



# Impact of Loss Aversion on Marketing

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## ABSTRACT

Scholars had long found that people were more concerned with losing than gaining. This theory was not confirmed experimentally by Tversky and Kahneman until 1979. Loss aversion was the truth that losses had a greater influence than gains. It was a basic property of behavioral account of choices. This review paper reviewed that loss aversion was affected by age, level of education and evaluation frequency. Marketers such as merchants took advantage of this fact to earn more profit, but not all policies benefited consumers. Consumers could mitigate the impact of loss aversion by exercising more to alleviate the degeneration of the brain and make more rational decisions. In most instances, risk aversion was closely linked and caused by loss aversion. But plenty of other studies showed that loss aversion didn't stand alone, and that people made wrong decisions because of other factors too. Therefore, this motivated more people from other fields to contribute to the research of loss aversion.

**Keywords:** *loss aversion, behavioral economics*

## 1. INTRODUCTION

If relatives left the world, people would be very upset. For most individuals, the loss is more important than the gain. This phenomenon is known in behavioral economics as loss aversion.

As early as 1930, Cason proposed that negative events have a greater impact on people and many scientists also believed that they felt that there was an emotional asymmetry between positive practices and negative events. But this was difficult to verify experimentally at the time. Until 1979, Kahneman & Tversky confirmed the existence of loss aversion through experimental tests [1]. Loss aversion is a psychological phenomenon that reflects people's more extreme reactions to losses than to gains. Unpleasant emotions can be associated with losing an amount of money, where the pain of losing is often greater than the pleasure associated with winning the same amount. [2]. Other people also participated in this research. Richard Thaler have contributed to the theory called Endowment Effect [3].

This has heightened enthusiasm for research in behavioral economics. Loss aversion is now widely used in areas such as equity premium [4]. In recent years, more scholars have questioned loss aversion. Loss aversion may

not exist alone but coexist with other theories. Many people in other fields also participated in the study of loss aversion, and they began to study why loss aversion existed [5].

Loss aversion will be affected by many factors such as age, education level and so on. Generally speaking, as people get older, they will be more affected by loss aversion [6], because as people become older, the speed of response will decrease. When they see a large amount of sale news, they may not care about the value of the product itself, such as quality, but worry that they will pay more for the same product next time after missing this discount. As a result, the elderly will buy a lot of goods during the discount period.

Due to the existence of loss aversion, merchants will cleverly use this psychological factor to formulate various marketing strategies such as trade-in services and odd-even pricing policies. Most of the time in our life, we will see the odd-even pricing policy, and many products end with odd numbers such as 999. For most individuals, the number 1000 may seem like a much greater amount compared to 999, so merchants will use this strategy to increase sales and obtain higher revenue.

In real life, not all pricing strategies developed by merchants will benefit both buyers and sellers. Sometimes

businesses exploit consumers' power in order to make more money. For example, in the case of information asymmetry, consumers spend more money on inferior goods. To reduce this from happening, consumers should learn to improve their knowledge and skills to reduce the effects of loss aversion. For example, increasing age loses the effect of aversion. As people age, the volume of ectocinerea in the posterior parietal cortex (a specific brain region) decreases. Inverse correlation between ectocinerea volume and loss aversion traits [7]. Participating in more physical activity may reduce the rate of gray matter volume decline, making people less averse to loss.

Given the vast literature on loss aversion, the purpose of our paper is to study the impact of loss effects on marketing. The structure of this paper is as follows. Section II introduces the concepts and related experiments of loss aversion and the endowment effect. Section 3 presents the factors that influence loss aversion. In Section 4, we set out how merchants can leverage loss aversion to specify marketing strategies. Section 5 shows consumers how to reduce the impact of loss aversion.

## 2. NOTIONS AND EXPERIMENTS

People often speculate that negative events have a greater impact on people [8]. The impact is not equal to the impact of negative events [9]. But it was difficult for people at the time to prove it experimentally.

