

Behavioral Economics and Consumer Choice on Amazon's Digital Platform

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Abstract

This paper examines how behavioral economics explains consumer decision-making within Amazon's digital marketplace. The research asks to what extent Amazon's platform design systematically leverages cognitive biases to influence purchasing behavior and strengthen market dominance. Reviewing behavioral economics literature and empirical studies on digital choice architecture, the paper analyzes three central biases: status quo bias, anchoring, and loss aversion, and evaluates their implementation in Amazon's interface design. Through case-based analysis of subscription renewals, pricing displays, free trials, default shipping options, and algorithmic product rankings, the study demonstrates how cognitive tendencies are embedded into platform architecture. The findings suggest that Amazon's growth reflects not only logistical efficiency and innovation but also the strategic operationalization of predictable behavioral patterns. While these mechanisms often increase convenience and reduce cognitive effort, they also raise concerns regarding transparency and consumer autonomy. Understanding how

behavioral design functions at scale is essential for evaluating fairness and regulatory implications in modern digital commerce.

Keywords: behavioral economics, digital choice architecture, e-commerce platform design, Amazon, cognitive bias

Introduction

The global e-commerce market has experienced rapid and sustained expansion over the past two decades, becoming one of the most influential forces in modern retail. It has transformed not only how people shop, but how they make purchasing decisions. In 2024, retail e-commerce sales worldwide exceeded \$6.3 trillion, with forecasts indicating continued growth (Feger, 2024). In the United States alone, e-commerce represented 16.3% of total retail sales in Q2 2025, and 2.71 billion people worldwide made online purchases in 2024 (U.S. Census Bureau, 2025; Oberlo, 2024). Global retail e-commerce sales reached \$4.4 trillion in 2023, a steep rise from \$1.3 trillion in 2014. By 2028, this number is projected to grow to \$6.8 trillion and account for 24% of all global retail sales (Miglani, 2024). With such a vast volume of transactions, even slight shifts in consumer behavior, nudged by psychological biases, can produce economic impacts on the scale of billions. Digital commerce has become a central arena for global consumption, and it is increasingly shaped by the behavioral architecture of platform design.

The rise of digital commerce, accelerated by widespread internet access and mobile connectivity, has outpaced traditional brick-and-mortar retail, fundamentally reshaping the

competitive landscape. Online environments operate through highly engineered interfaces, structures that are far from neutral. Interface elements such as layout, product placement, default selections, and the timing of visual cues all contribute to what is known as digital choice architecture (Johnson et al., 2012). These platforms function as digital choice environments, where consumers are not simply selecting between options, but are being subtly guided through the use of digital nudges, intentional design features that steer behavior while preserving freedom of choice (Weinmann et al., 2016). The way menus are structured, how prices are framed, and which buttons are highlighted or pre-selected all serve as cues that influence decision-making in the moment (Johnson et al., 2012; Sobolev, 2022).

While the convenience and speed of online shopping offer many advantages, they also reduce the richness of information available to consumers. In many cases, product quality, origin, or long-term value becomes secondary to urgency, convenience, or visual prominence. This reduction in informational depth increases the reliance on cognitive shortcuts that, while efficient, are prone to systematic biases. Recent research challenges the assumption that consumers make fully informed, rational cost-benefit decisions, showing that cognitive deviations are universal but often amplified in digital marketplaces. Online buying behavior is frequently shaped by cognitive biases, mental shortcuts that, while efficient, often lead to systematically irrational outcomes (Schneider et al., 2018; Weinmann et al., 2016). For example, consumer attention is easily redirected by scarcity cues or by initial price anchors, both of which distort perceptions of value and urgency (Wrabel et al., 2022; Wu & Cheng, 2011). In such

environments, cognitive biases generate predictable behavioral patterns, which can be engineered into the architecture of digital platforms.

This paper focuses specifically on Amazon, one of the most dominant actors in global e-commerce, commanding nearly 40% of the U.S. online retail market (eMarketer, 2024). In 2024, Amazon reported total revenue of \$638 billion, reflecting an 11% increase from \$575 billion in the previous year. Of this, \$247 billion came from online stores and \$156.1 billion from third-party seller services, supported by \$56.2 billion from advertising revenue and \$44.4 billion from subscription services (Amazon FY24 Income Statement). These figures show not only the scale of Amazon's operations but also its continued growth in a highly competitive digital marketplace. Amazon's platform is vast and finely tuned to guide consumer behavior at every stage of the purchasing process. Its success depends as much on operational efficiency, such as rapid delivery logistics and competitive pricing, as on its capacity to anticipate, influence, and retain consumer engagement through behavioral design.

In recent years, Amazon has become a leading example of how digital platforms evolve from consumer-centered innovation to exploitative market dominance. Cory Doctorow (2025) describes this process as "enshittification", a structural decline in which platforms first serve users, then business partners, before extracting value for themselves. Amazon achieved this by initially locking in consumers and sellers through policies that appeared highly favorable: low prices, fast delivery, and easy returns for users; broad market access and subsidized logistics for merchants. Once both groups became dependent on the platform, Amazon shifted toward

maximizing control and profit through sponsored listings, high seller fees, and data-driven imitation of third-party products (Doctorow, 2025). Yet users continue to rely on the platform due to the convenience, exclusive content, and the high switching costs created by its tightly integrated ecosystem. Examining Amazon is therefore essential not merely for its scale, but because it exemplifies how behavioral and structural power combine in digital commerce to extract value from all participants.

The central argument of this paper is that Amazon's rise cannot be explained by innovation or efficiency alone; it is largely the result of systematically applying psychological principles that exploit cognitive biases to shape consumer behavior at scale. By embedding these mechanisms into its digital architecture, Amazon transformed them into powerful engines of retention, conversion, and loyalty, turning behavioral tendencies such as inertia and loss aversion into sources of profit. While other platforms employ similar strategies, Amazon's success demonstrates how effectively these biases can be operationalized to dominate digital commerce. Understanding these behavioral mechanisms therefore offers insight into how modern platforms convert predictable human psychology into sustained economic advantage.

This contributes to a growing body of work on behavioral economics in digital contexts, offering a focused analysis of three specific cognitive biases: status quo bias, anchoring effect, and loss aversion within the e-commerce domain. While these biases have been studied in laboratory settings and controlled experiments, their real-world application in specific commercial digital interfaces has received comparatively less attention. Understanding how

these biases are implemented in user interface design, pricing strategies, and promotional structures is essential to evaluating the efficacy of behaviorally informed design in e-commerce.

Status quo bias refers to the tendency for individuals to favor existing conditions over change, even when alternatives may offer greater benefits. In the context of e-commerce, this bias fosters consumer inertia by increasing the likelihood that users will stick with default settings, repeat past behaviors, or forgo reconsideration of available options.

The anchoring effect is a bias in which individuals place disproportionate weight on the initial piece of information they encounter, often a reference price, when making subsequent judgments or decisions. This can significantly influence how consumers evaluate value, interpret discounts, and determine whether an offer appears advantageous.

Loss aversion is the principle that losses carry more psychological weight than equivalent gains. In digital commerce, this bias is often activated through the framing of offers, prices, or benefits in terms of what consumers might forfeit by failing to act. Such framing generates a heightened sense of urgency and encourages commitment and repeat purchasing behavior. As a result, purchasing behavior is driven more by the desire to avoid perceived losses than by the potential for gains.

Together, these biases shape not only what consumers choose, but how and when they choose, giving Amazon a powerful behavioral edge over its competitors. Understanding these mechanisms is crucial for evaluating the fairness and transparency of e-commerce platforms,

particularly as companies increasingly use behavioral data to influence spending decisions at scale.

The rest of the paper is organized as follows. The second section introduces the concept and psychological foundations of status quo bias and analyzes how this bias manifests in e-commerce, focusing on the ways Amazon leverages it through design features that encourage habitual use and discourage switching. The third section examines the anchoring effect, first defining the bias and its cognitive mechanism, and then exploring its application in digital commerce, particularly how Amazon employs anchoring through pricing displays, discount framing, and reference pricing strategies. The fourth section investigates loss aversion, outlining its theoretical basis and evaluating how it is activated in online retail environments through scarcity cues, time-limited offers, exclusive deals, and small subscription discounts. The fifth section concludes the paper.

Status Quo Bias

What Is Status Quo?

The status quo bias refers to the cognitive tendency of individuals to prefer maintaining their current state of affairs or existing decisions, even when superior alternatives are available. First conceptualized by Samuelson and Zeckhauser (1988), the bias was empirically demonstrated across diverse decision-making contexts, showing that individuals often irrationally remain with the default or preexisting option rather than switch to a new one they would otherwise prefer. This tendency is commonly attributed to loss aversion (Kahneman &

Tversky, 1984; Quattrone & Tversky, 1988; Samuelson & Zeckhauser, 1988), the principle that the psychological pain of giving up something exceeds the pleasure of gaining something equivalent.

In their 1979 study introducing Prospect Theory, Kahneman and Tversky presented participants with choices between certain and probabilistic outcomes. Participants were offered a choice between a certain gain of \$500 or a 50% chance to win \$1,000 and a 50% chance of gaining nothing. Although the expected value of both options was identical, a majority chose the certain \$500. Conversely, when framed as losses, either a certain loss of \$500 or a 50% chance of losing \$1,000 and a 50% chance of losing nothing, most participants chose the gamble. This asymmetry revealed that potential losses weigh about twice as heavily as equivalent gains, demonstrating individuals' aversion to losses.

