



# Preference Reversals Between Regret Aversion Based on Two Types of Regret Aversion in E-commerce Live Streaming

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**Abstract.** In the era of new media, online platform has become one of the main shopping channels for the public. As a new marketing model, e-commerce live streaming effectively stimulates impulsive buying of customers and generates huge economic benefits, which brings it important research value. Based on the design of situational experiments and questionnaires, this paper to analyzes different psychological tendencies in consumer groups in e-commerce live streaming from perspective of behavioral economics. The results show different strengths of different psychological tendencies in consumer groups and explains the reasons for impulse spending under this marketing model. The study enriches the application fields of preference reversal theory, innovates the empirical research design, and provides relevant suggestions and theoretical basis for customers, enterprises and the government participating in e-commerce live streaming.

**Keywords:** Regret aversion · E-commerce live streaming · Preference reversal

## 1 Introduction

With the development of new media industry, people's shopping behavior not only happens on online shopping platforms, but also extends to E-commerce live streaming platforms. However, inconsistent with such trends in change of purchasing pattern, most of the existing studies work out the positive factors on e-commerce live streaming. On the one hand, various advantages of e-commerce live steaming mode, such as the information transmission characteristic [1]; shopping characteristic [2]; sales scenes has been discussed by some recent literature, yet the more important issue irrational consumption behavior often occurring in live streaming platforms has yet to be discussed. This provides a scope for potential further problems with people's shopping behavior as consumption patterns change. The aim of this paper is thereby to focus on the question that in the context of the coexistence of advantages and disadvantages of e-commerce live streaming, the psychological tendencies of behavioral economics dominate consumer's

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purchasing behaviors and requires further studies for better understanding, analysis, and prediction of consumption behavior. To do this, we aim to use preference reversal and regret aversion as explanatory factors of e-commerce purchasing behaviors. This aims to demonstrate how people's purchasing decisions are significantly changed by e-commerce live streaming platforms.

The objective of this study is to test whether the hypothesis of preference reversal will occur between two different type of regret aversion biases. However, during data analysis, they found that for people who focused on different types of regret aversion, there are different levels of preference reversals. It means when people focus on the regret of missing out the discount, their preference were reversed from their initial preference. In this case, people who were not willing to buy things in the e-commerce live streaming will choose to consume in it in the future. When they focus on the regret of irrational consumption, another preference reversal occurs which is opposite to the previous preference reversal, and the levels of these two preference reversals are much different. Therefore, we contend that the preference with a higher level of reversal is the main factor that dominates people's purchasing behavior in the e-commerce live steaming. This study aims to verify the existence of preference reversal in e-commerce live steaming and determine the cause regret aversion caused by different heuristics. Meanwhile, we determined that the degree of preference reversal is heavily influenced by discounts. After the heuristics in the experiment of regret aversions mentioned above, we determined that the influencing factor that leads to higher preference reversal rate is the regret aversion for fear of missing out the discount, which is the main factor leading the psychological tendency of people's purchasing behavior in e-commerce live steaming.

## 2 Literature Review

### 2.1 E-commerce Live Streaming Condition

E-commerce has benefited from the introduction of the new media age. As a result, businesses are developing and adopting new business models, with e-commerce live streaming being one of the most popular and successful examples. [3] By the end of June 2020, China had more than 300 million users of e-commerce live steaming, with a transaction volume of \$51.5 billion USD, increasing 62.5 percent annually. [4] By the end of December 2020, the number of users who have purchased goods through e-commerce live steaming will have accounted for 66.2 percent of the total number of users, with 17.8 percent of users' e-commerce live steaming consumption accounting for more than 30% of their total online shopping consumption. [3].

### 2.2 E-commerce Live Streaming

Existing research mainly focuses on purchasing decisions and influencing factors in traditional marketing models, E-commerce live streaming process [5], characteristics of online influencers [6–8], and the role and economic effects of online influencers [9] in live broadcast marketing.

