Can Consumers Detect Deceptive Product Online? An Analysis of Consumers’ Anti-deception Mechanisms For Product-related Deceptions

SiQi Chen  
*Chongqing University of Posts and Telecommunications, Chongqing, chensiqi1001@gmail.com*

Shu Niu  
*Chongqing University of Posts and Telecommunications, Chongqing, 530943180@qq.com*

Jie Jian  
*Chongqing University of Posts and Telecommunications, Chongqing, Jianjie@cqupt.edu.cn*

Follow this and additional works at: [https://aisel.aisnet.org/iceb2016](https://aisel.aisnet.org/iceb2016)

**Recommended Citation**

[https://aisel.aisnet.org/iceb2016/22](https://aisel.aisnet.org/iceb2016/22)
Can Consumers Detect Deceptive Product Online? An Analysis of Consumers’ Anti-deception Mechanisms For Product-related Deceptions

SiQi Chen, Chongqing University of Posts and Telecommunications, Chongqing, chensiqi1001@gmail.com
Shu Niu, Chongqing University of Posts and Telecommunications, Chongqing, 530943180@qq.com
Jie Jian, Chongqing University of Posts and Telecommunications, Chongqing, Jianjie@cqupt.edu.cn

ABSTRACT
The rapid growth of electronic commerce (e-commerce) has lead to great loss of online customers every year. Among the different kinds of e-Commerce deceptions, product-related deception receives relatively most attention by practitioners but less attention by researchers. This paper aims to address two questions, 1) Can consumers detect product-related deceptions online? 2) How consumers distinguish the product-related deceptions from the good ones? To answer these two questions, an integrative model and a set of hypothesis, describing the relationship among product-related deception practices, consumers’ perceptions and purchase behavior will be developed. And then, test the proposed model using Partial Least Squares (PLS) method on the data collected via a scenario experiment and servery on real customers.

Keywords: product related deception, consumer experience, partial least square, consumer perception, purchase behavior

INTRODUCTION
The rapid growth of electronic commerce (e-commerce) has created fertile ground for online deception and deception. According to the annual report released by the Internet Crime Complaint Center (IC3) in 2015, the IC3 received 288,012 complaints from consumers claiming to have been deceived online; the total dollar loss linked to online deception was U.S. $1071 billion, which represents a 33.1 percent increase over the previous year; and the average individual loss amounted to $8421 (Internet Crime Complaint Center 2016). In China, which has the biggest e-commerce transaction amount of the world in 2015, online customers complained average individual loss of 5106 yuan in 2015 (Ministry of Commerce of People’s Republic of China 2016).

Among the different kinds of e-Commerce deceptions, product-related deception receives relatively most attention by practitioners but less attention by researchers. In fact, product related deceptions, like counterfeited products, deceptionulent transaction records, fictitious price, false description are widely adopted by e-commerce sellers and trapped a big amount of customers. Online transaction deception is clearly an important concern for e-commerce research. Prior studies in offline and online deception have focused on investigating factors contributing to individuals’ detection (or non detection) of another party’s deliberate attempts to deceive [1][2][3][4][5][6]. Some aspects of product-related deception such as price of commodities, false product comments are also examined. However there is lack of comprehensive understanding of why consumers may actually be deceived by deliberately product-related deceptive practices. This paper aims to address two questions: 1) Can consumers detect product-related deceptions online? 2) How consumers distinguish the product-related deceptions from the good ones? To answer these two questions, we will develop an integrative model and a set of hypothesis, describing the relationship among product-related deception practices, consumers’ perceptions and purchase behavior. And then, test the proposed model using a Partial Least Squares (PLS) method on the data collected via a web survey. The whole analysis process will be structured as follows:

CONCEPTUAL DEVELOPMENT: THE RESEARCH MODEL AND HYPOTHESES

Basic Theoretical Model
When facing product-related deceptions on the internet, consumers often act on information that is less than complete and far from perfect. As a result, they often perceive some degree of risk or uncertainty in their purchasing intention. Tarpey and Peter [7] provided a valence framework, combining perceived risk and perceived benefit, which assumes consumers make decisions to maximize the net valence resulting from the negative and positive attributes of their decisions. And then, Dan J. Kim, Donald L. Ferrin and H. Raghav Rao [8] extend the valence framework by adding trust as a critical variable in electronic commerce, we modify this framework to fit the context of this research which provides a basic theoretical model for our study(See Figure 1). The underlying logic of the framework is that a consumer's intention (INTENTION) is affected by his or her perception of benefit (BENEFIT), risk (RISK), and trust (TRUST) toward the Internet selling entity. The consumer will be more likely to engage in an Internet purchase when perceived risks are low, when perceived benefits are high, and when trust is high (direct effect).
Purchase intention

Purchase intention is the outcome variable of our study. In this paper, purchase intention refers to the probabilities when consumers detecting product-related deceptions in the condition of purchasing on the Internet. Thus, a consumer’s intention to perform (or not to perform) a purchase is the immediate determinant of that consumer’s actual behavior.

