

# *A Comparative Analysis of Applications and Implications of the Framing Effect*

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**Abstract:** The framing effect is an important cognitive bias and a key part of the decision-making framework. At the current stage of economic and social development, economic applications of the framing effect can better facilitate decision-making. Through empirical studies and data analysis in a wide range of fields, such as marketing, health care, this paper tries to uncover the mechanisms of the framing effect in decision-making, identify its influencing factors, and explore the application strategies of the framing effect in different fields, and the counter strategies of the framing effect that people can use to avoid irrational decision-making. The results show that the operational mechanisms, effective factors, and strategic usages of the framing effect are obtained. The conclusion in this study strongly supports that the framing effect exerts a great influence on people's decision-making. The framing effect can simplify the decision-making process and improve the quality of decision-making when applied in a rational way, thus providing rich assistance to decision-making applications in many areas.

**Keywords:** the framing effect, decision-making, empirical investigation, influencing factors, strategic applications

## 1. Introduction

Every day, human beings make decisions in virtually every aspect of their lives, as well as in various types of professional settings. When making these decisions, people usually consider a range of factors. For example, while choosing between one brand or another for household products, people are affected by various factors, including the brand image, the cost of the product, etc. The framing effect, which is an important cognitive bias, is among those influential factors. Specifically, the framing effect refers to two presentations of the same content in different logical ways, which may lead to different decision-making results. As this concept challenged the fundamental assumption of fully rational decision-making in economics, it has drawn great interest from academic researchers as well as industry experts. Research on the framing effect has important theoretical and practical significance [1]. On the one hand, it expands the scope of research on human cognitive psychology as well as economic sociology. From this perspective, decision-making can only be explained through the irrational factors contained within each choice and researchers' understanding of decision-making mechanisms is extended beyond the traditional analysis. On the other hand, it provides a theoretical and methodological inspiration for numerous applied fields, such as marketing, medical treatments, finance, etc. At the current stage of economic

and social development, economic applications of the framing effect can better facilitate decision-making [2], and improve economic efficiency as well as the living situation of people in society.

This paper first answers four important questions about the framing effect. First, this research tries to uncover the mechanism of framing effect in decision-making; how does the information frame affect people's perception of gains and losses [3], based on the prospect theory and how do the different information frames evoke different cognitive schemes from the cognitive psychology viewpoint? Second, it tries to identify influencing factors, including individual variables, such as cognitive style, education level, and cultural background, and situations such as problem complexity and time pressure. Third, the research explores the application strategy of the framing effect in different fields, such as marketing, and health care. And finally, it discusses the counter strategies of framing effect so that the people can avoid irrational decision-making. The significance of this research is twofold. On one hand, it enlarges the fields of cognitive psychology and behavioral economics, questions the classic definition of rational decision-making and values the role of irrational factors. It also has the potential to get new theoretical advances by discussing the interaction between the framing effect and the other cognitive biases and the social factors. On the other hand, it contributes to improve decision-making in different fields, in marketing, to product promotion and sales, to the patient-doctor communication and acceptance or refusal of the treatment, to the finance, to making more rational investment choices, and finally to promoting social welfare and benefiting the economy of a society in various industries.

## **2. Theoretical basis of the framing effect**

### **2.1. Prospect theory**

Prospect theory is the main theoretical basis of the framing effect. Theoretical explanation was proposed by Kahneman and Tversky [4]. People have less interest in making decisions on the basis of absolute gains and losses. They attach more interest in terms of variants in reference to some reference point. In contrast to gains, people display risk aversion when it comes to losses. That means most people choose \$100 for certainty when comparing with option \$200 when winning. But most people choose \$100 with certainty when comparing with option \$200 with a 50% opportunity when losing. Because of the differences between the approach of risk attitude, the framing effect appears. And by presenting information in a different manner, the reference point on the basis of gains and losses changes.

### **2.2. Cognitive psychology explanation**

From the cognitive psychology point of view, the framing effect is a result of the human limitation to information processing. If given the complex information, man will always use the heuristic methods to simplify the process. When giving information in different ways, it will activate the different frame schemas and cognitive associations and influence decisions [5]. For example, the sentence "90% additive-free" will be associated with health and safety in consumer's mind, but "10% contains additives" may cause concern and doubt, which two sentences are actually the same.

## **3. Applications of the framing effect in marketing**

### **3.1. Food marketing experiments**

In the field of food marketing, the framing effect is particularly evident. An experiment on consumers' perception of food ingredients shows that when a food is promoted as "made from 90%

natural ingredients", consumers' acceptance of it is significantly higher than when it is promoted as "10% contains artificial additives", as shown in Table 1.

Table 1: Comparison of consumer acceptance under different food promotion methods

Promotion Method	Consumer Acceptance (%)
Made from 90% Natural Ingredients	75
10% Contains Artificial Additives	35

In another food marketing experiment that deals with dietary fiber content and fat content, “being rich in dietary fiber” has a superior impact than being low-fat since the frame “being rich in dietary fiber” highlights the positive aspects of the product more, making consumers easier to make positive connections and consequently more willing to purchase the product.