To begin with, the buying choice depicts the dynamic process of consumers determining needs, gathering information, reviewing plans, and ultimately making judgments and purchasing habits. Personal elements such as personality and income, psychological factors such as incentives and information, and social factors such as culture and values are all influencing factors in customers' purchasing decisions, according to the classic marketing model. [5] Consumers who congregate in a homogeneous location, on the other hand, have a high degree of convergence and similarity, therefore personal and social characteristics play less of a part in network marketing. Unlike previous studies, this one looks at consumers' psychological preferences and behaviors as a whole, with the goal of figuring out how e-commerce live streaming causes preference reversal. Second, live marketing is an emerging marketing method that uses the Internet platform to introduce, display, and interact with products in real time, [10] promoting marketing effectiveness. [11] The e-commerce live streaming process and the characteristics of online influencers play an important role in attracting fans and building marketing competitiveness. The role of marketers with their own characteristics is multiplied by the catalysis of social platforms, which directly affects network groups in multiple vertical fields, [12] and thus creates commercial value. However, not all consumer groups will buy under the influence of online live streaming. Study what characteristics of consumer groups will be affected by live streaming. Current papers have studied factors such as gender, age, [13], education and occupation, [14] but few researchers focus on how consumer's different preference reversals influence their purchasing habits in the context of commodity marketing.

Online influencers, also known as Key Opinion Leader (KOL) in e-commerce live streaming, convey appearance, talent, interaction, and social attributes in the process of live broadcast. [15] By seamlessly connecting live broadcast content and popular products to trigger consumption experience, [6] consumers delay purchases. However, the specific factors and mechanisms that trigger the reversal of consumer preferences have not been accurately studied.

Mobile Internet groups known as network anchors have grown in popularity as a result of their regular display of specific qualities and active performance. They rely on developing media as thought leaders. They have a large social reach, a lot of information to spread, and a lot of personal power. [16] Fans are informed about product preferences and attitudes, which influences their purchasing decisions. [7] Live video helps the KOL economy. Individuals using social media platforms attract a big number of viewers, develop a significant fan base and targeted marketing groups, and establish a new IP-based business chain. [8].

Finally, not all online live broadcasts can provide significant rewards in the KOL economy. In live broadcast marketing, only top Internet celebrities who are adept at recruiting fans and methodically structuring marketing may succeed. [9] Studying the decision-making process of online shoppers will yield more recommendations for building a strong KOL and facilitating the entire economy.

### 2.3 Consumer Behaviors

Throughout our domestic and international research, we noticed that current research has generated a constructive debate on the influence mechanism of consumer buying in

traditional marketing and live broadcast marketing. Although traditional marketing literature emphasizes the importance of personal, social, and other elements in consumers' purchasing decisions, the network ecosystem's group convergence properties are diminishing these factors. [17] As a result, focusing on the standpoint of better expressing the characteristics of customer groups is crucial.

Impulse buying is considered to be one of the salient features of consumer behavior in e-commerce live broadcasts. Rook (1987) believes that if consumers suddenly have a strong and lasting impulse to buy, and seldom consider the consequences of the impulse buying, then this kind of buying is impulse buying. [18] Contextual circumstances and individual characteristics have a substantial impact on customers' impulse purchase, according to many empirical findings. The new marketing approach of e-commerce live streaming broadcast has ushered in a golden age of strong development, thanks to the in-depth development of information technology. This impulse buying has been dramatically exacerbated thanks to webcast marketing. In contrast to previous research on impulse buying, contemporary researchers focus on the stimulation of online shopping environments, consumer characteristics, and the interaction of the two [19]. However, scholars seldom get involved in the preference reversal factors that trigger the impulse buying behavior of consumers in e-commerce live broadcasts, so this paper intends to discuss them in depth.

## 2.4 Research Gap Identification

Despite extensive discussions in consumer behavior, not many of them focus on e-commerce live streaming, and further few has discussed it from behavioral economy perspective and treated the consumers as a group with similar consuming preferences. To fill in existing research gaps, this paper intends to build a fan purchase decision-making framework from the perspective of the consumer group based on regret-aversion bias theory and investigates the mechanism of e-commerce live streaming fans' purchase decision through questionnaire data.