Perceived risk

A consumer’s perceived risk is an important factor for online consumers to detect product-related deceptions, and it is also an obstacle for a consumer to consider whether to make a purchase. In our study, we consider perceived risk as a consumer’s perception about the potential negative consequence from the online purchase. Also, various types of risk have been identified, Bhatnagar et al [9]. considered that risk is mainly composed of three types: finance risk, product risk and information risk. Product Risk is related to the product itself, for example, a product may be a defective one. Finance risk is uncorrelated to product, but it is related to the opportunity cost and time of e-commerce transaction, for example, at the time of payment, a system error may lead the paid money disappear. Information Risk is relative to security and privacy, for example, the credit card information leaked in a transaction. A consumer’s perceived risk has been found to negatively have an impact on the consumer’s purchase intention, the higher risk consumers perceive, the less likely consumer make a purchase [10].

Therefore, we proposed that:

Hypothesis 1: A consumer's perceived risk negatively affects a consumer’s purchase intention.

Perceived trust

In this paper, we defined the perceived trust as a consumer’s perception relevant in conditions of ignorance or uncertainty with respect to the product-related deception. The research of Gefen et al [11]. presented that perceived trust is the basis of e-commerce transactions, and it has positive impact on the consumer’s transaction intention, it is to say that the higher the consumer’s perceived trust, the stronger the transaction intention. Of course, trust is not the only factor of e-commerce transaction behavior, it tends to appear with the perceived risk and they influence each other. Due to the virtual and other characteristics of e-commerce transactions, consumers are bound to have a certain perceived risk when shopping, perceived trust plays a key role in the face of these uncertain risks. Kim’s research presented that trust is an important influence factor to reduce perceived risk and promote consumers to take purchase decision, consumers' perceived trust has a more strong effect on purchase intention than the price that consumers perceived on it. That is higher the perceived trust, the lower the perceived risk[12].

Therefore,

Hypothesis 2a: A consumer’s perceived trust positively affects a consumer’s purchase intention.

Hypothesis 2b: A consumer’s perceived trust negatively affects a consumer’s perceived risk.

Perceived benefits

In our study, perceived benefit was defined as an extent that a consumer considers that he/she can make a profit from this transaction when he/she is having an online transaction. Margherio’s study presented that online transaction benefits consumers more on cost, time, convenience and other aspects than traditional shopping, which has become the significant factor that promote the purchase of consumers[13]. The research of Xiao Liu et al. presented that perceived benefit positively affect consumers' online purchase intention, Consumers perceived the greater benefit, the greater intention of the consumer transaction[14].

Therefore,

Hypothesis 3: A consumer's perceived benefit positively affects a consumer’s purchase intention.
Antecedents of perceived risk and trust.
Understanding the antecedents of a consumer’s perceived risk and trust can provide government regulator with the normally neglectful insights and tools that they can use to help consumers to detect product-related deceptions. We argue that there are three types of antecedents that influence consumer’s perceived risk and trust during the detection of product-related deceptions. These comprise the following:

- Manipulations of product-related deceptions: e.g., deceptions of product comments, deceptions of product info presentation, deceptions of product price, deceptions of product after-sale service, deceptions of product recommendation agent.
- Experience: e.g., internet experience, deception experience.
- Personality: e.g., disposition to trust.

Combining perceived risk and trust antecedents with the theoretical framework above, we propose a consumers’ perceived deception mechanisms for product-related deceptions. Fig. 2 presents the proposed research model with hypotheses.

