, the participants who read a negative review would understand that the reviewer is disappointed with the product and advises to think twice before making a purchasing decision. To confirm this expectation—the participants sufficiently recognize difference in review valence—, we asked the participants to evaluate, on a seven-point scale, whether they felt that the review attempted to recommend a product for them.

A dependent variable of this study is the participants' purchase intention towards a product after reading an online consumer review. It is measured by a single factor which asks the participants to evaluate how they are likely to buy a product on online shopping on a seven-point scale: one being extremely unlikely, and seven being extremely likely. According to prior research, a single item has been used to measure consumers' purchase intention [4, 14, 21].

It is important to control other factors that may affect participants' perception of an online consumer review, besides the chosen independent variables. First, individual participant's prior knowledge and experience with a digital camera and online shopping may have significant effects on an outcome of the experiment. Undergraduates and graduates who participated in the experiment may have enough experiences about online shopping. Also, a large amount of information about digital cameras can be obtained easily through the Internet, and they are one of those products that are frequently purchased on online shopping. Thus, we can assume that there is no significant difference in participants' online shopping experience and prior knowledge of a digital camera. To make sure that these variables do not affect consumers' perception of an online consumer review, this study asked the participants to answer questions about them [24, 42]. Second, it needs to control product-related features as well. Product-related features include brand and price, and the participants may be affected by them [42]. Therefore, in the experiments, such product-related information was hidden and not offered to the participants.

3.3 Experimental procedures

Four hundred fifty participants took part in an online experiment through e-mail. Each participant was asked to complete the experiment individually. Individual participants began their online experiment session by joining a URL attached in the e-mail, and was assigned to one of the six groups (Table 1). After reading an introduction along

with several cautions, the participants began the first stage of the online experiment. A picture of a digital camera and brief seller-created product information which can be found on the Internet were offered to the participants. Brand and price information were not given to the participants.

In the second stage, the participants in the experimental groups read online consumer reviews. They were notified that these online consumer reviews have been extracted from an actual product review site on the Internet, and review valence was different depending on the experimental conditions. Participants in a control group are not offered with an online consumer review. They had to decide whether to buy the product on online shopping based only on product information supplied at the first stage. A time limit was introduced so that the participants had to complete each stage within one minute. It was used to ensure participants to concentrate on the experiment.

At the third stage, the participants answered several questions. After evaluating their purchase intention, participants were required to rate two items for manipulation checks of review valence. Lastly, they self-evaluated their prior knowledge of a digital camera and online shopping experiences, and they answered several questions on demographic information.

4 Research results

4.1 Manipulation checks

Before testing established hypotheses, it is necessary to examine whether the participants have properly perceived review valence used in the experiment. For manipulation checks, the participants are asked to answer two questions about positiveness of the review they read: whether the review is positive about a product, and whether it recommends them to buy the product. A seven-point scale was used for both questions. (Cronbach's Alpha: 0.914). It was found that those two items had a single factor structure (eigenvalue: 1.841), and therefore, a mean value is used for manipulation checks. Results of ANOVA test found that a significant effect of review valence existed ($F(1, 298) = 3365.946, p = 0.000$), and it can be said that review valence was successfully manipulated. That is, perceived positiveness of participants who read a positive review was significantly higher than that of those who read a negative one ($M = 5.90$ and 1.99).

4.2 Hypotheses testing and findings

This study used ANCOVA analysis to test five hypotheses established to examine the impacts of gender and review valence and their interaction on participants' purchase intention. Participants' prior knowledge of a product and online shopping experiences were used as covariates for an analysis. Table 2 represents means and standard deviations of a dependant variable, and Table 3 shows summary results of an online experiment.

Table 2 Descriptive statistics of purchase intention

| | Mean and standard deviation of purchase intention | | | |
|--------|---|-------------------|-------------|-------------|
| | A positive review | A negative review | No review | Total |
| Male | 4.28(0.924) | 3.99(0.830) | 4.16(0.973) | 4.14(0.915) |
| Female | 4.83(0.828) | 2.89(0.894) | 3.96(0.979) | 3.89(1.198) |
| Total | 4.55(0.916) | 3.44(1.020) | 4.06(0.978) | 4.02(1.072) |

Table 3 ANCOVA results

| Variables | Sum of squares | <i>F</i> | Sig. |
|-------------------------|----------------|----------|----------------------|
| Prior knowledge | 0.174 | 0.211 | 0.646 |
| Shopping experience | 0.109 | 0.132 | 0.717 |
| Review valence | 90.750 | 54.998 | 0.000 ^{***} |
| Gender | 7.062 | 8.559 | 0.004 ^{***} |
| Review valence × Gender | 50.352 | 30.515 | 0.000 ^{***} |

* $p < 0.1$; ** $p < 0.5$;*** $p < 0.01$

To evaluate covariates such as prior knowledge of a product and online shopping experiences, participants were asked to answer 'Have you ever heard of this product?' and 'How often do you buy online?' According to the results, those covariates do not appear to affect consumers' purchase intention ($F(1, 442) = 0.211$, n.s. and $F(1, 442) = 0.132$, n.s.). This might be due to the fact that demographic characteristics of participants are similar, because all of them are undergraduates and graduates.