## 3 Methodology

We conducted a quantitative experimental study that aimed to produce generalizable knowledge on the causes of preference reversal, especially in live streaming.

We hypothesized that two types of preference reversals would occur in live stream. Both are preference reversals caused by regret aversion, but they differ in the origin of regret. One focused on the regret of impulsive purchasing behavior, and the other focused on the regret of missing a discount. It was predicted that most people would start to buy in live stream as they regret missing the discount or they would stop purchasing due to the regret of impulsive buying.

To observe the behavior and examine if the preference reversals occur as we proposed, we collected primary data by sending out surveys for our participants to fill in. This survey was conducted online due to the current situation of the global pandemic, but it was promoted on both online platforms, such as social media and offline platforms. Our subjects are consumer groups over the age of fifteen, mainly college students who

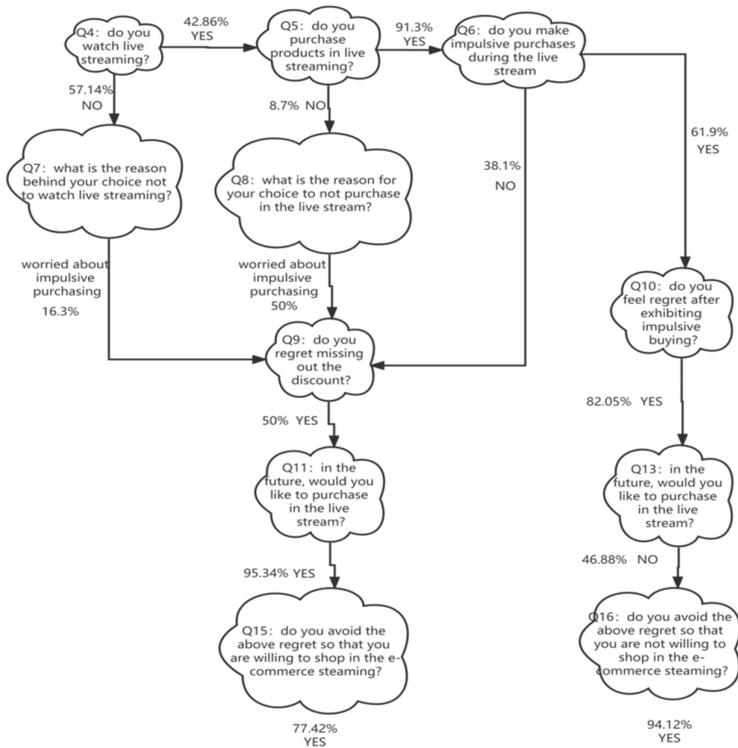


Fig. 1 Questionnaire paths and result flow chart

are, what we believe, people with the ability to spend in the live broadcast room. The survey consisted of 16 multiple-choice questions divided into two parts. The first part consisted of 3 questions that aimed to gather demographic information of the samples' demographic information. The second part included 13 questions divided into four tracks, each with a different situation.

Overall, we used the quantitative survey method to collect information from 161 participants for our study on preference reversals in live streaming. Despite the minor limitations of our method, the results collected were valid and applicable in analyzing preference reversal.

## 4 Results

See Fig. 1.

### 4.1 Overview

The second part of the survey follows our hypothesis of two types of preference reversals in a live stream. Both are preference reversals caused by regret aversion, but they differ in the origin of regret. One focused on the regret of impulsive purchasing behavior, while the other focused on the regret of missing a discount.

