

Engineering Loyalty: A Behavioural Economics Analysis of Consumer Retention Strategies at Starbucks, Amazon, and Duolingo

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Abstract

Traditional economic theory assumes that consumers are rational agents who make decisions to maximise personal utility. Decades of research in behavioural economics, however, show that consumer choice is powerfully shaped by cognitive biases, emotion, and habit. This paper examines how three global companies — Starbucks, Amazon, and Duolingo — embed specific behavioural mechanisms into their loyalty architecture in order to sustain customer engagement. Through a review of the intellectual history of behavioural economics and three detailed case studies, the paper shows how the Goal Gradient Effect and Endowed Progress Effect (Starbucks), the Sunk Cost Fallacy and Commitment Bias (Amazon Prime), and Loss Aversion and habit formation (Duolingo) are used to convert transactional customers into psychologically committed ones. These findings are then triangulated against an original survey of 156 respondents, which confirms that reward proximity, prior payment, and fear of losing progress meaningfully shift consumer behaviour. The paper concludes with a comparative thematic analysis and an ethical evaluation of behaviourally engineered loyalty, arguing that such strategies occupy a grey area between legitimate persuasion and manipulation, and that sustainable loyalty ultimately requires transparency and genuine consumer value alongside behavioural design.

Keywords: behavioural economics; consumer loyalty; cognitive bias; goal gradient effect; sunk cost fallacy; loss aversion; loyalty programmes

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I. Introduction

Why do people keep going back to the same coffee shop when there is a cheaper option right next door? Why do members of a streaming service hesitate to cancel even if they rarely use it? These questions sit at the interface of economics and psychology, a field known as behavioural economics. Traditional economic theory has long assumed that humans are rational agents who always make decisions that maximise their personal utility. However, decades of research demonstrate that this view is incomplete. When it comes to deviating from rationality, people are emotional, habitual, and consistently predictable. This research investigates how businesses have incorporated these psychological insights into their business strategies, notably in systems designed to keep customers loyal. The central argument is this: modern consumer loyalty is not simply the result of a superior product or a better price. Increasingly, it is engineered through a sophisticated understanding of cognitive biases — the mental shortcuts and emotional responses that lead consumers to behave in ways that are predictable, and often commercially advantageous to the firms that understand them.

The paper is structured as follows. Section 2 reviews the intellectual history of behavioural economics, beginning with early foundations in the 1700s–1800s and thinkers such as Adam Smith, who recognised that people are influenced by emotions and social factors even though mainstream economics continued to treat humans as perfectly rational decision-makers (Kahneman, 2011). In the twentieth century, psychology began shaping economics through the work of Sigmund Freud and Herbert Simon, who argued that human rationality is limited or ‘bounded’; in that context Simon introduced the concept of ‘satisficing’, meaning that people choose options that are good enough rather than searching for the objectively best one. The field of behavioural economics then formally emerged in the 1970s and 1980s through the work of Daniel Kahneman and Amos Tversky, whose studies of heuristics, biases, and prospect theory showed that people often make the same kinds of mistakes in their decisions. In the 1990s and 2000s, the American economist Richard Thaler grew the field further by applying these ideas to real-life behaviour such as how people save, spend, and invest, introducing concepts such as nudging and mental accounting.

Behavioural economics is now generally defined as a field that challenges the traditional assumption of human rationality in economic decision-making. During the 1980s and 1990s the concept expanded into market research, reinforcing the idea that loyalty could be measured through attitudes, satisfaction, and repeat purchasing behaviour (Smith, 2007). Section 3 of the paper therefore defines consumer loyalty and explains why

a purely rational account of it is insufficient.