Another explanation relates to risk and uncertainty aversion. Ortoleva (2010) shows that the presence of a status quo option increases individuals' reluctance to face uncertain outcomes, causing the familiar option to appear safer and more appealing than potentially superior but uncertain gains from change. However, scholars also emphasize that aversion to uncertainty is neither inherently negative nor irrational. Camerer and Weber (1992) observe that when information is incomplete or outcome probabilities are ambiguous, individuals may rationally avoid uncertain choices as a way of protecting themselves from potentially large losses. In such cases, uncertainty aversion can function as a cautious decision strategy, even though in other contexts it may lead to excessive reliance on the status quo.

Defaults were shown to reinforce individuals' tendency to stick with the status quo by creating a sense of ownership, which strengthens attachment to preexisting options. This dynamic was first articulated by Thaler (1980), who described it as the endowment effect, and demonstrated that once people perceive themselves as possessing an option, they assign it greater value than identical alternatives they do not possess. Kahneman, Knetsch, and Thaler (1991) illustrated this effect in an experiment where participants who were randomly given a coffee mug demanded an average of \$7.12 to give it up, whereas those without the mug were willing to pay only \$2.87 to obtain one. The sharp discrepancy between selling and buying prices, despite the mugs being identical, highlighted the heightened value placed on an endowed item simply due to ownership. Once something became the current option, giving it up was perceived as a loss. In both loss and uncertainty aversion, as well as the endowment effect, individuals resist altering the status quo because giving up what they already have feels like a potential loss.

When the existing state is adopted as the reference point, individuals tend to evaluate alternatives in terms of both potential gains and potential losses relative to that baseline. Because losses are psychologically weighted more heavily than equivalent gains, the perceived costs of abandoning the status quo often overshadow the prospective benefits of change (Samuelson & Zeckhauser, 1988). This asymmetry produces a systematic preference for the default, establishing loss aversion as a key psychological mechanism underlying the persistence of status quo bias across domains.

The implications of status quo bias can be seen in many areas of life, such as meal selections or health plan selection. For instance, in a school lunch experiment, researchers tested the impact of setting healthier foods as the default option (Just, Mancino, & Wansink, 2007). When fruit and vegetables were automatically included as side items on students' trays, more than 85% of students retained them, whereas when the same items had to be actively selected, participation dropped sharply, with fewer than 40% choosing them. This difference illustrates how the mere presence of a default can significantly shift behavior, encouraging healthier eating choices without restricting students' freedom to opt out. The findings showed that it is the structure of choice, rather than underlying preferences, that often determines outcomes.

A similar mechanism applies to health-related decisions, where the framing of the default determines outcomes on a much larger scale. Johnson and Goldstein (2003), in their research on organ donation, compared consent rates across European countries and found dramatic differences based solely on the default system in place. In Germany and Denmark, which have opt-in systems where individuals must actively consent to become donors, only 12% and 4% of people, respectively, consented. By contrast, in Austria and Belgium, where the default is to be a donor unless one opts out, rates exceeded 90%. To test whether this difference was purely cultural, they conducted a survey experiment in which participants faced opt-in, opt-out, or neutral consent forms. When participants were asked under an opt-in default, only about 42% agreed to donate, whereas under an opt-out default willingness rose to 82%, with the neutral condition falling in between. This gap demonstrates how defaults, as the embodiment of the status quo, shape individual decisions, even in matters as consequential as organ donation. These

differences cannot simply be explained by variation in individual preferences. Surveys indicate that a large majority of people report being willing to donate their organs after death. For example, 85% of Americans state their approval of organ donation, yet fewer than 30% have formally registered (Johnson & Goldstein, 2003). A similar pattern is observed in Europe. In opt-in countries, effective consent rates remain comparatively low, with Germany at 12%, the United Kingdom at 17%, and Denmark at 4.25%, despite higher reported willingness. In contrast, opt-out countries such as Austria (99.98%), Belgium (98%), and Poland (99.5%) display effective consent rates that are close to universal. The difference between stated attitudes and actual registration suggests that many people who intend to be donors fail to follow through when the default is non-donation. Defaults thus substantially influence outcomes by shaping whether expressed preferences are translated into formal decisions.

This tendency to stick with the default is not necessarily negative. In the school lunch experiment, setting healthier foods as the default guided students toward better choices without restricting their freedom. Similarly, in organ donation, the opt-out default increases registration among those willing to donate while those who do not wish to participate retain the freedom to opt out. When the default is not being a donor, registration more accurately reflects individuals' true preferences, as only those who actively choose to donate are included. In both cases, defaults can be structured to channel natural tendencies toward the status quo to achieve beneficial outcomes.

In marketing and business, companies often design strategies that leverage the status quo, turning it into an effective marketing tool to encourage customer retention and resistance to switching, ultimately boosting sales and profitability. While it can protect individuals from potential risks associated with change, such as making impulsive or poorly informed decisions, experiencing decision fatigue, or facing uncertainty in unfamiliar options, status quo bias can also lead them to miss out on better alternatives or fail to adapt to improvements. Thus, understanding its mechanisms and effects is crucial both for analyzing consumer behavior and for designing effective interventions or strategies.

Status Quo In E-Commerce

Defaults are one of the most effective ways to influence choices in online environments (Jachimowicz et al., 2019; Smith et al., 2013). In the context of e-commerce, defaults, such as preselected options or automatic renewals, simplify the purchasing process and reduce cognitive effort, but they also increase the likelihood that consumers remain with the pre-assigned choice rather than actively opting for alternatives.

An example of how status quo bias operates in e-commerce comes from a study that reviewed 558 retail websites and applications in the UK and conducted a follow-up online choice experiment with 5,889 participants (Department for Business and Trade, 2024). The study found that nearly half (49%) of websites and apps employed some form of default. The most common were preselected options (69%) and “mimicking defaults” (63%), where platforms highlight a particular choice through design features such as prominence or framing. These defaults were

typically related to customer services such as shipping or delivery options, as well as purchase agreements and add-ons. The follow-up online experiment simulated a shopping journey and confirmed the behavioral effects of these practices: consumers were 60% more likely to choose a more expensive protection plan and 70% more likely to select the more expensive shipping option when these were set as preselected defaults. Participants also completed purchases 12% faster under default conditions, suggesting that defaults reduce decision effort but also discourage more deliberate evaluation. A further insight was that 16% of participants reported having accidentally purchased at least one item in the past 12 months due to defaults, with 41% of those later returning the item. An important finding of the experiment was the discrepancy between actual consumer behavior and self-reported perceptions. While most participants did not express negative feelings about the choices they made when exposed to a default, they were significantly less likely to indicate that they would make the same choice again when asked retrospectively. This suggests that the influence of defaults often operates outside of conscious awareness. Supporting this interpretation, the study reported that participants who explicitly recognized the presence of a default were 31% less likely to choose the more expensive option, indicating that the effectiveness of defaults is closely linked to their subtle and nonconscious operation. The results of the experiment provided evidence of the default effect's power to increase average order value and direct consumer choices.

The influence of defaults in online platforms can also be seen in subscription-based services, where auto-renewal functions as a powerful mechanism of customer retention. An online experiment on subscription-based services demonstrates this dynamic (Ji, 2023). The

study surveyed 582 participants in August 2022 to compare intentions to cancel auto-renewals with actual follow-through. Results showed that while a large majority (73.9%) of participants reported having thought about canceling an auto-renewal subscription at some point, only 77.7% of these individuals actually carried out the cancellation, leaving 22.3% who stayed subscribed despite their original intention. Among those who failed to cancel, the most common reasons highlight status quo bias in action. A majority (60.8%) admitted they did not cancel simply “because of laziness,” while 37.2% reported forgetting to cancel altogether. A smaller share (10.8%) cited technical difficulties in navigating the cancellation process. Importantly, usage frequency of the apps was relatively moderate, with almost 80% of participants using the apps only “2–3 times per week” or “sometimes,” suggesting that the reluctance to cancel cannot be fully explained by high utility or satisfaction. Rather, it reflects the difficulty and inertia many individuals experience in overcoming default settings, even when they are misaligned with their own interests. These figures highlight how the design of defaults, automatic continuation unless action is taken, takes advantage of consumers’ tendency to maintain the status quo. As the study concludes, the auto-renewal strategy can be considered a successful selling practice precisely because it exploits consumers’ tendency to remain with the default option once it is in place. For firms, auto-renewal strategies secure continued revenue and customer retention, while for consumers they often result in suboptimal spending, as many remain locked into payments for services they no longer actively use, an outcome driven more by behavioral inertia than rational cost-benefit analysis.

Taken together, these studies demonstrate how defaults operate as a central mechanism of status quo bias in e-commerce. By guiding consumer choices toward preselected options, defaults support firms' objectives of customer retention and revenue growth. Building on this broader understanding, it is useful to examine how specific platforms, such as Amazon, integrate defaults into their design to influence purchasing decisions and reinforce consumer loyalty. Amazon's platform provides a particularly clear illustration of how defaults operate in practice. Its design incorporates defaults at multiple stages of the purchasing process, ranging from checkout structure to subscription models and algorithmic presentation of products, each of which reduces consumer effort while increasing the likelihood of remaining with the pre-set choice.