Methods of product-related deceptions
Deception of product comments: In this paper, the deception of product comments refers to the manipulation of comments about products and services by online stores, for example, the website automatically filters out consumer reviews without consumers’ permission, or the online store pose as prior consumers and write positive review about products. The research of Ong et al. showed that in the e-commerce transactions, consumers’ perception of false reviews will affect the consumer’s consumer behavior [15]. Under the circumstance of product information deception, the author believed that once consumers perceive the existence of the deceptions, their perceived trust in product will decline, perceived risk will rise. Based on these, we proposed that:

Hypothesis 4a: Deception of product comments positively affect consumer’s perceived risk.
Hypothesis 4b: Deception of product comments negatively affect consumer’s perceived trust.

Deception of product info presentation: The deception of product info presentation refers to the manipulation of descriptive information about the product, for instance, the websites use flashy animations to distract consumers from processing non-vivid yet more useful and informative textual descriptions. Larose thought that businesses use exaggerated animation and other product information display will affect the consumer's psychological perception, to induce consumers to make irrational judgments [16]. Under the circumstance of product information deception, the author believed that once consumers perceive the existence of product information display deception, their perceived trust on the product will decline, perceived risk will rise.

Based on these, we proposed that:

Hypothesis 5a: Deception of product info presentation positively affect consumer’s perceived risk.
Hypothesis 5b: Deception of product info presentation negatively affect consumer’s perceived trust.

Deception of product price: Product price deception refers to the manipulation of the product price and display of unclear price, fuzzy price commitment and hidden additional price. Grewal, Monroe and Krishnan et al. studied that the selling price of the product has an impact on consumer perception, and then affect the consumer's behavior intention[17]. Under the circumstance of product information deception, the author believes that once consumers perceive the existence of product price deception, their perceived trust on the product will decline, perceived risk will rise. Based on this, we put forward the hypothesis of this paper:

Hypothesis 6a: Deception of product price positively affect consumer’s perceived risk.
Hypothesis 6b: Deception of product price negatively affect consumer’s perceived trust.

Deception of product after-sale service: Product after-sale service refers to the corresponding service that consumers should enjoy when shopping on the Internet, such as logistics, goods return, product maintenance and other services. Deception of product after-sale service refers to the consumer in the process of online shopping cannot enjoy the due service. In real life, some businesses through the fuzzy information services and other ways to prevent consumers to enjoy the service, for example, currently seven days no reason to return has been written into law by administration for Industry and Commerce, but some businesses still with various reasons refused to return the consumer. Drew and Bolton's research points out that the quality of service affects the consumer's perception, and then affects the customer's purchase behavior [18]. Under the circumstance of product information deception, the author believes that once consumers perceive the existence of products supporting services
deception, the perceived trust of their products will decline, perceived risk will rise. Based on this, we put forward the hypothesis of this paper:

Hypothesis 7a: Deception of product after-sale service positively affect consumer’s perceived risk.

Hypothesis 7b: Deception of product after-sale service negatively affect consumer’s perceived trust.

**Deception of product recommendation agent:** Various types of deception of product recommendation agent have been identified, for example, the online store excludes products that best fit consumers’ preferences from the recommendation list, instead promotes products being a distinctive competitive advantage. Senecal’s research shows that the recommendation agent will make consumers feel more professional and more likely to be accepted by consumers than other consumers[19]. Taking into account the situation of product information fraud, the author believes that once consumers perceive the existence of product recommendation information fraud, their perceived trust on the product will decline, perceived risk will rise. Based on this, we put forward the hypothesis of this paper:

Hypothesis 8a: Deception of product recommendation agent positively affect consumer’s perceived risk.

Hypothesis 8b: Deception of product recommendation agent negatively affect consumer’s perceived trust.

**Experience**

**Deception experience:** A consumer's deception experience refers to the consumer's degree of acquaintance with the manipulation methods of selling entity, which includes whether to be familiar with the deceptive vendor and procedures. Besides, whether to experience the deception also includes. Experience is a "precondition or prerequisite of trust", because it leads to an understanding of an entity's current actions while trust deals with beliefs about an entity's future actions [20]. Some research has reported that experience reduces a consumer's perceived risk, interface complexity or uncertainty because it simplifies the relationship with a selling party [20,21,22].Based on these above, we proposed that:

Hypothesis 9a: A consumer's deception experience negatively affects perceived risk.

Hypothesis 9b: A consumer's deception experience positively affects perceived trust.

