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How Do the Internet Buyers’ Decisions Be Affected?
—An Experimental Study of Risky Choice Framing Effect

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Abstract

For Net-enhanced organizations (NEOs), business is conducted at a distance and risks are magnified. In effect, Internet buyers can solely rely on information provided by the Web sites to make decisions. Consequently, the way to present information favorable to the Internet business operators is very important. This study aims to understand whether positively and negatively framed messages result in different choices made by the Internet buyers. Further, the effect of subject’s intrinsic self-relevance to the framing effect is also considered in the current study.

The research is conducted by using laboratory experiment. The results indicate that the risky choice framing effect partly exists in Internet buyers’ product decisions. Specifically, when the subjects are highly related to the research context, they won’t be affected by the framing of messages because they are eager to obtain the target product. As a result, most subjects are prone to avoid risks. On the other hand, there is significant risky choice framing effect for subjects with low intrinsic self-relevance. In this group, subjects are prone to avoid risks when they were presented with positive information, whereas most people incline to take risks, and thus choose the risky option if the problem are framed negatively.

Keywords: laboratory experiment, Internet, risky choice, intrinsic self-relevance

1. Introduction

For Net-enhanced organizations, business is conducted at a distance, and risks are magnified. In effect, customers have to rely heavily on images and product information provided by the Web sites. As a result, the way to present information that is favorable to the Internet business operators becomes an important research issue.

Customers face a decision problem when they are buying products through the Internet. A decision problem is defined by the acts or options among which one must choose, the possible outcomes or consequences of these acts, and the contingencies or conditional probabilities that relate outcome to acts (Tversky & Kahaneman 1981). It is often possible that the decision problem can be presented in more than one way. The presentation of the
decision problem is the so-called “frame”. The phenomenon that the frame significantly affects how we infer meaning and hence understand the situation is the framing effect. The most popular form of the framing effect is the risky choice framing effect, which is first introduced by Tversky and Kahaneman in 1981. They suggest that people are risk-averse when a decision problem is formulated in terms of gain and risk-prone when the problem is formulated in terms of loss (Kahneman & Tversky 1979; Tversky & Kahaneman 1981; 1991).

Moreover, in consumer behavior research, the degree of personal involvement is also an important factor that shapes the type of decision process behavior (Engel et al 1995). The concept of consumer involvement is similar to intrinsic self-relevance (ISR) proposed by Krishnamurthy et al. (2001), who contended that the degree of relevance between research context and the subject will affect their decision choices.

This paper aims to examine the risky choice framing effect in Internet buying context. Specifically, the first goal of this study is to understand that will the Internet buyers make different shopping decisions if the problem were framed in terms of positive or negative messages. Also, we compare the results across two different subject populations: the high intrinsic self-relevance group and low intrinsic self-relevance group. Thus, the second objective of this paper is to realize that will different degrees of buyer involvement result in different risky choice framing effects. This is the first study that attempt to consider the subject’s self-relevance in risky choice framing choice.

2. Literature review

2.1 Risky choice framing effect

Tversky and Kahaneman (1981) defined risky choice framing effect in the context of choice under uncertainty, where the choice between two alternative actions was shown to reverse, depending on whether attention was focused on the potential gain or the potential loss associated with each alternative. Accordingly, the willingness to take risks by subjects depends on whether the potential outcomes are positively framed (e.g., in terms of success rate) or negatively framed (e.g., in terms of failure rate). The term “frame valence” is used to describe the situation in which the frame expresses the same critical information in either a positive or a negative way.

In a standard risky choice context, Tversky and Kahaneman (1981) illustrate a preference reversal phenomenon. That is, people are more willing to take risks with negatively framed outcomes than with positively framed outcomes. That is, they are more apt to take risks to avoid a loss than to achieve a gain when the messages were framed negatively. Prospect theory proposed by Kahaneman and Tversky is to explain why people make different choices when the same problem is illustrated by different kinds of uncertainty (Kahaneman & Tversky 1979).

2.2 Intrinsic self-relevance

The term “intrinsic self-relevance” (ISR) proposed by Krishnamurthy et al. (2001) refers to the situation in which a motivation would be instantiated when a decision maker spontaneously relates to the decision context. When the decision is inherently less involving, clearly the level of intrinsic self-relevance may not influence decision making.
In many studies examining how self-referencing influences decision behaviors, subject’s self-related knowledge structures are achieved by instruction. For example, in Rothman and Schwarz’s (1998) study, the subjects were asked to think about their own risk of heart disease versus the risk of the average person. In this situation, the decision context is not intrinsically self-relevant to the decision makers, and therefore the self-relevance is not spontaneous. Krishnamurthy et al. (2001) refer this type of self-relevance as nonintrinsic self-relevance (NSR).