Subscribe & Save: Amazon employs a subtle and widely accepted application of defaults through its "Subscribe & Save" program. The program, launched in 2007, targets everyday products that are bought repeatedly, such as groceries, household goods, and pet items. For the customer, the process is streamlined: they simply add eligible products to a subscription list, set a delivery schedule, and receive a discount. While consumers benefit from convenience and cost savings, the design also strengthens customer retention by fostering habitual purchasing patterns and making Amazon the default supplier. The act of subscribing turns a one-time purchase into a continuous, default state of recurring deliveries. This initial choice sets a behavior that requires future action, modification, or cancellation to change. The program effectively leverages status quo bias, as the convenience of not having to reorder and the assurance of a discount act as powerful incentives to maintain the default setting. Empirical analysis supports its effectiveness:

a study found a strong negative correlation between a product's eligibility for "Subscribe & Save" and its sales rank, with eligible grocery products in the United States showing a 19% improvement in sales performance and a similar 18% improvement in Canada (Etumnu, 2025). These benefits extend to sellers as well, who gain a more predictable revenue stream and higher sales volume, particularly third-party merchants.

Subscribe & Save functions as a recurring default, where continued delivery is automatic unless the customer cancels. Importantly, cancellation in this program is relatively straightforward, and the benefits of discounts and convenience are transparent. As such, this mechanism aligns with what behavioral economists call a benign nudge, a design that influences choices by shaping the decision environment without restricting freedom (Thaler & Sunstein, 2008).

Prime Membership: Amazon's Prime membership enrollment, on the other hand, illustrates a stronger and more contested application of defaults. Enrollment defaults into automatic renewal, and evidence presented by the U.S. Federal Trade Commission (FTC) indicates that the cancellation process was intentionally designed to be difficult, a practice regulators classify as a dark pattern. A dark pattern refers to an interface design that complicates or obscures certain actions, such as cancellation, in order to steer users toward a particular outcome. In this case, the strength of the default arises not only from consumer inertia but also from an asymmetry in effort: enrollment is simple and streamlined, while cancellation is purposefully complex and time-consuming. According to the FTC, during checkout consumers

were frequently presented with opportunities to join Prime at \$14.99 per month, while the option to complete a purchase without subscribing was less prominent. In some cases, the button to finalize a purchase did not make clear that selecting it would also result in enrollment in a recurring subscription. These features suggest that defaults in Prime enrollment are reinforced through interface design choices that blur the distinction between ordinary purchasing and subscription sign-up. Compared to Subscribe & Save, which nudges behavior in a relatively transparent manner, Prime's enrollment and cancellation flow incorporates multiple layers of behavioral and design mechanisms. Its design has been criticized for exploiting status quo bias to lock users into subscriptions, raising concerns about manipulation for short-term financial gain.

Free Trial: Amazon also makes extensive use of free trials as a mechanism for introducing customers to Prime. Consumers are offered a 30-day free trial, which allows them to experience the benefits of membership at no initial cost. The free trial is designed to lower the barrier to entry by removing the upfront cost and risk of commitment. However, to initiate the trial, a user must provide a payment method. This is the critical moment where a new default is established: once the trial period ends, the membership automatically converts to a paid subscription unless the user takes an active step to cancel. The trial allows users to experience the full benefits of Prime, such as faster shipping and access to streaming content, without payment. This initial experience creates a new "status quo" that is easy to maintain and requires zero cognitive effort. Beyond the role of defaults, the free trial also leverages the endowment effect. After 30 days of faster deliveries and exclusive content, consumers may perceive these benefits as something they now "own" and would incur a loss if they gave them up. In this way,

the user's inertia is transformed from a passive state into an active, ongoing subscription. As a result, many users who sign up for a free trial continue their subscriptions not necessarily because they have consciously re-evaluated the service's value, but because the psychological friction of canceling, coupled with a simple lapse of memory, is too high to overcome. From a business perspective, free trials serve as both a promotional tool and a default-based mechanism for customer retention, extending the role of defaults in subscription models.

1-Click: Amazon's 1-Click purchasing mechanism, which enables users to place an order instantly without going through the full shopping basket process, has been shown to embed defaults to standard (paid) delivery options for non-Prime customers, even when orders qualify for free delivery based on Amazon's own thresholds (typically £20 for most items or £10 for books). In some cases, this results in customers being charged up to £4.75 for delivery within one to two days, despite their order being eligible for free shipping, which usually takes three to five days. The design of the 1-Click system limits consumers' ability to pre-set free delivery as their default; instead, the only way to avoid the additional charge is to amend the order immediately after purchase, a step that requires conscious effort and awareness.

For Prime members, the same system often defaults to "Express" or next-day delivery, which, while faster, can also incur additional costs unless the user manually intervenes to select free alternatives. These defaults highlight how expedited checkout systems can leverage status quo bias: by reducing friction and making the purchasing process faster, they also discourage reconsideration of the delivery option. As a result, many customers remain with the pre-selected,

and sometimes more expensive, shipping choice, illustrating how defaults can subtly shape consumer spending behavior even in seemingly small transaction details.

Add-ons: Another practice of Amazon is the inclusion of pre-selected add-ons at checkout, such as product protection plans or gift wrapping. These options are presented as defaults, relying on the customer's tendency to accept what is already selected rather than actively opting out. Amazon partners with companies like Asurion and Consumer Priority Service to offer extended warranties directly on product pages, a strategy that subtly raises the average order value without requiring aggressive upselling. Similarly, gift wrapping services have been shown to increase average order value by 3–5%, as customers perceive added value and convenience when such features are offered automatically (Titan Network, 2025). This allows retailers to boost revenues while presenting the add-ons as a convenience rather than a sales push.

Presentation of Products: Another way in which Amazon employs defaults is through the presentation of search results. When a customer enters a query, by default, the platform displays items sorted by its "Featured" algorithm. This default ranking favors products that meet Amazon's internal priorities, including Prime eligibility, sales performance, and, in many cases, sponsored placement. Although alternative sorting options, such as "Price: Low to high," "Newest arrivals," or "Best Sellers," are available, most shoppers rarely take the extra step to change from the preset view. As a result, the products highlighted in the "Featured" ranking receive disproportionately higher visibility and sales. This structure reduces decision-making

effort for users while simultaneously guiding them toward items that align with Amazon's commercial objectives.

With millions of items available across categories, the volume of alternatives has the potential to overwhelm consumers. An increase in the number and attractiveness of alternatives has been found to intensify decision conflict, often resulting in delay choosing, reliance on the default, or even avoiding making a choice altogether (Dhar, 1997; Shafir, Simonson, & Tversky, 1993; Hauser & Wernerfelt, 1990). In this context, Amazon's default ordering of results functions as a cognitive shortcut, sparing shoppers the burden of systematically evaluating every possibility. When confronted with such extensive choice, individuals naturally fall back on the preset ranking, thereby reinforcing Amazon's influence over which products ultimately receive the most attention and sales.

Overall, Amazon's use of default settings reflects a broader application of behavioral economics in digital commerce. By structuring choices so that options like auto-renewal of subscriptions, shipping methods, extended warranties, or gift wrapping are pre-selected, the company reduces friction in the decision-making process while subtly guiding customers toward outcomes that increase order value and engagement. While these mechanisms do not eliminate consumer choice, they take advantage of well-documented tendencies such as inertia and status quo bias, illustrating how default effects can shape purchasing behavior in large-scale online marketplaces.

Anchoring Effect

What is Anchoring?

Anchoring is a cognitive bias in which individuals rely heavily on the first piece of information they encounter when making judgments or decisions, even when that information is arbitrary or irrelevant. Once an anchor is established, subsequent evaluations are adjusted in relation to it, but the adjustment is typically insufficient, meaning that the initial anchor continues to exert a disproportionate influence, and final judgments remain biased toward the starting point.

Tversky and Kahneman's (1974) experiments demonstrate this effect across a variety of contexts. In one study, participants estimated the percentage of African countries in the United Nations. Participants were first exposed to a random number generated by spinning a wheel of fortune, which could produce any value between 0 and 100. This number, though entirely arbitrary, was presented as a reference point or "anchor." Participants were then asked two questions: first, whether the true percentage of African countries in the UN was higher or lower than the number they had just observed, and second, to provide their own estimate of the actual percentage by adjusting upward or downward from the anchor. Different groups of participants received different starting numbers from the wheel. For example, one group had spun a 10, while another group spun a 65. The results showed a clear anchoring effect: the median estimate of the UN membership percentage was 25 for the group anchored at 10 and 45 for the group anchored at 65. Despite the anchors being completely unrelated to the actual value, participants' estimates

were strongly biased toward the initial number. Importantly, incentives for accuracy did not reduce the effect, showing that anchoring is a cognitive bias that operates even when individuals are motivated to be correct. By showing that even random numbers can distort estimates, Tversky and Kahneman (1974) concluded that people start from the initial value and adjust to reach a final estimate, but their adjustment is typically insufficient, leaving the anchor disproportionately influential.

The anchoring effect is further illustrated by Strack and Mussweiler's (1997) study in which participants were divided into two groups and asked questions about Mahatma Gandhi's age at death. The first group was asked whether Gandhi died before or after the age of nine and then asked to estimate his age at death. The second group was asked whether Gandhi died before or after the age of 140, followed by the same estimation task. Although all participants knew, at least implicitly, that Gandhi must have lived longer than nine years and could not have lived beyond the maximum human lifespan, the initial reference point strongly influenced their estimates. The first group, anchored on the extremely low number nine, provided an average estimate of 50 years. In contrast, the second group, anchored on the much higher number 140, provided an average estimate of 67 years. This 17-year difference between the groups demonstrates that initial numerical information, even if clearly implausible or irrelevant, can systematically bias subsequent judgments.