Section 4 presents three detailed case studies — Starbucks, Amazon, and Duolingo — each analysed through the lens of specific behavioural biases. These case studies explore how different firms apply behavioural economics concepts such as the goal gradient effect, the sunk cost fallacy, loss aversion, and commitment bias to influence consumer decision-making and encourage repeated engagement. Each case examines the company's initiatives, the underlying psychological principles, and the impact on consumer behaviour and loyalty. By exploring real-world applications, this section aims to show how theoretical notions from behavioural economics are converted into concrete business tactics, while also assessing the effectiveness and limitations of these tactics.

Section 5 offers a comparative, survey-based analysis across the three case studies, drawing on original data collected from 156 respondents. It examines common patterns in the use of behavioural biases across different industries, showing similarities and contrasts in the techniques employed to influence consumer behaviour, and assesses the effectiveness of these approaches across different scenarios.

Section 6 critically evaluates the ethical dimensions of these strategies, focusing on how companies such as Starbucks, Amazon, and Duolingo employ behavioural biases to influence consumer autonomy and decision-making. This section investigates whether such methods empower customers by streamlining their choices or exploit them by leveraging cognitive biases, and considers issues of transparency, informed consent, and consumer awareness.

Section 7 presents the conclusions of the research, drawing together the findings from the Starbucks, Amazon, and Duolingo analyses to demonstrate how cognitive biases influence consumer decisions and long-term brand relationships, while acknowledging the limitations and ethical considerations raised earlier in the paper.

II. Literature Review: The Foundations of Behavioural Economics

2.1 Early Roots: Adam Smith and the Limits of Rationality

The intellectual roots of behavioural economics stretch back further than is often recognised. Adam Smith, celebrated as the father of modern economics for *The Wealth of Nations* (1776), was also the author of *The Theory of Moral Sentiments* (1759), a work that took a strikingly different view of human nature. In it, Smith observed that people derive more psychological pain from losses than pleasure from equivalent gains. This asymmetry — which Smith described in largely philosophical terms — would later become one of the most robustly verified findings in experimental economics, formalised as loss aversion by Kahneman and Tversky. Smith's observation was significant because it demonstrated, at the very birth of economic thought, that emotion and psychology are not external disturbances to rational decision-making; they are embedded within it. Yet mainstream economics in the nineteenth and twentieth centuries largely set these insights aside in favour of elegant mathematical models of rational choice.

2.2 Bounded Rationality: Herbert Simon's Challenge

The first decisive challenge to the rational-actor model in modern economics came from Herbert Simon in his landmark 1955 paper, 'A Behavioral Model of Rational Choice'. Simon argued that human rationality is inherently bounded — limited by the information available, the cognitive capacity of the decision-maker, and the finite amount of time any individual can spend on a decision (Simon, 1955). Rather than optimising their choices (selecting the objectively best option), Simon proposed that people select options that are 'good enough', meeting a threshold of acceptability rather than reaching for an ideal. Simon's concept of bounded rationality was revolutionary: it suggested that the mathematical models used in economics, while internally consistent, did not accurately describe how real people think and decide. His work opened the door to a more psychologically grounded economics, one that acknowledged human limitations rather than assuming them away.

2.3 The Modern Foundation: Kahneman and Tversky

The formal crystallisation of behavioural economics as a discipline occurred in the 1970s and 1980s, primarily through the work of psychologists Daniel Kahneman and Amos Tversky. In their 1974 Science paper, 'Judgment under Uncertainty: Heuristics and Biases', they demonstrated systematically that people rely on mental shortcuts — heuristics — when making judgments under conditions of uncertainty, and that these shortcuts produce predictable, systematic errors called biases (Tversky & Kahneman, 1974).

Their most notable contribution came in 1979 with Prospect Theory, which fundamentally challenged Expected Utility Theory, the prevailing model of risk-taking and decision-making. Prospect Theory showed that people evaluate outcomes relative to a reference point (usually the status quo) rather than in absolute terms, and that losses loom larger than equivalent gains. As Kahneman and Tversky (1979) demonstrated, people systematically overweight certain outcomes relative to probable ones, which explains many seemingly irrational financial decisions. The study became one of the most cited in the history of economics, and Kahneman received

the Nobel Memorial Prize in Economic Sciences in 2002.