## 4.2 Preference Reversal A: Path 1

At the beginning of the second part of the survey, the participants were first asked: “do you watch live streaming?” in question 4. This would direct the participants to two distinct tracks. Firstly, if the participant answered “yes,” they would be directed to question 5: “do you purchase products in live streaming?” The design of this question may seem repetitive. However, it was to make sure whether the subject purchased it or not. There was the possibility that they watched live streaming as entertainment and did not engage in any purchasing behavior. If the participant answered “yes” to question 5, they would be directed to question 6: “do you make impulsive purchases during the live stream?” This question was designed because some people could be rational about what they were purchasing in the live stream. This question would separate those who exhibited impulsive buying from those who did not, which would help with our analysis of the feelings and preferences of the participants that did impulsive buying. If the subject answered “yes” to this question, they would be directed to question 10: “do you feel regret after exhibiting impulsive buying?” This question was designed to see if the subjects felt regret and got affected by regret aversion bias, as we had hypothesized. 82.05% of the participants answered “yes” to this question, which indicates that a large proportion of the subjects on this track had feelings of regret toward their impulsive purchasing behavior.

No matter what the subject answered in question 10, they would be directed to question 13, asking: “in the future, would you like to purchase in the live stream?” This question was for us to analyze if there was preference reversal due to regret aversion as we proposed or not. However, even though the subjects would be directed to the exact content of the question, they would get different question numbers; if they answered “yes,” they would be directed to question 13, and if they answered “no,” they would be directed to question 14. The logic behind this was simple- this was the only method to ensure that the subjects who exhibited preference reversal were separated for our analysis. This way, we could see the proportion of subjects that demonstrated the first type of preference reversal. Out of all the subjects that felt regret, only 46.88% answered “no” in question 13, indicating that not most subjects would exhibit this type of preference reversal as we hypothesized.

Nevertheless, subjects who answered “no” to question 13 were be directed to question 16: “do you avoid the above regret so that you are not willing to shop in the e-commerce steaming? “We could ensure that this preference reversal was because of the effect of regret aversion described above. 94.12% of the subjects answered “yes” in question 16. This is important because this signifies that the preference reversal we hypothesized was actual and existent. It existed in the case of almost half of the participants going down this path. Even though only 46.88% of the participants who regretted impulsive buying indicated that they would stop purchasing in live streaming, indicating that the preference reversal itself was not as prominent, this is positive evidence that the preference reversal that did occur was mainly due to regret aversion and had been exhibited by 94.12% of the previous 46.88% of the participants in this track.

Throughout the above path, we can determine whether the first preference reversal had occurred (preference reversal A). The second preference reversal (preference reversal B) based on the other three paths is described next.

### 4.3 Preference Reversal B: Path 1

For path 1 of preference reversal B, we should return to question 4. If the participant answered “no,” which was 57.14% of the subjects, they would be directed to question 7: “what is the reason behind your choice not to watch live streaming?” which would explore whether they were worried about impulse consumption in the e-commerce live streaming. In exploring the first type of preference reversal, we have designed the logic of the questions like this. For question 7, if the participant answered, “worried about impulsive purchasing,” they would be directed to question 9. Question 9 is essential. All these three paths will cross in this question. Since all three paths have the same questions after question 9, it will move on to path 2 in this preference reversal.

### 4.4 Preference Reversal B: Path 2

For path 2 of preference reversal B, if the participant answered “yes” in question 4, 42.86%, they would be directed to question 5: “do you purchase products in live streaming?” The design of this question may seem repetitive. However, it was to make sure whether the subject purchased or not, as there was the possibility that they watched live streaming as a form of entertainment and did not engage in any purchasing behavior. For question 5, the participants were given two options: yes or no. If the subject answered “no” to this question, which was only 8.7%, they would be directed to question 8: “what is the reason for your choice to not purchase in the live stream?”. If the participant answered, “not interested,” the survey would automatically end. However, if they answered, “worried about impulsive purchasing,” they would be directed to question 9, which would be explained further in exploring the second type of preference reversal.

### 4.5 Preference Reversal B: Path 3

For path 3 of preference reversal B, returning to question 5, If the participant answered “yes,” which was 91.3%, they would be directed to question 6: “do you make impulsive purchases during the live stream?” We designed this question because some people could be rational about what they were purchasing in the live stream. This question would separate those who exhibited impulsive buying and those who did not, which would help with our analysis of the feelings and preferences of the participants that did impulsive buying. If they answered “no” in question 6, which was 38.1%, they would also be directed to question 9: “if you do not purchase in live stream, would you regret missing the discount in the future?” This question was designed to explicitly ask the participants to indicate if they felt regret after not purchasing in live stream, which could lead to our main cause of preference reversal- regret aversion.