When the decision maker is inherently less involved in the decision context, the level of ISR may not influence decision making. However, in decision contexts that have the potential for high involvement, NSR and ISR might represent different environments for decision making. Specifically, the degree of consumer involvement with a decision context will influence the number of evaluative criteria used in pre-purchase alternative evaluation. A greater number of evaluative criteria are likely to enter into the decision as involvement increases (Engel et al. 1995, p. 214). Therefore, subjects that are higher in ISR will have higher motivation to seek desirable outcomes and avoid undesirable ones.

3. Hypotheses
It had been verified that there exists framing effect in medical and clinical decisions (decisions made by both the provider and the recipient of health care), perceptual judgments, consumer choices, responses to social dilemmas, bargaining behavior, auditing evaluation, and many other decisions (Levin et al. 1998); and the research findings were almost the same: when one identical decision problem is framed as positive or negative alternative, people would make different decisions. Most often, people are risk-reverse when a decision problem is formulated in terms of gain and risk-seeking when the problem is formulated in terms of loss. Thus, the first hypothesis we postulate is:

\[ H_1: \text{The framing of decision problem as positive or negative will result in different choices made by the Internet buyers.} \]

The second hypothesis is to examine how self-referencing influences customer’s decision behaviors. According to Krishnamurthy et al. (2001), decision makers who are intrinsically highly involved in the research context have more knowledge about the problem, and have higher motivation to seek desirable outcomes and avoid undesirable ones than subjects with lower intrinsic self-relevance. So the second hypothesis is postulated as follows:

\[ H_2: \text{Different levels of subject’s intrinsic self-relevance will result in different decision behaviors.} \]

\[ H_{2a}: \text{For subjects with high ISR, their decisions will be affected by the different formulation of the risky choice problems.} \]

\[ H_{2b}: \text{For subjects with low ISR, their decisions will be affected by the different formulation of the risky choice problems.} \]

4. Methodology

4.1 The experiment design
An experimental Web site demonstrating product information about an imitative electronic translator was built up. The experiment was a 2 (positive vs. negative frame) × 2 (sure option
vs. risky option) between subjects factorial design. 236 undergraduate students were recruited as subjects, who were then randomly assigned into two groups: positive risky choice framing group and negative risky choice framing group. Subjects in the former group were exposed to Web pages with the content of product information framed positively. Likewise, Subjects in the latter group were exposed to Web pages with negatively framed product information.

4.2 Procedure
The experiment was conducted in the following three phases. First of all, after been randomly assigned, the subjects were instructed to enter a computer laboratory with one monitor in front of each of them. Second, the instructor gave an introduction to the subjects, and then explained the process of this experiment. All the subjects were asked not to discuss with each other until the experiment is finished. Further, after completing a paper-based questionnaire measuring their demographic information, the subjects then were instructed to read the product information. Finally, subjects were asked to click into the next Web page to answer the problems about their buying decisions. The whole experiment lasted about 15 minutes.

4.3 Manipulation
Levels of ISR were manipulated by class assignments before the experiment were conducted. Half of the subjects were asked to read paper and textbooks in English, which is not their native language. Materials in Chinese were assigned for the other half of the students. We postulate that students in English materials group would have a strong need for powerful translators, thus result in higher involvement in the research context.

4.4 Stimuli
All the stimuli in the experiment were presented through Web pages. The first page comprised the general description of a synthetic store selling various types of electronic appliances, including the electronic translator—the target product in this research. The product information was described as follows: “This is the latest electronic translator equipped with all the functions you can find in any of the translators on the market. In addition, the most powerful function of which is that the full text Chinese can be translated into English and vice versa. No matter who you are, you will not feel like a dinosaur any more and will be able to overcome all of the embarrassing situations when facing English.”

The second page has two parts. First, the framing message was manipulated in the up side of the Web page. Second, one question measuring the subjects’ buying decision was illustrated in the bottom. The messages in positive and negative condition were basically the same except that the choices to be chosen were formulated differently. The basic message was that “There are two most powerful full language translators selling in our store. As the result of 600 professional users’ testing, it was found that…” Right after that, the positive and negative choices were then framed separately.

In positive risky choice framing condition, the message was framed as:
- Brand A translator: 200 people were satisfied.
- Brand B translator: there is 1/3 probability of which 600 people were satisfied and 2/3 probability that no people felt satisfied.

In negative risky choice frame condition, the message was framed as:
- Brand A translator: 400 people were unsatisfied
- Brand B translator: there is 1/3 probability of which no one were unsatisfied and 2/3 probability that 600 felt unsatisfied.
4.5 Measurement
The subjects’ Internet buying decision about the full text electronic translator is measured by the following question: “Which brand would you choose? Brand A or B?”