Anchoring can often be triggered by framing effects, which refer to the way information is presented or structured and how this presentation can shape interpretation and evaluation

(Tversky & Kahneman, 1981). While anchoring is a distinct cognitive bias, it is often triggered or amplified when numerical or contextual information is framed in a particular way, guiding individuals toward a specific reference point for judgment. The impact of framing on decision making has been demonstrated by Tversky and Kahneman (1981) in their “Asian disease problem.” Participants were presented with two alternative programs to address an outbreak expected to kill 600 people. In one version of the problem, outcomes were described in terms of lives saved. Program A promised to save 200 people for certain, while Program B offered a one-third probability that all 600 would be saved and a two-thirds probability that no one would be saved. In this case, the majority of participants preferred the certain option, reflecting a risk-averse tendency when outcomes were framed as gains. In a second, mathematically equivalent version, outcomes were described in terms of lives lost. Program C would result in 400 people dying for certain, while Program D offered a one-third probability that nobody would die and a two-thirds probability that all 600 would die. Here, most participants preferred the risky option, demonstrating risk-seeking behavior under a loss frame. Although the scenarios are logically identical, the only difference is the framing of outcomes: lives saved versus lives lost. The framing altered participants’ choices, showing that evaluations are highly sensitive to the way information is presented.

Anchoring fits within this framework because the presentation of information often establishes the reference points that serve as a frame shaping subsequent evaluations, even when the anchor is irrelevant. The way a problem is framed, such as by presenting a high or low initial

number, creates the very anchor that then biases the decision-making process (Wu & Cheng, 2011).

To gain a more comprehensive understanding of the anchoring effect, it is also necessary to classify different types of anchors. The literature broadly distinguishes between experimenter-provided anchoring and self-generated anchoring (Epley & Gilovich, 2001, 2005). Experimenter-provided anchoring occurs when reference values are introduced by an external source and become the primary cues in situations of high uncertainty. For instance, in the Gandhi experiment (Strack & Mussweiler, 1997) described earlier, the numbers nine and 140 served as externally provided anchors, shaping subsequent estimates of his age at death.

A different mechanism of anchoring, known as self-generated anchoring, occurs when individuals draw on their own knowledge or experiences to create a starting point for judgment rather than relying on an externally provided value. Epley and Gilovich (2001, 2005) argue that this process is guided by the same anchoring-and-adjustment model, but instead of being externally imposed, the anchor is internally retrieved. In this case, individuals access a piece of relevant information from memory and use it as their initial reference value, subsequently adjusting from it to reach a more accurate judgment. However, as with externally provided anchors, the adjustment tends to be insufficient, leaving estimates systematically biased toward the self-generated anchor.

Liu (2023) gives an example of self-generated anchoring with historical dates. When asked, “In what year did George Washington become the first president of the United States?”,

many respondents anchor on 1776, the year of American independence, because it is the most salient and accessible historical date in American history. From there, they attempt to adjust upward, recognizing that Washington assumed the presidency after independence. Yet because adjustment is typically conservative, the final estimates remain clustered too closely around 1776 rather than the correct date of 1789. In other words, although participants are capable of retrieving relevant knowledge and using it as a reference point, the mental correction they perform does not go far enough, leading to systematic underestimation.

Tversky and Kahneman's (1974) anchoring-and-adjustment model proposed that anchoring occurs because individuals start from an initial value and adjust insufficiently, stopping once the estimate feels plausible, which leaves judgments biased toward the anchor. Later work by Jacowitz and Kahneman (1995) noted that adjustments often end once outcomes fall within a reasonable interval rather than reaching precise values. However, this model faced criticism regarding its explanatory scope, as evidence shows that anchors influence responses to the initial comparative question itself (Strack, Bahník, & Mussweiler, 2016; Jacowitz & Kahneman, 1995). The selective accessibility model (Strack & Mussweiler, 1997, 1999) offers an alternative explanation, suggesting that anchors shape judgments by guiding memory retrieval: individuals temporarily treat the anchor as plausible, selectively search for anchor-consistent information, and make final estimates based on this biased set of accessible knowledge (Chapman & Johnson, 1999).

While these theoretical models clarify the cognitive mechanisms underlying anchoring, their significance becomes especially evident when applied to real-world decision making. Anchoring effects have been documented across many domains, ranging from everyday estimations to business negotiations and judicial decision making (Galinsky & Mussweiler, 2001; Chang et al., 2016; Guthrie & Orr, 2006; Rachlinski et al., 2007).

Chang et al. (2016) studied judicial decision making in land dispute cases in Taiwan to examine whether judges' decisions were influenced by plaintiffs' claimed yield rates. Taiwanese courts determine compensation yield rates by multiplying land value by a yield rate. To study this process, Chang et al. first estimated market values and lease rents of land parcels using transaction data, producing baseline market yield rates, and then measured deviations between judicial yield rates and plaintiff claims to assess the potential influence of plaintiffs' claims on judicial decisions. A positive effect of plaintiff claims on judicial yield rates would indicate the presence of an anchoring effect, where judges are subconsciously influenced by the initial figure proposed by plaintiffs. The study also investigated whether defendants' counterclaims could neutralize this effect and whether deliberation by a three-judge panel affected the degree of anchoring.

The analysis revealed that the judicially determined land values and rents were typically lower than market estimates, suggesting that judges do not set yield rates to fully approximate market rents. When plaintiffs asked for higher rates, judges' rulings shifted upward, even if the numbers no longer aligned with objective market values, which showed that plaintiffs' claims act

as externally provided anchors influencing judges' assessments of land yield rates. However, the effect of defendants contesting the plaintiff's claims significantly reduced the excess judicial yield rates. When defendants actively challenged the requested yield rate or presented their own figures, judges were far less likely to rely on the plaintiff's anchor. Counterarguments worked as a competing anchor, pulling judicial decisions back toward more balanced or market-based outcomes. In contrast, when defendants remained silent, judges were more likely to accept the plaintiff's numbers as a natural starting point.

Another central finding was the role of judicial experience. Inexperienced judges were highly vulnerable to anchoring, with their decisions showing much stronger dependence on plaintiffs' claims. By contrast, more experienced judges were less influenced by plaintiffs' claims, keeping their rulings closer to actual benchmarks. This contrast shows that experience functions as a protective factor against anchoring bias: inexperienced judges are more prone to rely on anchors, while experienced judges actively resist them, showing that the anchoring effect is not uniform but can be mitigated by expertise and familiarity.

Similarly, anchoring effects can be observed in negotiations. Galinsky and Mussweiler (2001) ran a negotiation simulation in which MBA students engaged in a face-to-face negotiation over the sale of a pharmaceutical plant. Depending on role assignment, participants acted as buyers or sellers. The central manipulation was who made the first offer, combined with whether participants were instructed to consider their opponent's best alternative to a negotiated agreement (BATNA). Results showed that initial offers strongly influenced the final agreements:

when sellers opened, agreements averaged about \$5 million higher than when buyers opened. However, when participants were explicitly instructed to consider their opponent's BATNA, the anchoring effect was significantly reduced, and settlements converged toward more balanced outcomes.

To test whether anchoring persists in less interactive contexts, Galinsky and Mussweiler (2001) extended the task to email-based negotiations over the size of a job candidate's signing bonus. Again, candidates and recruiters were randomly assigned to make the first offer or to respond. Even without face-to-face pressure, the first offer served as a powerful anchor, with candidate-first offers leading to substantially higher settlements. Yet, when non-first-offer negotiators were directed to focus on their opponent's reservation price rather than on their target outcome, the anchoring effect diminished.

In a final test, the researchers examined whether anchoring could be explained by the information negotiators focused on. Participants were asked to either consider their own best alternative to a negotiated agreement (BATNA) or their opponent's BATNA while making decisions. Participants who focused on their own BATNA, a form of self-generated anchor based on their internal knowledge of alternatives, were more susceptible to the other party's first offer, as their attention to their own reference point heightened sensitivity to the external anchor. By contrast, those who deliberately considered their opponent's BATNA were better able to counteract the external anchor, and the influence of the first offer weakened substantially. This

showed that selective attention and the deliberate use of countervailing information can mitigate anchoring effects.

Anchoring Bias in E-Commerce

Anchoring also plays a significant role in shaping consumer choices in digital marketplaces. E-commerce platforms exploit external anchors through reference prices, discounts, and presentation formats. Anchoring in these contexts often interacts with framing, as price anchors are combined with gain- or loss-oriented frames such as discounts or surcharges.

The relationship between framing and anchoring in e-commerce has been empirically demonstrated in a laboratory experiment conducted by Wu and Cheng (2011), which examined the joint effect of attribute framing and reference price anchoring on consumer behavior in an online shopping context. In this study, undergraduate students were randomly assigned to one of four experimental conditions in a 2 (attribute framing: positive vs. negative) $\times$ 2 (anchor points: high vs. low) between-subjects design. Participants were presented with a fictitious electronic translator, with translation accuracy presented either positively (e.g., “80% translation accuracy”) or negatively (e.g., “20% error rate”). Simultaneously, participants were exposed to a reference price embedded in a banner advertisement displaying either a high-value anchor of \$38,800 or a low-value anchor of \$900.