Kahneman and Tversky are considered the mother of loss aversion. Not only because they create this theory, but also experimentally to prove them. In a paper published in 1979 by Daniel Kahneman (1934-) and Amos Tversky (1937~1996), this psychological "avoidance phenomenon" was observed in the following controlled experiment.

In the first experiment, everyone had 1,000 units of cash, and people made different choices based on this

A. There is a 50% chance that the cash on hand will become 2000.

B. There is a 100% chance of increasing the cash holdings to 1500.

In this experiment, 16% of the experimental group chose A, and 84% of the experimental group chose B.

In the second experiment, everyone had 2000 units of cash and made choices accordingly.

C. There is a 50% chance that the decision maker will lose 1000 units of cash

D. There is a 100% chance that the decision maker will lose 500 units of cash

The result of the second experiment was that 69% of people chose C and 31% of people chose D. Looking at the entire experiment, you can see that both options A and

C end up holding 1000 or 2000 cash with a 50% probability. In contrast, options B and D have a 100% probability of holding 1500 cash.

That is, the groups being experimented on tended to choose low risks when they were likely to gain benefits and showed a higher likelihood to choose high risks when they were likely to suffer losses. This result encouraged more people to investigate the concept of loss aversion.

Knetsch and Thaler set up an experiment in which participants can play 3 roles: seller, buyer, and decision maker [10]. Knetsch and Thaler gave the seller a mug, assuming the seller now resells the mug, how much would they price it. At the same time, Knetsch and Thaler did not give the buyer a cup, but only asked how much the buyer was willing to pay for the quilt. For decision makers, they also didn't receive a quilt, only to be asked whether to choose a mug or a sum of money. From the average results of the experiment, the monetary values given by the three groups are: \$7.12 for the seller, \$2.87 for the buyer, and \$3.12 for the buyer's choice. Buyer's valuation doesn't seem to matter that much. But sellers valued the cups more than twice as much as buyers and selectors. However, the only differences between groups relate only to their initial endowments and their role in relational assets. The funniest thing, those who got the cup, on average, valued it more than those who didn't. In other words, if people own an item, they give the item more value than its true value or the original value of the cup. Different ones assign different values to the quilt, a phenomenon that can be explained by loss aversion: to the seller, the cup is a loss, while the buyer and chooser see the cup as a gain. Since losses have a greater psychological impact than gains, sellers tend to value the cup more than potential buyers, so will set the price a bit higher.

Moreover, due to the development of academic research, many people have questioned the theory of loss aversion proposed by Kahneman and Tversky, and some even feel that this theory does not exist [11]. Scholars have found that loss aversion may not appear as an individual alone but occurs along with other factors. Researchers have observed that loss aversion may only occur in special cases, i.e., some conditions need to be met [12]. Some researchers have suggested that loss aversion does not exist as an independent phenomenon [13]. These phenomena show that most of the time, it is not because of loss aversion that people make bad decisions, but other factors at the same time. For example, the endowment effect. This further motivates more people to study and explore loss aversion.

### 3. FACTORS INFLUENCING LOSS AVERSION IN THE MARKET

#### 3.1 Education/experience

It has been shown through various studies that educated individuals tends to show less loss aversion compared to those who are uneducated [14]. In addition, individuals with rich financial and investment experience had less loss aversion than those who lack experience in making financial decisions. Those who reported a higher level of investment maturity had lower loss aversion.

Also, the impacts of loss aversion showed a strong correlation with relevant financial experience, such as taking part in risky investment choices, then with unrelated financial experience like paying the bills. Although both experiences involved finance of some sort but paying bills neither involved risk nor any requirement for a high education background. Thus, not all experiences are closely correlated to loss aversion; Financial experiences involving investments are more closely associated to loss aversion than unrelated experiences such as paying bills.

Relevant financial experiences continuously reflected lower loss aversion, with a mean correlation of 0.10, while unrelated experience had a smaller mean correlation of 0.01, resulting in poorer consistency [15]. Hence, people with better educational, financial and investment experiences have a clearer understanding of themselves, resulting in stronger risk tolerance, and relatively lower loss aversion prediction. Oppositely, people with less domain experience, knowledge and education may show higher reluctance towards losing.