**Internet experience:** A consumer’s Internet experience refers to the experience of acquiring skills or knowledge from practice. According to the characteristics of electronic commerce, this paper will define the Internet experience for consumers as the familiarity extent of e-commerce transactions, after e-commerce transactions, consumers in the purchase process, product information search and other aspects have a certain familiarity. Luhmann’s research presents that the shopping experiences can reduce consumers’ perceived risk. Experiences can help consumers to familiar with the operation, so that shopping uncertainty, the complexity of showing the page and other factors are greatly reduced [23]. The results of Light study presents that the consumer’s familiarity is a prerequisite for trust, compared to products that have not been exposed to, there is a good shopping experience of the product is more likely to allow consumers to trust, and ultimately to achieve a sense of purchase [24]. Gefen’s research shows that once consumers was familiar with the purchase process, website and the business, their personal experiences promote the transaction intention [25].Based on these above, we proposed that:

Hypothesis 10a: A consumer's Internet experience negatively affects perceived risk.

Hypothesis 10b: A consumer's Internet experience positively affects perceived trust.

**Personality**

**Consumer disposition to trust** refers to a customer's individual traits that lead to expectations about trustworthiness, a consumer-specific antecedent of trust. A consumer's disposition to trust is a general inclination to display faith in humanity and to adopt a trusting stance toward others. Some of the existing research results show that trust has a great impact on consumer trust. McKnight believed that the consumer's trust tendency positively influences consumer trust, that is, the higher the consumer's trust, the more likely he/she is to trust others, vice versa [26].Therefore, we proposed that:

Hypothesis 11: A consumer disposition to trust positively affects perceived trust.
RESEARCH METHODOLOGY AND DATA COLLECTION

To test the research model, we will measure the consumers’ perceptions and behaviors by means of questionnaire survey. The research survey was conducted among teachers and undergraduate, because online consumers are generally more educated than are conventional consumers, and data collection in our research indicated that the sample were more sensitive to the deceptive product online.

We published questionnaire surveys via Internet, and received the responses as research data. During the survey, the participants were asked to follow the procedures below: first, they were instructed to visit at least any two B-to-C or C-to-C retailer websites to comparison shop for an item of their being most needed recently. Next, the participants were asked to choose two shops from website for purchasing the products they had chosen in last step, one shop is manipulated by product-related, but the another is not. And then the participants randomly assigned to complete one of two questionnaires: one questionnaire asked questions about the shop from which the participants feel trustful, the another asked the same questions, but about the shop from which the participants feel deceptive. Last, we would verify the websites filled by the participants, to judge whether they detect the deception correctly.

The instruments development for this study was carried out according to the two parts, one part of instruments was adapted from previous research and modified to fit the context of this research, the another part was developed based on the results of a literature review of the topics. All of the constructs were measured by at least three indicators with 5-point Likert scales. We conceptualized and measured product-related deceptions, perceived risk, perceived trust, perceived benefit, and purchase intention as aggregations of different manifestations of deception ways, risk, trust, and intention, respectively, thus the direction of causality is from indicator to construct (i.e., formative). The other constructs were operationalized as reflective indicators.

A total of 285 responses were received. After eliminating incomplete and inappropriate responses, a total of 210 usable responses were included in the sample for construct validation and hypothesis testing.

DATA ANALYSES AND RESULTS

To test the proposed research model, data analyses for both the measurement model and structural model were performed using Partial Least Squares (Smart PLS 3.0) with bootstrapping. We use PLS method for data analyses because it is a powerful tool for assessing both structural model and measurement model with minimal demands on measurement scales, sample size, and residual distributions [27,28,29], also PLS can be used to handle both formative and reflective indicators.
To ensure the appropriateness of the research instrument, we used PLS method to test for content validity, reliability and construct validity.

**Reliability:** Internal consistency was calculated using Cronbach’s alpha, composite reliability, and average variance extracted (AVE) [30]. Table 1 shows that most of Cronbach reliability coefficients are higher than the minimum cutoff score of 0.70 [31] (see Table 1) except for experience’s alpha coefficient, but all composite reliability coefficients are greater than 0.7, and all constructs have an AVE of at least 0.5, so it indicates adequate internal consistency.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Types of indicators</th>
<th>Cronbach's Alpha</th>
<th>Composite Reliability</th>
<th>AVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposition to trust</td>
<td>Reflective</td>
<td>0.836</td>
<td>0.888</td>
<td>0.667</td>
</tr>
<tr>
<td>Internet experience</td>
<td>Reflective</td>
<td>0.831</td>
<td>0.888</td>
<td>0.666</td>
</tr>
<tr>
<td>Deception experience</td>
<td>Reflective</td>
<td>0.561</td>
<td>0.772</td>
<td>0.538</td>
</tr>
<tr>
<td>Deception of product after-sales services</td>
<td>Formative</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Deception of product recommendation agent</td>
<td>Formative</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Deception of product info presentation</td>
<td>Formative</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Perceived trust</td>
<td>Formative</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Perceived benefit</td>
<td>Formative</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Deception of product price</td>
<td>Formative</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Deception of product comments</td>
<td>Formative</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Perceived risk</td>
<td>Formative</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Purchase intention</td>
<td>Reflective</td>
<td>0.84</td>
<td>0.904</td>
<td>0.758</td>
</tr>
</tbody>
</table>