In his 2011 book *Thinking, Fast and Slow*, Kahneman synthesised decades of research into an accessible framework built around two modes of thought: System 1 (fast, intuitive, emotional) and System 2 (slow, deliberate, rational). Most everyday decisions, he argued, are made by System 1, which is where biases reside (Kahneman, 2011). This framework has had a great impact not only in academia, but also in industry and policy.

2.4 From Theory to Practice: Richard Thaler

While Kahneman and Tversky established the experimental and theoretical foundations, Richard Thaler pioneered the practical application of behavioural economics to real-world situations. Thaler proposed the concept of mental accounting in his 1985 paper, arguing that people do not treat all money as fungible but instead categorise it into different psychological ‘accounts’ (Thaler, 1985). Money won in a lottery may be spent more freely than money earned through work, even though the purchasing power is identical. Thaler’s most widely known work, *Nudge*, co-authored with the legal scholar Cass Sunstein, was published in 2008. The book developed the concept of ‘libertarian paternalism’, which holds that choice architecture (the way options are presented) can guide people toward better decisions without restricting their freedom of choice (Thaler & Sunstein, 2008). A nudge might be as simple as making a pension plan opt-out rather than opt-in, or placing healthier foods at eye level in a cafeteria. The book influenced governments around the world and signalled that behavioural economics had moved from the lecture hall to the boardroom.

Thaler later documented the field’s struggle for acceptance in *Misbehaving: The Making of Behavioral Economics* (2015), noting that early behavioural economists strategically published in mainstream economics journals rather than positioning themselves as outsiders — a decision that helped the field gain legitimacy within the discipline (Thaler, 2015).

2.5 Behavioural Economics and Business Strategy

The rise of behavioural economics has had far-reaching implications for corporate strategy. Rather than assuming that consumers make perfectly rational, utility-maximising decisions, businesses increasingly design products, services, and loyalty programmes that work with, rather than against, predictable human psychology.

This is the context in which the case studies in Section 4 should be understood. Each company examined below has gone beyond intuition to incorporate precise, identifiable behavioural mechanisms into its consumer-engagement architecture. The question is not whether these corporations understand behavioural economics — they plainly do. The more interesting question is: which specific biases are they exploiting, how, and for what purpose?

III. Understanding Consumer Loyalty

3.1 Definition and Key Features

Consumer loyalty is defined by Richard L. Oliver (1999) as a customer’s deep commitment to repurchase or use a preferred product or service in the future, despite situational influences and marketing efforts that may cause switching behaviour (Oliver, 1999). This definition is important for what it emphasises: loyalty is more than habitual repurchase. It requires a psychological commitment that endures even in the face of alternatives.

Aaker (1991) identified three characteristics of consumer loyalty that remain fundamental to the field:

- 1) Repeat purchasing behaviour: customers who continuously buy from the same brand over time display a predictable and steady pattern of engagement.
- 2) Emotional attachment: a positive emotional tie formed through trust, satisfaction, and meaningful experiences that goes beyond transactional reasoning.
- 3) Trust and reliability: a strong belief that a brand or product will consistently meet expectations, reinforcing long-term loyalty.

3.2 Why Rational Models Are Insufficient

Traditional marketing theory treated loyalty essentially as a function of satisfaction: customers who were pleased with a product would rationally choose to return to it. While satisfaction is undeniably important, this account is incomplete. As behavioural economics shows, loyalty behaviour is frequently influenced by psychological mechanisms that act independently of, or even in opposition to, rational cost–benefit analysis.

Habits, emotions, cognitive biases, and the presentation of options all shape consumer behaviour. Reward systems, subscription models, and streak-based features can drive repeat behaviour even when the user is not consciously evaluating whether the option is best. These systems generate a sense of attachment, commitment, or urgency that extends beyond simple gratification.