Research results has supported this idea, showing that skillful stock and option traders displayed less loss aversion than inexperienced stock and option traders (Haigh List, 2005). Those with relatively less relevant trading experience exhibited the WTA/WTP gap while those with relatively more intense trading experience do not [16]. With more relevant knowledge and experience, professionals are less interfered by externals factors and are more adaptable to change.

#### 3.2 Age

Age was another decisive factor in loss aversion. Older people proved to be more loss-averse than younger individuals in the market. They are more prone to primary effect and memory interference, paying more attention to the first piece of information they receive, and give greater weight to the first one [17]. Due to the endowment effect, older sellers tended to focus more on the first piece of information that came to mind, which is the value-added to the product. This makes them focus more on their emotional attachment to the object, ignoring other substantial factors like the actual market price. Since older

individuals tends to pay more attention to the first information they receive, they become more susceptible to the effects of loss aversion, as they are unlikely to fully consider the loss and gain, but instead focus merely on the loss.

Another reason why older people are more exposed to loss averse could be since they retained less specific knowledge. Abilities to comprehend specific brand history and to calculate the pricing of a product was less evident in older individuals. Some other loss aversion theories, however, suggested that loss aversion decreased with age, since ones' ability to regulate their emotions improved with the coming of age.

#### 3.3 Exchange and public relationships

Previous research had shown that transactional and communal relationships impacted customer behaviors [18]. In exchange relationships, the main purpose for interacting with others was to obtain a good or service from them. People only cared about what they receive from giving, and thus only made equal exchanges - the relationship is a quid pro quo. The exchange was also done in a measurable manner, using money for example, allowed both buyers and sellers to bargain for an acceptable price that came between the WTA and WTP valuation. This behavior norm is common between strangers or business partners, where no other bonds are tied between them.

By contrast, the motivation between public relations was not only to receive a satisfactory bargain, but also to interact with others because they truly care about the oppositions' preferences. Individuals preferred to gain benefits that are different from those that they give, since receiving different benefits showed that others were truly concerned with their unique desires. Relationships such as those present in friends and families falls into this content. In social context, consumers and brands also reflected this kind of interpersonal relationship. Loyal customers would head back to the same brand they usually purchase from, whilst first-time purchasers would reflect the exchange relationship where interactions are kept at a minimal, and only done when necessary.

The significance of this relationship norm acted as a situational variable that regulated people's loss aversion. Because exchange relationships were a guide that only measured what was given up by what was accepted, there was no real value-added due to emotional attachments, resulting in a weaker sensation of loss aversion. Previous research supported this premise, showing that trading thinking is associated with weaker endowment effect (Mande 2002).

Compared to exchange relationships, which was only concerned with the net balance of input and result, public relations lead to a different feeling of loss. When public relations norms stood out, consumers viewed their

exchange partners as close friends or family. Previous research hinted that trader in close relationships gave positive feedback to their partners commitments [19]. In context with the endowment effect, individuals tended to ask for a higher return in order to give up their current choice, and thus displayed greater reluctance when asked to abandon it - indicating a somewhat stronger degree of loss aversion.

Thus, due to the difference in cognitive perspective and emotional contributions, the effects of losing were more evident in public relations than in exchange relationships. When a relationship's norms were prominent, it was just like any other environmental factors. The relationship between the customer and the product guided peoples' subsequent behaviors, including their decision on the pricing of a product with or without value added.

### 3.4 Evaluation frequency

Myopic loss aversion (MLA) relates to evaluation frequency and its effect on loss aversion. In mental accounting, individuals can either frame decision problems narrowly or broadly [20]. Broad framing refers to individuals treating decisions as a collection of uncorrelated events. In contrast, narrow framing, or myopia, occurs when individuals viewed each decision as separate events. When framed myopically, investors become short-sighted, and payoffs are reduced to a single performance within the overall sequence.