There exist significant main effects and an interaction effect among the independent variables. The effects of gender and review valence on purchase intention are found to be important ($F(1, 442) = 8.559$, $p < 0.004$ and $F(2, 442) = 54.998$, $p = 0.000$). Also, there is a meaningful interaction among gender and review valence ($F(2, 442) = 30.515$, $p = 0.000$). This suggests that the effects of gender on the purchase intention may be different depending on the valence of a review (Fig. 1). In other words, review valence moderates the gender differences in participants' perception of online consumer reviews, and it is consistent with what this study expected.

This study compares a control group with experimental groups to investigate the role of review valence and its interaction effect with gender, and suggests several findings. First, no significant gender differences on purchase intention is found among participants in a control group who do not read online consumer reviews ($F(1, 146) = 1.479$, n.s.). Females are not different from males in terms of willingness to buy online, and it proposes that H1 would be rejected.

Second, although online shopping usage may not be inherently different between genders, still males and females have different perception of recommendation by others. Purchase intention of females who read a positive review was found to be much higher than that of males ($F(1, 146) = 14.353$, $p = 0.000$). The extent to which a positive review stimulates participants' purchase intention seems to be greater for females than males. A negative review has a similar effect. Purchase intention of females who read a negative review was found to be much lower than that of males ($F(1, 146) = 59.276$, $p = 0.000$). These results suggest that an online consumer re-

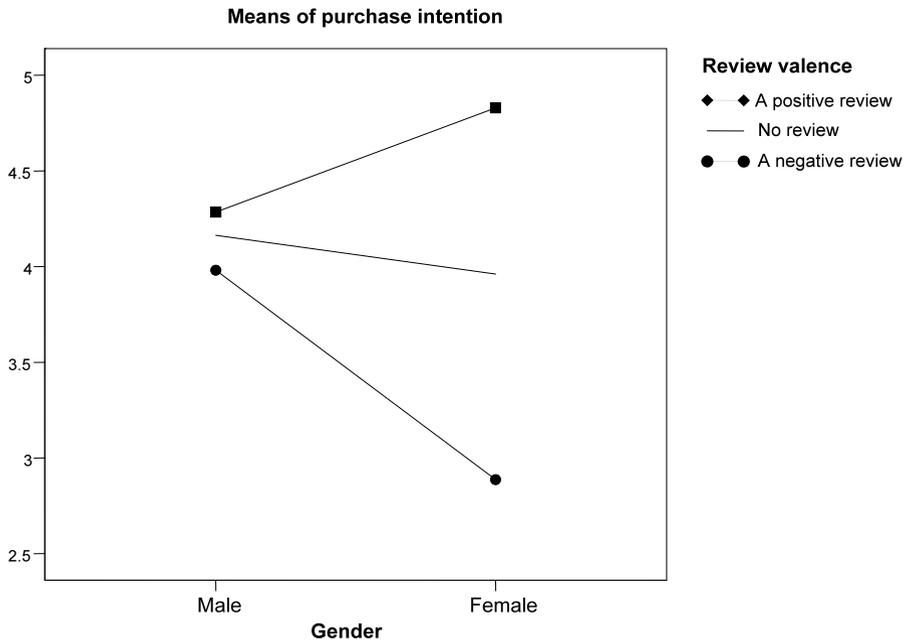


Fig. 1 The interaction effect of review valence \times gender for purchase intention

view has stronger effects on females than males, confirming H2-1 and H2-2. That is, there exist significant gender differences in consumers' perception of other's opinion in the online environments, as with offline.

Third, this study suggests that the negativity effect of online consumer reviews on participants' purchase intention exists. This is observed by the fact that a decrease in purchase intention when shifting from no review to a negative review is greater than an increase in purchase intention when shifting from no review to a positive review ($F(2, 445) = 48.164, p = 0.000$). It means that a negative review has stronger effects on participants' purchase intention than a positive review, supporting H3-1.