5. Results and Analysis
Results of the Chi-square analysis indicate that the manipulation of risky choice does incur different decision pattern made by two subject groups (p=0.018). As depicted in Figure 4, most people (65%) in positively framed risky choice condition choose the sure option. On the other hand, half of the students in negative condition choose the sure option, and another half students choose the risky option. Consequently, this result partly confirms that the risky choice framing effect exists in Internet buyer’s product decisions. Thus, H1 is partly supported.

![Figure 4 Result of chi-square analysis (p=0.018)](image)

The analysis goes further to explore the moderating effect of intrinsic self-relevance. First, the decision patterns of high ISR were examined. As illustrated in Figure 5, no matter what type of framing messages they received (p=0.824), most subjects (63% in positive condition and 67% in negative condition) choose the sure option. Thus, H2a is not supported.

![Figure 5 ISR=High (p=0.824)](image)

As shown in Figure 6, the risky choice preferences are significantly different (p=0.002) between the positive and negative conditions for subjects with low ISR. So, H2b is supported. 66% of the students who received positively framed message choose the sure option. In contrast, 60% of the subjects who received negatively framed message choose the risky option. The framing effect is confirmed when the subjects’ ISR level were lower. This result is consistent with the past investigation in Neale and Bazerman (1985), Maule (1989), Neale and Pease (1985), and Levin et al. (2002). Namely, when people are presented with two choices framed positively, they are prone to avoid risks; however, if the choices are framed negatively, most people incline to take risks, and thus choose the risky option.
6. Conclusions and Discussions

The results of this study illustrate that part of the risky choice framing effect is supported. That is, the subject’s intrinsic self-relevance determined their risky choice preferences. When the information was framed positively, most subjects would choose the sure option. For subjects who received negatively framed messages, the decisions would differ in terms of the level of their intrinsic self-relevance. Specifically, there exists no risky choice framing effect in high ISR group, in which people’s decision tend toward a sure choice no matter how the information were framed. On the other hand, subjects with low ISR did reveal a significant risky choice framing effect on their decisions.

Most of the past experiments on risky choice framing effect enlisted students as their subjects no matter what the research context were, thus led to the results that the framing effect was significant. Unfortunately, these researches did not consider the ISR effect on decision maker’s choices. For example, in Levin et al.’s (2002) study, participants were told to imagine that one of their parents was diagnosed as having dangerously high levels of cholesterol, and the students were given the positive or negative descriptions of two different programs. One of the programs was a certain and the other was the risky description. After reading the description of the problem, subjects were then asked to answer the question about their decision. The result of their study showed that the predicted effect of more risk taking in the negative frame than in the positive frame was significant.

In another study, 244 undergraduates participated in Highhouse and Yuce’s (1996) experiment to examine the framing effect. Again, Tversky and Kahaneman’s (1981) Asian Disease Problem was presented to all participants who then were asked to complete some questions about their perceptions and decisions. As expected, the strong framing effects on choice between risk-averse and risk-seeking alternatives were found. They further indicated that when the problem was framed positively, most participants take the sure-thing option as more of an opportunity than the risky option. In contrast, when the problem was framed negatively, participants were inclined to take the sure-thing option as threat than the risky option. Thus, subjects under the positively framed condition choose the opportunity, and subjects under the negatively framed condition choose to avoid threat.

There are many other studies that recruited students as participants and their intrinsic self-relevance to the research context were low. These studies include Neale and Bazerman (1985), Fagley and Miller (1990), Schneidr (1992) and Kuhberger (1995). All of the results showed that framing effect exists. However, we cannot sure that whether all the effects confirmed in such studies occurred because the subjects were under the condition of their lower ISR.

The results of our experiment suggest that when the participant’s ISR level are not considered, the framing effect is partly supported. If the participants were divided into two groups in terms of their intrinsic self-relevance to the research context, a more meaningful decision pattern are revealed. That is to say, subjects with high ISR are more eager to acquire the appropriate product to satisfy their needs, and are less willing to take risks. Therefore, they would rather choose the sure-thing option no matter how the message is framed. As for participants with low ISR, they have larger room to consider the alternatives and make choices, and are more susceptible to market messages. Consequently, a significant framing effect is found in this group. Specifically, participants are more risk seeking under negative condition and risk aversion under positive condition. The implication of this study is that
people’s risky choice preference may differ in terms of their level of ISR to the research context.

In sum, human beings behave with bounded rationality, and are sensitive to framing messages, advertisements and outer stimulus, and thus result in decision biases. Framing effect is one of the most important factors that affect human’s decision thus is helpful for companies attempting to compete through the powerful Internet.

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