Benartzi and Thaller proposed that the combination of loss aversion and decision framing influenced risk preferences [21]. Since riskier assets posed a greater risk of losing over a short period of time compared to safer assets. Investors became more exposed to loss aversion when considering riskier assets over brief time horizons. If investors frame decisions myopically, they become more averse to losses and tend to turn to safer options on the short run. In contrast broad framing results in a greater call for risk, as payoffs over longer time periods reduced the opportunity for one to be exposed to loss aversion.

Evaluation frequency refers to the rate at which individuals look back at their profile and evaluate returns. With higher evaluation frequency, decision makers are faced with outcomes after every trial, increasing their likelihood of being exposed to loss aversion, inducing myopia [22]. Frequent evaluations of risky assets could prompt individuals into choosing safer options such as treasury bonds. In order to reduce myopia, individuals should increase the interval of time between each evaluation to enhance the attractiveness of riskier assets. By avoiding witnessing each and every small loss, investors could focus on the bigger picture. This allows them to shift towards riskier assets, as riskier alternatives do indeed offer higher potential returns compared to safer choices.

## 4. HOW CAN PEOPLE UTILIZE LOSS AVERSION

### 4.1. Free trials

Loss aversion is frequently used in marketing strategies to make the consumers loyal to make more profits. With the development of browsing technologies, a lot of internet multinational cooperation's (MNCs) has developed a marketing strategy - free trials in order to attract more consumers.

Utilizing free trials free and allowing customers to try out the goods and services establishes a sense of ownership which leads to a sense of potential loss when the trial period ends. This strategy is adopted by large firms, including Spotify and Netflix. Literally, this means that consumers can sign in to their account, and they are then offered a premium access to all the features on that website with zero cost (there will be more viewers attracted due to this). Usually, this will last for a month. All the internet companies likewise, after trying out the website, consumers would normally get obsessed with the features and would feel like having access to this website is part of their right or even part of their life; they have fully emerged into the experience, and a long-term brand commitment and ownership have been built, so when then trial finally ends, they will feel a sense of loss. Thus, according to the phenomenon 'loss aversion', people will feel extremely devastating by this loss and are willing to cover this loss. Then the solution apparently would be to continue with the premium. However, this time the consumer will have to pay the bills from their own pockets.

This is also explained in another perspective by Novemsky and Khaneman with time difference. Generally, buyers have to pay (give up an old possession or money) immediately when acquiring a new product, and the benefit of that product will only be experienced at some future point [23]. This means that whichever vendor offers a payment delay will dominate the market, because even if some customers are unwilling to pay full price for a product, they may be eager to test out free trials in order to avoid losing it. If the purchaser does not have tangible possession of the goods, a "psychological endowment" may serve to generate a sense of ownership [24]. According to studies of online auctions, someone who has been in the lead for a long time in the auction can be encouraged to raise his offer above his initial price limit in order to avoid losing the item to someone else [25], which is the same principle as free trials. Loss aversion boosts the effectiveness of short-term promotional offers, according to Paraschiv & L'Haridon, since a loss-averse consumer places a premium value on a product after trying it and is thus more likely to buy it again [24].

## 4.2. Groceries

Being the most profitable internet company globally, Amazon has its own strategy. They announced Amazon Go (Maglione, 2017), a grocery store with no lines or checkout counters that they label "Just walk out technology." To enter the store and begin shopping, all you need is the Amazon Go app. Sensors, algorithms, and artificial intelligence monitor each customer as they walk through the store, adding products to a virtual shopping cart synced to their Amazon account, and then walking out the door. "Just walk out" because there are no cashiers, no dollars or credit cards. Aside from the numerous advantages that Amazon Go offers, it is also a wonderful example of how to manipulate people's loss aversion psychology.

People dislike expenditures, so if you're standing in a line watching the cashier ring up your purchase, you're more likely to think twice and, once you see your total, ask them to put items back on the shelf for you. Loss aversion is what triggers us to feel discomfort whilst we pay the bill. The process of checking out has been streamlined thanks to new technology, which not only saves time but also caters to human psychology, resulting in increased earnings.