Participants’ attitudes toward the product, purchase intentions, and willingness to pay were measured after exposure to these stimuli. The findings revealed that framing and anchoring exerted both independent and interactive effects on consumer evaluations. Specifically, positive

framing significantly enhanced product attitudes and purchase intentions, while higher anchors increased willingness to pay. More importantly, the interaction between framing and anchoring was significant across all three dependent measures. When the product was positively framed and accompanied by a high-value anchor, participants reported the most favorable attitudes, the highest purchase intentions, and the greatest willingness to pay. Conversely, negative framing paired with a low-value anchor resulted in comparatively better responses than negative framing paired with a high anchor, highlighting the importance of congruence between the frame and the anchor.

Moreover, the study examined the moderating role of participants' product knowledge. Individuals with lower knowledge of the product were far more vulnerable to framing and anchoring, displaying stronger shifts in attitudes, purchase intentions, and willingness to pay across conditions. By contrast, participants with higher product knowledge were less affected, indicating that framing and anchoring act primarily as peripheral cues that exert stronger influence on the judgments of less knowledgeable consumers.

This pattern mirrors the judicial findings previously mentioned, where experience similarly reduced reliance on anchors (Chang et al., 2016). Just as informed consumers are less likely to be swayed by extreme price anchors, experienced judges resist plaintiffs' claims, demonstrating how domain expertise mitigates susceptibility to externally imposed frames. The parallel shows a broader principle: anchoring is most effective when decision-makers lack familiarity, but its influence diminishes as individuals accumulate knowledge and experience. On

e-commerce platforms, this means that high-value or low-value anchors may sway inexperienced or first-time buyers, while frequent users with greater product knowledge are more likely to recognize the tactic and mentally adjust, reducing its persuasive power.

Dennis et al. (2020) conducted a series of studies to examine how cues in online shopping environments could influence consumers' willingness to pay. They focused on two main mechanisms: numeric priming and semantic priming. Numeric priming primarily influences System 1 cognition, which is fast, intuitive, and automatic, and occurs when exposure to numbers, even those unrelated to the product, affects judgments and decisions. Semantic priming, in contrast, involves exposure to concepts or products related to the item of interest and works through System 2 cognition, which is slower, more deliberate, and reasoning-based, by activating associations about product quality. Both numeric and semantic priming act as forms of anchoring, one through direct numeric cues and the other through qualitative associations.

In the initial study, participants took part in online auctions for laptops and cameras. During the bidding task, advertisements featuring incidental products appeared on the same webpage. These incidental products varied in their relationship to the auctioned items: some were related, such as another high-quality camera, while others were unrelated, such as a bicycle. Additionally, the incidental product's price was manipulated to be either low or high. The results demonstrated that incidental high prices increased willingness to pay, even when the product was unrelated to the auction item, showing the influence of numeric anchoring. More importantly, when the incidental product was related to the auctioned item, the combination of numeric and

semantic cues produced the strongest effect, as participants associated the related high-priced products with higher quality and thus valued the focal products more.

Subsequent studies replicated and extended these results across different product categories and task formats. Even when participants were exposed to different price ranges for unrelated items, their bids continued to shift upward with higher anchors, confirming the robustness of numeric priming across contexts. When participants were primed with high- or low-quality related products without accompanying prices, consumers still adjusted their willingness to pay. Exposure to high-quality related products triggered associations about advanced features, which in turn elevated perceived value and willingness to pay, suggesting that semantic priming independently influences judgments. Semantic priming, through the presentation of high-quality related products, functioned as an externally provided knowledge cue, guiding consumers' evaluations in the same way that self-generated anchors do when people draw on their own relevant knowledge. The observed effects were not simply due to heightened attention or random noise; instead, they consistently reflected the dual pathways of automatic number-based anchoring and association-based semantic priming.

Additional studies examined the boundary conditions of these effects. When participants were exposed to unrelated products, the anchoring effect persisted but was notably weaker, consistent with the idea that numeric priming operates even in the absence of semantic connections. However, when both numeric and semantic primes were present together, the influence was magnified. Exposure to a high-priced camera advertisement while bidding on

another camera significantly inflated valuations compared to exposure to a high-priced but unrelated product.

Amazon employs anchoring and framing to shape consumer decision making, primarily through its presentation of prices, which serve as external numeric anchors. One of the most common strategies is the display of crossed-out “was prices” alongside the current discounted price (See Figure 1). This dual presentation sets a higher reference point in the consumer’s mind, making the discounted price appear more attractive even if it aligns with typical market rates. For instance, when a product initially shown at \$800 is offered at \$500, consumers interpret the purchase as a bargain, even if the product was never truly worth \$800. According to Amazon’s own policy, the “was price” is defined as the median selling price paid by customers over a set period, excluding temporary promotions. This definition is intended to enhance transparency and prevent misleading discounts. Nonetheless, the presentation of a higher reference price, whether reflecting an actual historical median or shaped by market fluctuations, still functions as an anchor that makes the current price appear more attractive. The higher anchor magnifies the sense of value, encourages faster purchasing decisions, and frames the transaction as a gain. The visual display of crossed-out prices further reinforces this perception by directing attention to the relative benefit of buying at the current price (See Figure 2). This strategy is widespread across e-commerce, particularly during large-scale marketing campaigns such as Black Friday, where platforms rely heavily on inflated reference prices and temporary discounts to stimulate sales. Such campaigns generate significant revenue by leveraging consumers’ sensitivity to anchors and framed price reductions.

Figure 1

Screenshot from Amazon's official website showing a crossed-out 'was price' used as an anchor.

Captured by the author, 2025.



Visit the Amazon Renewed Store
4.3 ★★★★★ 56 ratings
50+ bought in past month
Was: ~~£79.00~~
Price: **£74.00**
You Save: **£5.00 (6%)**

Figure 2

Screenshot from Amazon's official website showing the savings amount highlighted. Captured by the author, 2025



Limited time deal
-18% **£12³³**
RRP: ~~£14.99~~
Save 5% on any 4 [Terms](#)
Special Price: ~~£14.99~~

Amazon applies anchoring through “Prime Exclusive Deals” as well. In these promotions, non-Prime customers continue to see the regular price, while Prime members are shown a discounted deal price. The presence of both prices on the platform establishes a reference point. The higher regular price acts as an anchor, making the lower Prime price appear

more favorable in comparison. Even when the actual discount is modest, this side-by-side presentation enhances the perceived value of the deal through the anchoring effect. At the same time, such discounts can influence perceptions of Amazon Prime membership itself. By consistently displaying exclusive savings against a higher regular price, consumers may come to evaluate Prime as offering ongoing financial benefits. In this way, the anchoring effect operates not only at the level of individual product purchases but also in shaping attitudes toward membership, as the repeated contrast between non-Prime and Prime prices highlights the relative advantage of subscribing.

Dynamic pricing complements this anchoring mechanism by leveraging temporal shifts in consumer expectations. Dynamic pricing involves adjusting prices based on factors such as demand, seasonality, or consumer behavior. Prices may be initially presented at a higher level when demand is low or inventory is plentiful, only to lower them later when demand is at its peak, creating the impression of a substantial discount. Even when the adjusted price reflects the product's typical market value, consumers perceive it as advantageous because their expectations are shaped by the initial reference point. While it is difficult to obtain direct evidence that Amazon specifically uses dynamic pricing, it is well documented that many e-commerce platforms employ this strategy.

Amazon also creates incidental anchors through recommendation features such as "Frequently bought together" or "Customers who bought this also bought." These suggestions operate much like the incidental products in Dennis et al.'s (2020) study, where exposure to

additional items shifted consumers' willingness to pay. When higher-priced products are displayed on the same search page as the focal item, consumers can redefine what feels like a reasonable price, even if they never intend to purchase the more expensive option. In this way, Amazon translates experimentally demonstrated anchoring effects into its digital storefront, subtly shaping value perceptions through the presence of related or adjacent items.

A further strategy involves the order and structure in which products are displayed. By placing a higher-priced item first, the platform can create a reference point that makes subsequent options appear more reasonably priced by comparison. This strategy is closely related to the decoy effect, in which an unattractive option is presented not to be chosen itself, but to make a target option appear as a more balanced or desirable compromise (Huber et al., 1982). Online experiments by Weinmann, Mishra, Kaiser, and vom Brocke (2020) provide empirical support for this mechanism: participants made higher pledges on a fictitious crowdfunding platform when higher-priced or less advantageous options were added to the choice set.

In the context of Amazon, the initial presentation of an expensive product serves as an anchor, subtly guiding consumers toward mid-range products that deliver higher margins. Numeric priming functions as price anchoring, as the high number itself becomes a reference point that shapes subsequent judgments. Research suggests that numeric priming is most effective when presented concurrently with the task rather than beforehand (Shen & Chen, 2007; Yoo, 2008). On Amazon, this effect is reinforced when high-priced options are highlighted as

pop-ups or featured recommendations, ensuring that the anchor remains visible while the consumer evaluates alternatives. Even if the expensive item is far beyond a consumer's typical budget, its presence shifts perceptions of what constitutes an acceptable price. In this way, the initial high-priced item not only anchors expectations but also subtly guides consumers' decision making by shaping their sense of value in real time.

Additionally, the presentation of product attributes, such as features, specifications, or materials, can be sequenced to enhance anchoring effects. Listing the most impressive or high-end attributes first establishes a standard against which all other options are judged. For instance, if a laptop's display quality and processing power are emphasized upfront, consumers are likely to evaluate its storage capacity or battery life relative to these initial impressions, increasing the perceived overall value. In this way, careful ordering and framing of product information can subtly steer consumers' judgments, reinforcing the influence of anchors throughout the decision-making process.