As a result, loyalty is rarely a purely rational outcome based on product quality or pricing; it is

typically built through carefully designed experiences that shape consumer behaviour. This underlines the need to understand loyalty as a product of both rational appraisal and psychological influence.

A consumer may remain subscribed to a service they rarely use out of fear of wasting their original payment (the sunk cost fallacy). A student may return to a language app daily, not because they want to learn, but because they are afraid of losing a streak. A coffee drinker may increase their purchase frequency not because the coffee has improved, but because they are close to receiving a reward (the goal gradient effect). In each of these examples, loyalty is sustained not by rational desire, but by a psychological process built into the product's design.

This is precisely the insight that modern businesses have implemented. Understanding which biases influence loyalty-relevant behaviour allows businesses to build engagement that persists even when the purely rational reason for it is weak. The three case studies below demonstrate this process in specific, concrete terms.

IV. Case Studies

4.1 Case Study One: Starbucks — Rewards, Progress, and the Goal Gradient Effect

4.1.1 Background

Starbucks is the world's largest coffeehouse chain, with over 35,000 stores worldwide. In 2011, it introduced Starbucks Rewards, a digital reward scheme in which consumers collect 'Stars' for every qualifying purchase. Stars accumulate through incentive tiers, and when specific thresholds are met, customers earn free drinks, food, or other benefits. By 2024, the programme had over 32 million active members in the United States alone, making it one of the world's most successful loyalty schemes.

The system is purposefully visual: the Starbucks app displays a progress meter showing exactly how many Stars a customer has and how many more are needed to reach the next reward. Bonus Star offers ('Earn double Stars this week') are frequently used to accelerate accumulation, making the experience feel engaging and goal-oriented rather than purely transactional.

4.1.2 Behavioural Mechanisms

Two interconnected behavioural biases are at work in the Starbucks rewards architecture: the Goal Gradient Effect and the Endowed Progress Effect.

The Goal Gradient Effect, first described by the behaviourist Clark Hull in the 1930s and later extended to human consumer behaviour by Kivetz, Urminsky, and Zheng (2006), explains how customers increase their effort and purchasing frequency as they approach a reward: the closer people feel to a reward, the harder they try to reach it. In the Starbucks context, this means that a customer with 180 Stars (needing 20 more for a reward) will purchase more frequently, and perhaps spend more per visit, than a customer who has just redeemed a reward and is back at zero. Starbucks' data on purchase habits enables the company to time bonus Star promotions precisely, activating them as customers approach a threshold and begin to slow down, thereby sustaining high purchase frequency throughout the cycle.

The Endowed Progress Effect, identified by Nunes and Drèze (2006) in a seminal study of loyalty cards, is the phenomenon whereby people who are given an artificial head start on a task are considerably more likely to complete it. In the original trial, customers given a card with 12 stamps required, 2 of which were already filled in, completed their cards at a significantly higher rate than those given a blank card requiring only 10 stamps, despite the underlying task being equivalent. Starbucks applies this principle by awarding additional Stars upon account creation or on a customer's birthday, ensuring that no user begins at zero. This psychological head start creates the impression that progress has already begun, lowering the apparent distance to the reward and increasing motivation to continue.

4.1.3 Analysis and Evaluation

The sophistication of the Starbucks system lies in how these two effects are layered. The Endowed Progress Effect lowers the psychological barrier to entry, encouraging new users to join the system, while the Goal Gradient Effect sustains engagement throughout each reward cycle, with intensity increasing as the reward nears. The visual progress bar reinforces goal proximity, transforming an abstract point accumulation into a felt sense of nearness.

The system also alters the nature of the customer's motivation. A customer who first visits Starbucks because they enjoy the coffee or value the convenience gradually comes to return, at least in part, because they are nearing a reward: their loyalty becomes partly goal-driven rather than purely preference-driven. This is not irrational behaviour, but it reflects design choices that serve the firm's interest in purchase frequency.