As in case of groceries and individual price elasticity, the use of loss aversion in marketing is practical. Dr. Daniel Putler's behavioural economics study from 1992 looked at egg prices and demand changes. Putler's team found that when the price of eggs climbed by 10% between July 1981 and July 1983, demand for eggs fell by 7.8% as a result of the price increase. When the price of eggs was trimmed by 10%, demand rose by only 3.3 percent. This study exemplifies an individual's price sensitivity in terms of their loss aversion, with people being more influenced by prospective losses than potential savings. This adds to the evidence that the previous two cases were successful.

## 4.3. Odd-even pricing

The price for a product is a key determinant for whether the product is popular or not, and many companies have figured out their own ways to attract consumers. The very last digit of a product or service price is used in an odd-even pricing strategy. An odd pricing approach is used for prices that end in an odd number, such as \$1.99, whereas an even pricing strategy is used for prices that end in an even number, like \$200.00. Initially, the goal was to compel the cashier to unlock the register in order to give change. This reflects human psychology - loss aversion. Consumers would perceive a product priced at \$99 (or even \$99.99) much cheaper than the one at \$100. This can be explained that cutting the price down for one cent or dollar prevents consumers' loss of one more cent or dollar, which is a desirable outcome for consumers. It has been proposed that pricing things just

under a whole number, such as \$29.95 rather than \$30.00, this strategy was then further developed to encourage consumers to buy because makes the price appear to be a bargain — that people will focus just on the first number and consider the price to be nearer to because rounding upwards involves additional cognitive processing instead of directly taking the first digit [26], in this case, \$20 than to \$30. In a broader sense, odd pricing implies a bargain, whereas even pricing encourages purchasing. Referencing to a 1997 study by Holdershaw et al., more than 90% of advertised prices ended in an odd number. Although the market has evolved and buyers have become more sophisticated, most prices are still likely to end in an odd number.

## 4.4. Time difference

It is also found that loss aversion in relation to time is more significant than the that of monetary values [27], this leads to the formation of enhanced delivery companies and systems. These firms can charge higher prices to consumers and there will still be a massive amount of demand simply because the feeling of loss of time strikes deeper than the loss of money, so paying a higher price for a quicker delivery or service is considered as more desirable and that the total utility for consumers will increase.

Relinquishing an old possession is necessary while acquiring a new item. As a result, a risk-averse consumer may overestimate the benefits of the product he already possesses and be hesitant to replace it. When the consumer's sense of loss is related to the non-use of his old goods, this reluctance grows. The consumer suffers a double loss: he loses the benefit of the old product, which is no longer used, while also having to pay money on a new product. [28].

Strategies are then developed to help consumers get rid of this sense of loss. One is that companies would be willing to take consumers' disposals before selling their new products. Taking used durable commodities in exchange for a new purchase makes use of the principle of loss aversion among consumers. This can be seen as a renewal of their old product and will significantly reduce consumers' feeling of loss [24]. This trade-in offer was first proposed and discussed by Purohit in 1995, Purohit stated that consumers are willing to take advantage of trade-in exchange even if the price of the replacement product increases, and this strategy is now extensively used in car and electronics industries, and it is believed that more and more durable goods companies will begin conducting it because of its profitability [29].

## 5. WHAT CONSUMERS CAN DO TO AVOID NEGATIVE EFFECT OF LOSS AVERSION.

Loss aversion are sometimes unavoidable when making decisions, but since this can steer consumers to

making bad decisions and get into the trap by marketers, so it is essential that we understand this concept and the ways to reduce its influence on consumers' decision making.