Taken together, anchoring bias acts as a subtle yet powerful force that makes initial reference points disproportionately influential in judgment and decision making. Whether created by arbitrary numbers, framed discounts, or the structured display of products, anchors consistently shape how people perceive value. Research shows that these effects are often amplified when combined with framing or contextual cues, which helps explain why Amazon successfully employs tactics such as crossed-out prices, Prime-exclusive deals, and carefully

ordered search results. In this way, anchoring is revealed not just as a laboratory phenomenon but as a pervasive mechanism shaping everyday consumer choices.

Loss Aversion

What Is Loss Aversion?

Loss aversion is a psychological bias in which individuals tend to experience the pain of losses more intensely than the pleasure of equivalent gains. This phenomenon was first formalized by Kahneman and Tversky in their seminal work on Prospect Theory (1979), which posits that individuals evaluate outcomes relative to a reference point, typically the status quo, and that falling below that reference point (losses) is weighted more heavily than rising the same distance above it (gains) (Kahneman & Tversky, 1979).

In one of their foundational works on Prospect Theory, Kahneman and Tversky (1979) conducted a series of experiments designed to test how individuals evaluate choices under risk. Participants were presented with choices between certain and probabilistic outcomes: a sure gain of \$500 or a gamble offering a 50 percent chance of winning \$1,000 and a 50 percent chance of winning nothing. Although both options had the same expected value of \$500, most participants chose the certain amount of \$500. This revealed risk aversion in the domain of gains: individuals preferred to secure a guaranteed outcome rather than accept uncertainty, even when the probabilistic choice was equally rational under expected utility theory, the prevailing rational choice model. When the same numbers were reframed as losses, however, preferences shifted. Choosing between a sure loss of \$500 or a gamble with a 50 percent chance of losing \$1,000 and

a 50 percent chance of losing nothing, the majority preferred the gamble. Faced with a definite loss, participants became risk-seeking, accepting uncertainty in hopes of avoiding the loss.

Kahneman and Tversky argued that this asymmetry arises because losses carry greater psychological impact than commensurate gains. The value function they proposed is concave for gains, convex for losses, and steeper in the loss domain, showing that the pain of losing \$500 outweighs the pleasure of gaining the same amount. This marked a decisive departure from the predictions of expected utility theory as a rational choice model, demonstrating that individuals do not evaluate risky prospects solely by calculating their final expected wealth. Instead, they evaluate outcomes relative to a reference point and weight potential losses disproportionately heavily.

This reference-dependent logic was later demonstrated in Kahneman and Tversky's (1991) job selection experiment. Participants were asked to imagine that their current part-time job was ending and that they had to choose between two new jobs. In the first version of the task, the current job, used as the reference point, involved long periods of isolation and a short, 10-minute commute. Compared to this baseline, the two new options both offered improvements in social contact but required longer commutes. Job X offered limited social contact and a 20-minute commute, while Job Y offered moderate social contact but required a 60-minute commute. When evaluated against the reference point, the increased commuting time was perceived as a loss, while the improved social contact was viewed as a gain. Most participants,

therefore, favored the job that minimized the perceived loss in commuting time, even if it offered less social interaction.

In the second version, the reference job was described as involving much pleasant social interaction but requiring a long, 80-minute commute. Here, the majority of participants chose the option with shorter travel, reflecting a reversal of preferences relative to the first condition. Although the objective trade-offs between the two job options were identical across both versions, shifting the reference point changed which attribute was experienced as a loss. The same differences were thus weighted more heavily when interpreted as losses rather than as gains.

Quattrone and Tversky (1988) conducted a study on political decision-making in which they tested how loss aversion influences voting behavior. In a series of experiments, participants were asked to imagine themselves as citizens making electoral decisions between candidates whose proposed economic policies implied different national outcomes. The key manipulation lay in how these outcomes were framed relative to a reference point, such as the average standard of living, inflation, or unemployment levels across other nations. By altering the reference point, the researchers were able to examine whether individuals perceived the policies as producing gains or losses.

When outcomes were presented as gains relative to the reference point, respondents tended to prefer safer options and avoid risk. For example, when economic forecasts suggested that both candidates' policies would keep living standards above the average of other nations,

individuals gravitated toward the candidate associated with less variability in the projections. Conversely, when outcomes were framed as losses, such as when the forecasts implied that living standards or inflation levels would fall below those of other nations, respondents were more willing to support the riskier candidate. In this way, the same policy alternatives elicited very different preferences depending on whether they were evaluated in the domain of gains or losses.

Quattrone and Tversky's design revealed that people do not evaluate outcomes purely on their absolute value but relative to a reference point that defines whether the situation is experienced as one of gain or loss. Importantly, the studies also showed a tendency for respondents to favor the status quo, the default option, when it was made salient, even when the expected value of alternatives was equivalent. This reluctance to depart from the existing state of affairs emphasizes the role of loss aversion in reinforcing inertia and maintaining existing policies.

Another bias deeply shaped by loss aversion is the endowment effect, the tendency for individuals to assign greater value to things they own compared to equivalent goods they do not (Thaler, 1980). From the perspective of loss aversion, giving up a possession is perceived as a loss, and because losses are psychologically more salient than equivalent gains, willingness to accept compensation for giving up an item generally exceeds willingness to pay to acquire the same item.

Knetsch (1989) tested this dynamic by designing tests that compared valuations under different endowment conditions. In one experiment, participants were randomly endowed with either a coffee mug or a Swiss chocolate bar and were then offered the opportunity to trade for the alternative good. A third group of participants, who were not initially endowed with either good, simply chose between the two items. Despite the goods being of similar market value and the cost of exchange being negligible, preferences differed substantially depending on whether participants were evaluating a good as a potential gain or as a potential loss: those endowed with mugs generally chose to retain them; those endowed with chocolate bars generally retained those, whereas the group without an initial entitlement exhibited more balanced preferences across the two goods.

In a second experiment, Knetsch examined minimum acceptable exchanges using both goods and money as initial entitlements. Participants endowed with candy bars indicated the amount of money they would require to part with them, while those endowed with money specified the number of candy bars they would require in exchange. The valuations again diverged depending on the initial reference point. Individuals given candy bars demanded higher monetary compensation to part with them than those given money were willing to pay to acquire the same candy bars, even though the goods had comparable market value.

These results demonstrate that individuals' valuations are reference-dependent and systematically asymmetric. The direction of trade, whether one is giving up or acquiring an item, shapes preferences in a way inconsistent with the assumption of reversible indifference curves.

The evidence aligns with the predictions of loss aversion: losses relative to an existing endowment carry greater psychological weight than equivalent gains, producing the observed endowment effect.

Loss aversion has also been discussed as one explanation for why framing effects emerge, since outcomes can be interpreted differently depending on whether they are framed in terms of gains or losses. Gallagher and Updegraff (2012) examined this dynamic by testing how differently framed health messages would influence people's vaccination decisions. Participants were randomly assigned to receive either gain-framed messages or loss-framed messages. The gain-framed appeals emphasized the benefits of receiving the flu shot, such as staying healthy, avoiding illness, and protecting others, whereas the loss-framed appeals stressed the negative consequences of failing to vaccinate, such as missing days of work, suffering from the flu, or infecting family and friends. Both versions conveyed substantively the same information, yet the framing altered how participants responded. The study measured participants' attitudes toward vaccination, their perceived risk of contracting influenza, and, most importantly, their self-reported intentions to get the flu shot. Gallagher and Updegraff also examined whether personal differences, such as health beliefs and perceived vulnerability, influenced how strongly participants responded to each frame. Their results showed that participants exposed to loss-framed messages expressed significantly stronger intentions to vaccinate than those who read the gain-framed messages, even though the factual content was equivalent. This pattern suggested that the anticipation of possible negative consequences carried more motivational weight than the equivalent promise of positive outcomes.

This pattern extends well beyond health behavior and can be observed in many everyday choices. It influences the behavior of ordinary consumers, but also extends to professionals who are presumed to act with objectivity and expertise. For example, Pope and Schweitzer (2011) analyzed a large dataset of putts made during professional golf tournaments. Their design allowed a direct comparison between putts of equal distance, differing only in their implications for the player's score. A successful birdie putt represented an improvement over par, whereas a par putt represented the avoidance of dropping a stroke. Importantly, the objective difficulty of the shots was the same, meaning that any systematic difference in success rates could not be explained by skill, environmental conditions, or technical variation. The analysis revealed that players were more likely to sink par putts than birdie putts from identical distances. The results suggest that the motivation to avoid losing ground exerted a stronger influence on performance than the opportunity to make a gain. What makes this particularly significant is that it demonstrates the force of loss aversion even among elite athletes trained to manage psychological pressures.

Further evidence comes from Genesove and Mayer's (2001) analysis of condominium sales in Boston, which tested whether seller behavior aligned with the predictions of rational market theory. In principle, economic models based on expected utility and market efficiency would predict that homeowners adjust their asking prices according to prevailing market conditions, independent of their original purchase price. However, the study revealed systematic deviations from this prediction. Sellers whose properties would fetch a price below their original purchase level set higher asking prices and held their units on the market longer compared to

sellers whose properties had appreciated. These choices reduced the probability of a timely sale and increased the financial risks associated with carrying unsold property, such as maintenance costs and exposure to market fluctuations. Yet, they reflected the reluctance to finalize a transaction that would confirm a monetary loss. The findings point to the interaction of loss aversion and the endowment effect: ownership establishes a psychological reference point, and selling below that benchmark is experienced as a loss, even if doing so would be economically rational in terms of maximizing expected returns. In this way, the housing market provides a large-scale natural experiment showing how the asymmetry of losses and gains directly shapes behavior in one of the most consequential areas of household finance.