Then we can focus on question 9, like question 10, regardless of their answer, the participants would be directed to a question asking: “do you regret missing out on the discount?” Precisely 50% of the participants who answered question 9 chose the option “yes,” meaning they would regret missing the discount. Like questions 13 and 14, the participants here would also get different question numbers- question 11 and question 12- to ensure the answers to this question could be directly related to their previous answers. This would assist us in analyzing the proportion of subjects that demonstrated the second

type of preference reversal. As high as 95.34% of the participants who answered “yes” for question 9 answered “yes” for question 11. This is crucial for our analysis because our assumption of preference reversal based on regret for missing the discount was valid. However, we still had to examine whether this preference reversal was based on regret or not. Hence, like question 16, question 15: “do you avoid the above regret so that you are willing to shop in the e-commerce streaming?” Out of all the subjects in question 15, which were the subjects that answered “yes” in question 11, 77.42% answered “yes,” suggesting that they reversed their preference due to regret. Thus, after the analysis of the results of the three paths, we can see that the preference reversal was valid. However, only 77.42% of those who reversed their preference did so due to regret aversion, and the other 22.58% might have done so due to other reasons that we could examine with follow-up experiments.

## 5 Discussion

Our data presents multiple insights on purchasing patterns. Firstly, we discovered that both types of preference reversal occurred, but the trend is slightly different from our hypothesis. Most subjects exhibited the preference reversal based on missing the discount as we proposed (preference reversal B), but less had exhibited preference reversal based on their impulsive behavior (preference reversal A). Nonetheless, the ratio of participants that did choose to not purchase in live streaming due to regret is higher than the proportion of participants that chose to purchase due to regret.

For preference reversal A, 46.88%, which is no more than half, of the subjects chose to stop purchasing as they regret their impulsive behaviors, indicating that even though this type of preference reversal happened to some, it did not occur as much as we would expect. However, it is to note that 94.12% of those who had the will to stop purchasing chose to do so due to the regret they experienced, demonstrating a clear link between regret aversion and preference reversal as we have hypothesized. Hence, even though the occurrence of preference reversal A is not as prevalent, our hypothesis of the link between regret aversion and preference reversal is proven to be clear.

For preference reversal B, a different trend is shown. As much as 95.34% of the subjects chose to start purchasing when they answered that they would regret missing the discount afterwards, indicating that the second type of preference reversal we proposed occurred at a large scale in the subjects. Nonetheless, only 77.42% of those who chose to start purchasing specified explicitly that they did so due to the wish to avoid the regret of missing out the discount. This conveys that the occurrence of preference reversal B is quite prevalent among the subjects, but the link of regret aversion and the reversal is not as strong as we proposed.

## 6 Conclusion

Our research contributes in three main ways. First, theoretically, we link preference reversal to e-commerce live streaming. The main direction is to analyze consumer behavior in the e-commerce live streaming industry from the perspective of preference reversal in behavioral economics. We concluded that “worry about impulsive consumption” is

the main psychological tendency that dominates consumers' purchase behavior in e-commerce live streaming. The second is the experimental contribution, we design an experiment in which two different heuristics are used to guide subjects to generate two different regret aversion. The two types of regret aversion acted on the subjects, causing two different reversals of their preferences. The above result are drawn by comparing the calculated preference reversal rates. Thirdly, clarifying the leading role of this psychological tendency provides an essential focus for consumers' cognition and analysis of e-commerce live streaming and provides it for the e-commerce live streaming industry's cognition and analysis of consumers' purchasing behavior. Consumers may manage their purchasing behavior more rationally by realizing that their preferences are likely to be reversed by the "fear of missing out on the discounts" psychological tendency heuristic. It is also possible for the e-commerce live streaming industry to recognize it to analyze consumers' purchasing behaviors to promote strengths and avoid weaknesses and guide the progress of the entire industry.

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