### 3.2. Framing strategies in advertising and promotion

In the advertising and promotion, we may resort to the keyword method of the framing effect to affect consumer behaviors [6]. For example, scarcity frame ads like “Our products are on a limited discount, only left in 3 days” will excite consumer’s sense of urgency so that consumers tend to buy right now. It’s shown that the purchase conversion rate of the product promoted by scarcity frame ads is more than 30% compared to ordinary ads (Table 2).

Table 2: Comparison of purchase conversion rates of different ads type

Advertising Type	Purchase Conversion Rate (%)
Ordinary Ads	20
Ads Using Scarcity Frame	50

In addition, frames that emphasize gains and losses are also widely used. For example, "Buy this product and save 20%" (gain frame) is more attractive to consumers than "Not buying this product will cost you 20% more" (loss frame). This is because people are less sensitive to gains than to losses, and the loss frame makes consumers pay more attention to the negative consequences of not buying.

## 4. Applications of the framing effect in healthcare

### 4.1. The Asian disease problem experiment

In medical decision-making, the Asian disease problem experiment, classically, shows the effects of the framing effect. Assume that there is a rare disease and it is estimated that 600 people will die from this disease. There are now two plans for the treatment: plan A is sure to save 200 people, plan B has 33% probability to save 600 people, and with a 67% probability, no one would be saved [7]. If the scenario be framed as “save lives”, most will choose plan A. When it is framed again, plan C will cause 400 deaths; plan D has a 33% probability that no one will be killed and has 67% probability that 600 people will die. The majority will choose plan D at this point when it’s framed as “number of deaths”.

This demonstrates that, merely by shifting the presentation frame of the problem, one would experience a great difference in people’s decisions, representing the significant effect of the framing effect on medical decision-making.

## 4.2. The framing effect in daily medical decisions

In daily medical scenarios, the way doctors communicate with patients is also affected by the framing effect. For instance, when communicating the potential dangers of an operation, if a physician states, "There is a 90% success rate for the procedure," patients tend to be more inclined to undergo the surgery [8]. However, if the doctor says, "The failure rate of the surgery is 10%", patients may be more hesitant. Research shows that when the surgical risks are informed in a positive frame, the patient's acceptance rate of the surgery is 25% higher than that in a negative frame, as shown in Table 3.

Table 3: Comparison of surgery acceptance rates under different risk - informing frames

Risk-Informing Frame	Surgery Acceptance Rate (%)
Positive frame (Success Rate is 90%)	70
Negative frame (Failure Rate is 10%)	45

## 5. Influencing factors of the framing effect

### 5.1. Individual differences

Individual variables like cognitive style, cultural background, and educational level can influence the size of the framing effect. Those with a strong analytical cognitive style are less susceptible to the framing effect. They could also find the problem more reasonable and not easily be dominated by the frame of presentation. Different cultural backgrounds also need to be considered. People in collectivist cultures will pay attention to group interest, and the decision result influenced by the framing effect may be different from that in individualist culture.

### 5.2. Circumstances of the problem

Situational factors, such as the complexity of the given problem and time pressures have some influence on the framing effect. The higher the complexity of the problem, the more likely the decision-makers rely on their heuristics. Consequently, the influence of the framing effect might be amplified. If there is tight time pressure, people do not have much time to reflect and ponder and hence are more prone to the framer's angle of framing the situation. For example, in the framework of an imminent medical decision, doctors and patients alike are more influenced by how the problem was framed to them.

## 6. Strategies for coping with the framing effect

### 6.1. Enhancing decision- making awareness

Decision-makers need to have the recognition that the framing effect exists. When making decisions, they should take into account the possible influence of different forms of information presentation [9], analyze and solve problems from multi viewpoints, so as to avoid irrational decisions brought by the framing effect. For instance, in terms of investing decisions, investors should not just use the sales material of financial products to judge, but analyze potential risks and returns deeply.

### 6.2. Information integration and analysis

After getting a piece of information, it is very important to collect pertinent information as much as possible [9], avoiding the tendency of being rigid to focus only on the information on a single frame. It is essential to accumulate and take an assessment on different information among multiple frames

in order to lay a more objective and accurate foundation for decision-making. For example, when purchasing a product, consumers should not just focus on the beneficial characteristics that are advertised by the manufacturer. Consumers need to get familiar with the potential negative character of the product as well. Only after an analysis should a purchase decision be made.

## 7. Conclusion

The framing effect, as one of the most frequent and important cognitive biases, occurs in all fields of daily life and has a huge influence on various fields; for example, in marketing, people are willing to buy a product that is claimed to be “90% customers satisfied with the product” but unwilling to buy a product claimed as “10% dissatisfaction with the product”; in the medical field, a treatment that is claimed to be “high success rate” has more possibilities that a patient may choose the treatment while the same treatment as “low failure rate” might lose a chance from an alternative treatment. Through the wide investigations and specific data analysis, we could find that the framing effect could influence decision-making process and outcome, which helps decision-makers to get a better understanding of them after theoretical grounds research (e.g., prospect theory), find practical application areas (e.g., classroom teaching where a difficult homework is framed as the learning opportunity could effectively drive students’ motivation to complete such homework); keep considering the influencing factors (e.g., cultural background and individual risk aversion); decision-makers would have possibilities to build countermeasures. With more research and evidence, there might be more effective application strategies for decision-making field, covering more, and also could promote the theoretical findings by investigating how the framing effect interacts with other cognitive biases and social factors in the future study.

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