Note: NA—Does not apply for the formative measures.

**Construct Validity:** We examined construct validity by assessing discriminant validity. According to Fornell and Larcker (1981), constructs have adequate discriminant validity if the square root of the AVE for a construct is higher than the variance shared between the construct and other constructs in the model [30]. As we can see in Table 2, in all cases the correlations between each pair of constructs were lower than the square root of the AVE for the particular construct. Consequently, these results as well as the factor analyses confirm that all the constructs were empirically distinct.

**Testing the Structural Model:** The assessment of the structural model includes estimating path coefficients and T statistics. Fig.3 shows the results of assessment and hypothesis testing. As shown in the figure, three hypothesized paths from the consumer perceptions (risk, trust, benefit) to purchase intention were significant at T statistics>2, thus validating H1, H2, H3a, and also risk had a strong negative effect on trust and significant, validating H3b. Interestingly, among the two hypothesized paths from the experience to consumer perceptions and purchase intention: for one thing, deception experience had a positive
The Sixteenth International Conference on Electronic Business, Xiamen, December 4-8, 2016

Chen, Niu & Jian

Research findings

According to the proposed model, a consumer’s perceived risk has a significant negative impact on purchase intention, but perceived benefits and perceived trust are positively correlated with transaction intention. And the higher the perceived risk, the greater the perceived trust low. Consumers’ personal experience can not directly affect the consumers’ intention to trade, but through the impact of perceived risk and perceived trust and indirectly affect the purchase intention. These findings exactly verify the classical model.

Deception of product comments, deception of product price, deception of product after-sale service have strong negative effects on risk, and deception of product price, deception of product after-sale service had strong positive effects on trust, suggesting that consumers consider a relatively wide variety of perceptions and observations when developing their trust and risk in a website and vendor, so these findings provide government regulator with the normally insights and tools that they can use to help consumers to build consumer trust and manage the perceived risks during the detection of product-related deceptions.

One interesting finding is that the presence of deception of product info presentation and deception of product recommendation agent did not influence consumer’s trust and risk. These findings indicated that a consumer easily ignore product info presentation and recommendation agent during the detection of deceptions. So in our future study, we would center on the enhancement of government regulators’ education strategy, to increase consumer’s risk and control the trust when facing the product-related deceptions.

Surprisingly, the deception experience and Internet experience had strong direct influence on consumers’ perceived risk as expected, however, neither of them have significant direct effect on consumers’ perceived trust.

Finally, we found that our personality-oriented antecedent, a consumer's disposition to trust, had a significant effect on a consumer trust. This is consistent with previous studies on the relationship between trust and consumer disposition to trust.
Research limitations and prospects

This article explores the impact of fraud and consumer's personal characteristics on consumers' perceived risks, interests and trusts in e-commerce product information fraud by using empirical research. Commerce trading platform for the corresponding recommendations. But in the whole study, there are still many deficiencies, mainly in the following areas:

This article put the product of information fraud of e-commerce fraud as the object of study. There are many categories in e-commerce deception, each type of fraud may affect the perception of consumers is different. Therefore, consumer perception of e-business fraud is only a case study, which can not explain the general situation of consumer perception in e-commerce fraud.

As for research model, this paper put the product of information fraud and consumer personal characteristics as the consumer perceived pre-influencing factors which study the impact of pre-factors on consumer perception. There are other factors exist in the real life.

The questionnaire on the issue and recovery: although some teachers and social workers take participated in this project, but college students become the main object of this survey, the proportion of the object is not very reasonable, so we should pay more attention to Research on the proportion of the object on future research.

REFERENCES

[26] McKnight D H,Cummings L L,Chervany N L.Initial trust formation in new organizational relationships[J].Academy of