### ***5.1. Effects of age on loss aversion***

Studies conducted by Johnson, Gaechter and Herrmann and Haigh and List have demonstrated real data in car buyers and professional traders respectively, and it is revealed that a positive relationship exists between age and loss aversion (older people are more loss averse). As ageing takes place, grey matter volume in posterior parietal cortex (a specific brain region) declines and there is a negative correlation between grey matter volume and loss averse characteristics [30]. Although the causal relationship was not tested but engaging in more physical activities like exercising could potentially reduce the rate of the decline of grey matter volume and it might make people less loss averse. However, further studies must be conducted to test this out.

One factor that is certain to influence loss aversion is individuals' cognitive ability. This can be explained that the cognitive components in the brain overtake the affective components so that people with better cognitive ability are better at making rational choices and controlling their emotions. Paraschiv and L'Haridon have gathered evidence for this: first, the level of education has a negative correlation with loss aversion [31], and second, the unemployed and home workers are more lost adverse than managers, business owners, and farmers. [31]. This evidence imply that education is crucial for people to dodge bad decisions probably because they are more informed with the potential harm when making a decision.

### ***5.2. Level of experience***

The level of experience plays an important role as more experienced people suffer less from loss aversion in the market [31]; [32]; [33]; [34]; [35]. This can be explained that professional minds and knowledge are more organized which are less likely to be affected by personal emotions and outside distractions. Thus, consumers must be involved in more transactions to build up their experience and reduce loss aversion. However, it is doubted that for durable goods such as real estates and cars, most consumers may not have the chance to be involved in a great deal of trades, so the bias remains (Paraschiv & L'Haridon, 2008). Nevertheless, since these transactions are rare in one's life, some even once in a lifetime, so it can be helpful because in some sense it prevents loss, and since most people will be guided by a professional intermediary, then loss aversion becomes a positive trait. On the other hand, for transactions that happen frequently, consumers will learn from each individual transaction, so being misguided by loss aversion for the first few times is surmountable. Overall,

getting involved in more transactions and prepare the cognition for each transaction is essential for a consumer to avoid loss aversion in both momentous decisions and everyday purchases.

## **6. CONCLUSION**

Overall, our paper summarized experiments related to loss aversion, the factors that influenced it, as well as the utility of loss aversion in real life situations.

Kahneman and Tversky's psychological experiment on individual's preference for loss and risk was proven through the "avoidance phenomenon". Individuals preferred a certain choice of gaining 1500 in cash instead of a 50% chance of earning 2000. The other 50% chance of gaining nothing drove people to side with the certain option instead of a possible greater gain. This is because of loss aversion, where losses tend to loom larger than gain.

The mug experiment established by Knetsch and Thaler in 1990 also proved the effects of loss aversion. Sellers, compared to buyers, set a higher value to the mugs that they own, since it would be losing from the perspective of a seller, and gaining from the perspective of a buyer. The endowment effect also contributed to this phenomenon, showing that loss aversion rarely existed on its own.

This paper also explored factors influencing loss aversion in the market. Education and relevant experiences reduced the effects of loss aversion, whilst increasing age intensified the effects of loss aversion. Public relationships compared to exchange relationships also proved to exacerbate loss aversion, since there would be a greater deal of emotions involved when exchanging with a friend or family. When a relationship's norms are highlighted, people tended to have relatively lower values for choices that threaten their existing relationships, therefore resulting in a greater extent of loss aversion. The rate of evaluation frequency could also affect the extent of loss aversion in the market. Higher evaluation frequency meant receiving feedback more often, thus increasing the likelihood of being exposed to loss aversion.

Real life applications such as free trials, online shopping, odd-even pricing, and the loss of time all reflected elements of loss aversion. Whether it was inducing online shopping methods such as Amazon, or utilizing odd-even pricing, it both reduced peoples' awareness of the actual cost of a good or service, thus decreasing the level of loss aversion.

With sufficient exploration of experiments in loss aversion, factors influencing the extent of it, and how merchants take advantage of this heuristic, we leave for future papers a chance to explore the application of loss aversion in areas other than marketing, such as in insurance, or the housing market. Individuals also need to

acknowledge the inevitability of loss aversion and identify mitigating factors that could potentially reduce the severity of it.

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