The scarcity effect, the tendency to place higher value on items or opportunities perceived as limited in availability, is rooted in the principles of loss aversion. Cialdini (2001) argued that scarcity increases desirability not just due to supply constraints, but because the potential loss of access amplifies urgency. When individuals encounter scarcity cues, their decision-making is influenced not simply by the desire to gain a rare item, but by the underlying aversion to losing access to it. Scarcity reframes inaction as a potential loss, thus activating the cognitive mechanisms of loss aversion.

Worchel, Lee, and Adewole's (1975) classic cookie-jar experiment provides clear empirical support for this connection. Participants were asked to evaluate cookies that were identical in every respect except their apparent supply, with one jar nearly empty (scarce condition) and the other jar nearly full (abundant condition). Crucially, nothing about the

cookies' quality or flavor changed, only the perception of supply did. Under these circumstances, participants systematically rated the cookies in the scarcer jar as more desirable and more valuable than those in the abundant jar (Worchel et al., 1975).

Worchel et al. also manipulated whether supply remained constant or changed over time and the reason behind changes in supply. In the scarce condition, some participants saw cookies that were always scarce; others saw cookies that began abundant but later decreased. The shrinkage in supply was attributed either to an "accident" or to "high demand." In complementary abundant conditions, cookies were either always abundant or began scarce and then increased; the increase, similarly, was explained to participants in terms of an accident or lack of demand. They also crossed these supply manipulations with a belief manipulation regarding how many future participants would also rate the cookies, thus inducing perceived competition or exclusivity. The results from this design revealed several nuanced patterns: Across the board, cookies under scarce supply were rated as more attractive than those under abundant supply. Cookies whose supply changed from abundant to scarce were rated more highly than cookies that were held constantly scarce. That is, the loss of abundance heightened perceived value.

Scarcity attributed to high demand led to higher ratings than scarcity attributed to an accident. This suggests that when scarcity is understood as socially mediated (others actively choosing the item), it enhances desirability and magnifies the perceived cost of inaction. In the abundant conditions, cookies that had been scarce and then became abundant were rated less favorably than those that had been constantly abundant. The "gain of abundance" did not

enhance value as strongly as the “loss of abundance” reduced it. Worchel et al. interpreted these results in part through the lens of commodity theory (Brock, 1968), the idea that the perceived unavailability increases subjective worth, while also illustrating the asymmetry central to loss aversion: the psychological impact of losing abundance outweighs the impact of gaining it.

Together, this evidence demonstrates how scarcity cues operate less as signals of objective supply and more as frames that activate loss aversion. What appears to be heightened attraction to rare items is often a reflection of individuals’ reluctance to incur the loss of access. This helps explain the effectiveness of scarcity-based marketing strategies. As Cialdini (2009) observed, compliance professionals frequently exploit the scarcity principle through tactics such as “limited-number” appeals and artificial “deadlines.” Customers are told that a product is nearly sold out, that only a few lots remain, or that an offer expires imminently. These messages do not merely promise gain; they frame inaction as a missed opportunity, thereby triggering aversion to loss. A striking variant occurs when salespeople claim that a product has just sold out: disappointment makes the item seem more desirable precisely because it is no longer available. When it is later “found” in stock, customers who have already committed often follow through with the purchase, even though its abundance would otherwise diminish its appeal (Cialdini, 2009). Such tactics work because they reframe hesitation into forfeiture, an outcome people are motivated to avoid more strongly than they are motivated to secure equivalent gains.

Building on observations, Aggarwal, Jun, and Huh (2011) conducted experiments to examine how different types of scarcity messages affect consumer purchase intentions.

Participants were exposed to printed advertisements featuring either limited-quantity scarcity (LQS) cues, such as “Only 100 units available”, or limited-time scarcity (LTS) cues, such as “Sale ends in six days”, alongside control ads with no scarcity information.

In Study 1, participants viewed advertisements that either stressed a small number of units available (LQS), emphasized a short purchase window (LTS), or included no scarcity information. Both scarcity conditions significantly increased purchase intentions compared to the control. However, LQS appeals produced a stronger effect than LTS appeals, suggesting that competition among consumers for a finite number of items intensifies the perception of potential loss. Mediation analysis confirmed that perceptions of consumer competition, participants’ sense that others might purchase the product before them, partly explained why scarcity increased purchase intentions.

Study 2 extended these findings by testing whether brand concept moderated the effect. Using laptop advertisements framed as either functional (emphasizing durability and practicality) or symbolic (emphasizing style and exclusivity), the researchers again compared LTS, LQS, and control conditions. The results replicated Study 1, showing that both scarcity appeals boosted purchase intentions relative to the control, with LQS consistently outperforming LTS. Importantly, the effect was especially pronounced for symbolic brands. While functional brands showed only modest differences between LTS and LQS, symbolic brands produced a sharp divergence: participants exposed to LQS reported much stronger purchase intentions than those exposed to LTS. This indicates that scarcity interacts with consumers’ desire for uniqueness and

social distinction, amplifying the sense of loss when an exclusive product may no longer be attainable.

The findings indicate that scarcity appeals derive their persuasive power from the cognitive weight of potential losses. Limited-time messages pressure consumers by suggesting that waiting will mean losing an opportunity altogether, while limited-quantity messages magnify the threat of losing out to other buyers. In both cases, the appeal works not because consumers expect greater gains, but because they are motivated to avoid the sharper psychological impact of loss.

These experimental findings have clear theoretical parallels. Rosato (2016) extended the logic of scarcity and loss aversion through a theoretical model that explains how retailers strategically employ limited-availability bargains to capitalize on consumers' aversion to losses. In his framework, a retailer sells two substitute goods: a discounted "bargain" item with restricted stock and a higher-priced "rip-off". When the cheap item sells out, consumers who expected to obtain it experience that unfulfilled expectation as a loss and, to avoid it, often purchase the more expensive option instead. This mechanism allows firms to extract additional surplus by using the illusion of scarcity to shift demand toward higher-margin products. Rosato illustrates this process with Black Friday sales, where heavily discounted "doorbuster" items offered in limited supply entice customers into stores, and once those deals sell out, shoppers frequently buy the higher-priced products. The model formalizes this bait-and-switch dynamic, showing that limited availability is essential for sustaining the effect: when goods are sufficiently

similar, consumers' aversion to losing the deal drives them to purchase less favorable alternatives, yielding profits above the benchmark of full-availability.

While Rosato's model highlights how scarcity and anticipated loss can stimulate additional purchasing, other evidence shows that the same bias can produce the opposite effect when the context of loss changes. Once a discount ends and higher prices are perceived as losses relative to earlier reference points, consumers often reduce their willingness to buy altogether.

Ray, Shum, and Camerer (2015) analyzed over 2 million online sales transactions from a large retailer of hardware and household products to investigate how post-sale purchasing patterns reflect reference-dependent preferences. They tested what they termed the *substitution effect*: if consumers anchor to reference prices established during sales, they should become reluctant to repurchase the same item once its discount ends, instead shifting their demand toward substitute goods that did not experience a similar price change.

Using a logit model of product choice across 204 pairs of substitutable goods, where consumers choose only one product or its substitute, they found that consumers bought significantly fewer units of an item after its discount ended, while purchases of substitute products increased. This asymmetry in post-sale demand could not be explained solely by stockpiling behavior. Instead, it indicated a psychological reluctance to pay a price above the previously discounted "reference price," consistent with the predictions of loss aversion.

Interestingly, the study also showed that experienced consumers, those with frequent purchasing histories, exhibited weaker reference dependence than casual buyers, suggesting that market familiarity may attenuate loss-averse responses.

These examples make it clear that loss aversion is not limited to abstract psychological experiments, it operates across multiple channels and contexts, influencing everyday decisions in powerful and often subtle ways. One area where this bias plays an especially prominent role is digital commerce. The next section examines how e-commerce platforms systematically harness the principles of loss aversion to drive consumer behavior and increase conversions.

Loss Aversion in E-Commerce

E-commerce platforms have incorporated this bias directly into their design, structuring choice environments in ways that emphasize the potential losses of inaction rather than the benefits of action. In this setting, loss aversion operates as a determinant of purchasing behavior, guiding how consumers evaluate products, prices, and opportunities online. The same asymmetry between losses and gains identified in Prospect Theory therefore underlies many of the decision patterns observed in online commerce, where platform design frequently embeds this bias into the consumer experience.

Wrabel, Kupfer, and Zimmermann (2022) investigated how scarcity cues interact with online reviews in shaping consumer decisions on e-commerce platforms. The researchers constructed a controlled shopping environment in which participants were asked to choose between two pairs of noise-cancelling headphones. Both products were presented at the same

price and with identical numerical review metrics, but they differed in the textual reviews describing product quality. One set of reviews indicated high quality, while the other emphasized poor performance. Participants were randomly assigned to a control condition, in which both products were simply listed as “in stock,” or a scarcity condition, in which the low-quality product displayed a message such as “Only 3 left in stock. Order soon.” Scarcity levels dynamically decreased over time, replicating the countdown features often used on real retail sites.