Lastly, the negativity effect of an online consumer review on participants' purchase intention appears more apparent for females than males. Figure 1 and Table 2 show that the difference in purchase intention of females among three groups is greater than the difference in purchase intention of males. In other words, the gap between a decrease in purchase intention after reading a negative review and an increase in purchase intention after reading a positive review is greater for females than males, and thus H3-2 is accepted.

5 Discussion and implications

All the hypotheses but H1 are accepted. While no more gender gap in willingness to buy online was found, there are significant gender differences in consumers' perception of online consumer reviews, and review valence can play a moderating role.

Findings from this study offer useful guidance for online sellers who want to exploit online consumer reviews as an informant and a recommender on online shopping [42].

This study found that gender differences do not exist in consumers' willingness to buy online. Internet use by females is widespread compared to the early days of the Internet [5, 7, 40, 53, 56], and as a result, female Internet users have become much familiar with the Internet and its cultures, which contributes to higher confidence and help them buy online. This finding is important for online sellers, because females have great possibilities to become active online shoppers. According to prior research, almost 70% of product sales are made by female consumers, and 60% of shopping addicts are females on offline shopping [2, 3]. It means that females tend to enjoy shopping more and invest more money and time than males. Therefore, we can expect that product sales of online sellers can be improved greatly with higher engagement of female consumers. It is an important issue for online sellers how to attract and support female consumers to use online shopping.

One of the strategies for online sellers seeking to attract female consumers is to use online consumer reviews as product recommendations. While differences between genders in various Internet behaviors are diminishing, still females are different from males in the way they receive and use others' opinions in making purchase decision. This is because females are more likely to rely on a recommendation from others, and word-of-mouth communication has a stronger effect on females than males. This study found that there are meaningful gender differences on consumers' perception of online consumer reviews. In other words, consumers' tendency to think that other consumers have more useful information and knowledge than themselves is significant on the Internet, especially for females. Online consumer reviews can play an important role as electronic word-of-mouth by offering females credible product information and recommendations. Thus, online sellers should consider using online consumer reviews as one of useful marketing tools for females.

In particular, it is important for online sellers to keenly watch for negative online consumer reviews. This study found that purchase intention of consumers is more influenced by a negative review than by a positive review. This negativity effect is stronger for females than for males. That is, females tend to perceive that a negative review is more diagnostic and useful than a positive one, and a negative review has a stronger effect on a decrease of purchase intention for females than males. Online sellers have to remind that they can control online consumer reviews and benefit from making negative reviews under their control [11]. Also, online sellers should consider that although it is possible for them to decide whether to offer negative reviews to consumers, especially for females, that censoring negative reviews may have negative impact on consumers' long-term credibility and trust level. It means that negative reviews need to be controlled with great cautions.

Also, online sellers can take advantage of developing online communities for consumers to stimulate them to generate and share online consumer reviews about products. Especially, it will be more helpful for females, because they tend to be more socially connected with others and are more likely to be affected by opinions from others than males. Considering that consumers tend to perceive product information from the Internet forum more useful than that from corporate web pages [4], use

of online communities to deliver online consumer reviews can stimulate consumers, especially females, to buy online.

6 Limitations and future research

This study has a few limitations. First, only undergraduates and graduates participated in an online experiment, and generalizing the findings from this study should use caution. Even if undergraduates and graduates are reasonable samples for the study, since they are the heaviest Internet users and are familiar with online shopping, future works must include various age groups to validate the gender differences found in this study. This study uses only one type of product, a digital camera, for an online experiment, and it remains to be seen whether the results obtained in this study are valid across various product types. Second, this study used only one factor to measure participants' purchase intention. Additional factors may enhance the validity of findings. Finally, this study chose participants' prior knowledge of a product and online shopping experiences as control variables which can influence participants' purchase intention. Those variables were used as covariates in the experiment. While two covariates were found to have no significant effects on participants' purchase intention, it should be considered that there are several variables that might affect consumers' decision makings. Future studies need to pay attention to other control variable that this study did not consider.

Despite those limitations, this study offers a guiding motivation for future studies. While a negative review has a negative effect on consumers' perception, it would be possible to develop how to use it in a positive direction. For example, several consumers begin to doubt whether online consumer reviews are offering trustworthy product information for them, because almost all the online consumer reviews on the Internet are found to be positive [13]. It might be helpful for online sellers to use negative reviews properly in order to increase consumers' perceived credibility of product information and help them change attitudes towards a product or a brand positively. Consequently, how online sellers can benefit from using negative reviews might be an interesting issue for future research.

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