The results revealed that scarcity cues significantly altered how participants processed product information. In the control group, consumers were more likely to consult textual reviews before making a purchase, and decision accuracy was higher, with more participants selecting the objectively better product. In contrast, when scarcity cues were displayed, participants devoted less attention to textual reviews, processed fewer product attributes, and often bypassed review information altogether. Instead of carefully weighing the quality signals embedded in reviews, many participants responded primarily to the scarcity prompt, which created a sense of urgency and the perception of a looming loss of access. This pattern led to a notable decline in decision accuracy, with more consumers purchasing the inferior product despite clear textual evidence of its shortcomings.

The study also demonstrated that scarcity did more than simply reduce information processing; it actively enhanced the perceived value of low-quality products. Participants in the scarcity condition rated the scarce product as more desirable than identical alternatives without

scarcity cues, even when the reviews highlighted defects. In other words, scarcity not only redirected attention away from diagnostic information but also reshaped perceptions of value in a manner that favored inferior goods. The combination of reduced information search and inflated desirability made consumers more susceptible to choosing products that they otherwise would have rejected.

Ding (2023) extended this line of inquiry by investigating how different forms of promotional framing combine with scarcity cues to shape purchase intentions in e-commerce live broadcasting contexts. The study focused on two of the most common promotional mechanisms used in online retail (price discounts and gift promotions) and analyzed how their effectiveness changes when paired with either limited-quantity or limited-time scarcity. Participants were asked to imagine themselves as consumers in a live-streaming shopping scenario (purchasing Bluetooth headsets or shampoo) and were randomly assigned to treatment conditions that manipulated both promotion type and scarcity framing.

The first experiment showed a clear differentiation in how consumers responded to scarcity depending on the type of promotion. When the promotional mechanism was a price discount, limited-quantity scarcity cues (e.g., “only 100 left in stock”) were more effective in increasing purchase intentions. By contrast, when the promotion was a gift, limited-time scarcity cues (e.g., “offer ends in 5 minutes”) produced stronger effects. These patterns were consistent with the notion that quantity scarcity triggers perceptions of social competition and exclusivity,

while time scarcity amplifies urgency and emotional arousal, particularly when paired with the appeal of an additional gift.

Subsequent experiments examined the psychological mechanisms underlying these effects. In the discount condition, scarcity operated primarily through perceived value. Consumers interpreted quantity scarcity as a signal of popularity and market demand, which in turn enhanced the attractiveness of the discounted product. Moreover, the strength of this effect was moderated by the size of the discount: larger discounts magnified the influence of quantity scarcity, while smaller discounts weakened it.

In the gift promotion condition, time scarcity produced its effects by heightening perceived arousal. The deadline generated feelings of urgency and excitement, which led consumers to act quickly to secure the promotional offer. Importantly, the relationship between the gift and the main product moderated this effect. When the gift was highly relevant (e.g., a shampoo paired with a complementary conditioner), time scarcity significantly increased purchase intentions. When the gift was unrelated, however, the effect of time scarcity diminished.

Taken together, these experiments demonstrate that scarcity cues strategically leverage the cognitive asymmetry predicted by loss aversion. Consumers' responses were not driven solely by the objective gains of a discount or a gift, but by the heightened salience of what they stood to lose by failing to act: missing the chance to purchase a limited stock item or forfeiting access to a time-limited gift. By activating this aversion to loss, scarcity cues reduced

deliberative information processing and redirected consumer behavior toward immediate action, even when the quality or long-term value of the product was uncertain.

Amazon provides one of the clearest examples of how digital platforms strategically employ loss aversion to influence consumer decision-making. Design elements operate on the principle that the threat of loss motivates action more strongly than the prospect of equivalent gains. By foregrounding the possibility of missing out, Amazon encourages users to accelerate purchase decisions and reduces the likelihood of cart abandonment.

One prominent way Amazon leverages loss aversion is through limited-quantity messaging. Product pages frequently display alerts such as “Only 3 left in stock, order soon,” which recast consumer hesitation as a potential loss of access. Rather than evaluating the intrinsic value of the product, consumers become preoccupied with the risk that delaying might cause them to forfeit the chance to buy it altogether.

Another tactic is limited-time promotions, particularly visible during large-scale events such as Prime Day, Black Friday, or holiday sales. Amazon uses countdown timers and banners like “Deal ends in 2 hours” to generate a temporal frame of loss. Here, consumers are confronted with the prospect that inaction will result in the disappearance of a favorable price. These time-based cues heighten urgency and arousal, leaving less room for rational evaluation of whether the product is truly needed or whether the discount offers real value. The narrowing time frame heightens the influence of loss aversion, as missing the deadline is experienced as a more aversive outcome than forgoing a potential gain.

Amazon also embeds losses into competitive contexts, making loss aversion especially salient during peak demand periods such as Prime Day or Black Friday. Stock alerts are paired with signals of other customers' activity, for example, "20 people have this in their carts" or "Purchased 1,000 times in the past 24 hours." These cues suggest not only that the product may soon be unavailable, but also that other buyers are actively competing for it. The combination of temporal urgency and social comparison amplifies the emotional cost of inaction, reframing hesitation as a loss both of the product and of the competitive edge.

Loss aversion is also embedded into Amazon Prime's membership model. Amazon frequently uses Prime-exclusive discounts and Prime-only offers as part of its pricing and promotional architecture. During promotional periods like Prime Day, certain deals are labeled "Prime Exclusive," meaning that only members of Prime can access them. This exclusive access is framed as a benefit that non-members risk losing out on if they do not hold membership. Because the deals are presented as privileges reserved for members, the framing suggests that failure to act (or failure to hold Prime membership) results in missing something others get: a loss relative to what others obtain.

In addition, for those who are members of Amazon Prime, these signals serve to heighten the sense that the opportunity is fleeting and tied to membership status (i.e., "exclusive, limited, for Prime members only"). Members are reminded that failure to act during limited-time events like Prime Day means wasting the unique benefits of their subscription. In this way, Prime membership becomes a reference point, and any missed opportunity becomes a perceived loss.

Prime users feel entitled to these special offers, and loss aversion magnifies the reluctance to let such opportunities slip. This effect mirrors the endowment effect. Prime members treat access to exclusive deals as part of what they “own,” and loss aversion amplifies their motivation to act before those privileges disappear. In other words, the psychological forces of loss aversion and the endowment effect overlap perfectly, both intensifying the consumer’s desire to avoid losing what feels like theirs.

Even the annual subscription itself is designed around the avoidance of loss: consumers who have paid for Prime feel compelled to maximize its value by making frequent purchases, perceiving underutilization as a form of loss. Prime Day magnifies this psychology by coupling exclusivity with scarcity, ensuring that consumers act quickly not only to capture gains but also to avoid the aversive experience of “missing out” on member-only opportunities.

This logic extends beyond annual memberships to recurring product subscriptions. Through its Subscribe & Save program, Amazon offers small discounts, typically between 10% and 15%, to incentivize repeat purchases. Although the actual savings are minimal, their impact lies in how they are cognitively framed. Rather than being perceived as a minor gain, the discount is often evaluated in terms of what would be lost by not subscribing. When consumers anticipate purchasing the product in the future, failing to take advantage of the available discount is experienced as a forfeiture, a missed benefit that was within reach. The offer thus becomes the default expectation, and opting out is framed, internally, as a loss. In this way, loss aversion drives consumers to commit to recurring purchases, not because of the value they gain, but

because of the discomfort they feel at missing out. This behavioral framing has tangible commercial effects: products offered with a 10%–15% Subscribe & Save discount have been shown to increase sales conversion by up to 1.8 times (Sell on Amazon, 2025).

Finally, Amazon's use of scarcity cues has the effect of shifting consumer attention away from product quality. When scarcity signals are activated, individuals are less likely to process detailed textual information such as reviews or price comparisons (Wrabel et al., 2022). This psychological redirection allows Amazon to boost sales even for lower-quality or commoditized products that might not otherwise withstand scrutiny.

Loss aversion offers a powerful lens for understanding why consumers often make choices in digital markets that diverge from rational choice predictions. E-commerce platforms systematically employ tactics that frame delay or inaction as a loss, using devices such as low-stock warnings, countdown timers, and membership-exclusive deals. These strategies exploit the greater psychological weight of potential losses to influence purchase decisions and strengthen engagement. They reveal not only the pervasiveness of loss aversion in shaping modern consumption but also its central role in the design of online marketplaces.

Conclusion

Amazon's behavioral architecture demonstrates how behavioral economics has moved from experimental theory to systemic practice, transforming cognitive biases into the structural logic of digital commerce. By embedding status quo bias, anchoring, and loss aversion into its interface design, pricing systems, and subscription models, Amazon converts predictable

psychological tendencies into engines of retention and profit. What appears as personalization or convenience often reflects deliberate behavioral engineering that guides consumer choices in the company's favor. While this paper does not rigorously test Amazon's design choices or identify their causal impact at scale, interpreting observable platform practices through the lens of behavioral economics strongly suggests that consumers' behavior is systematically shaped via heuristics and cognitive biases. These findings show that Amazon's success rests not only on efficiency and innovation but also on its ability to institutionalize human irrationality within the mechanics of the marketplace. Recognizing this fusion of psychology and design reframes debates on autonomy and fairness, inviting deeper inquiry into how behavioral insights can be redirected toward transparency, accountability, and consumer welfare in the evolving architecture of digital commerce.

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