The Starbucks case illustrates a central principle of behavioural loyalty design: the most effective systems actively shape the psychological experience of purchasing, making the pursuit of the reward motivating in its own right.

4.2 Case Study Two: Amazon Prime — Subscription, Commitment, and the Sunk Cost Fallacy

4.2.1 Background

Amazon Prime was introduced in 2005 as an annual subscription programme offering unlimited free two-day shipping on qualifying goods in the United States. Over the last two decades, the Prime offering has grown considerably to include same-day delivery in many locations, Prime Video, Prime Music, Prime Reading, sales events such as Prime Day, and a range of other benefits. As of 2024, Amazon Prime had over 200 million subscribers globally, making it the world's largest paid subscription programme. Rather than rewarding individual purchases, it asks customers to make a single upfront payment — currently \$139 per year or \$14.99 per month in the United States

— in exchange for ongoing benefits. This upfront commitment carries psychological consequences that extend well beyond the obvious financial incentive of free delivery.

4.2.2 Behavioural Mechanisms

The Sunk Cost Fallacy, one of the most well-documented cognitive biases in the literature, lies at the heart of Amazon Prime's effect on consumer behaviour. The Sunk Cost Fallacy refers to people's tendency to continue investing time, money, or effort in a course of action because of a prior, irrecoverable investment, even when doing so is not the best decision given current circumstances (Arkes & Blumer, 1985). The logical flaw is straightforward: sunk costs are, by definition, irrecoverable, and a rational agent should base decisions only on future costs and benefits. Research consistently shows, however, that people are unable to do this; prior involvement exerts a psychological pull toward continued engagement.

In the case of Amazon Prime, the mechanism works as follows: once a customer pays the annual subscription fee, that payment becomes a sunk cost. The rational question at every subsequent decision point should be, 'Given my current needs, is Amazon the best option for this purchase?' But the psychological question that System 1 tends to ask instead is, 'I've already paid for Prime; I should use it to get my money's worth.' This subtle reframing has significant commercial implications: Prime members are substantially more likely to begin product searches on Amazon rather than elsewhere, more likely to purchase on Amazon even when prices are identical on other platforms, and less likely to cancel their subscription even during periods of low usage.

A related mechanism is Commitment and Consistency Bias, the well-documented tendency of people to behave consistently with their earlier commitments. When a consumer identifies as an 'Amazon Prime member', they develop a psychological stake in maintaining that identity. Cancelling Prime therefore requires not only a financial decision but also a reconsideration of one's established purchasing identity — a form of cognitive dissonance that most consumers prefer to avoid.

4.2.3 Analysis and Evaluation

The Amazon Prime model is arguably the most commercially successful application of behavioural economics in loyalty design, because it accomplishes something that post-purchase reward programmes cannot: it alters the consumer's reference point before the purchase ever takes place. The member evaluates each Amazon purchase by asking, 'Am I getting the value I've already paid for?' rather than 'Is this the best deal?'

This represents a significant shift in competitive dynamics. Amazon does not need to be cheaper than its competitors on every product; it merely needs the perceived cost of switching — the sense of 'wasting' the subscription fee — to outweigh the perceived value of the alternative. The Sunk Cost Fallacy automates much of this work.

There is, however, a meaningful difference between the retention created by this mechanism and true brand loyalty. A Prime member who shops exclusively on Amazon because they feel they must 'justify' their subscription is not necessarily an emotionally engaged customer in Oliver's (1999) sense; if the subscription fee were removed, their behaviour could change dramatically. Some scholars refer to this as 'false loyalty' — retention driven by switching costs and psychological inertia rather than genuine preference. The business implication is significant: firms that rely heavily on sunk-cost dynamics may be vulnerable if a competitor substantially reduces switching costs.

4.3 Case Study Three: Duolingo — Streaks, Loss Aversion, and Commitment Bias

4.3.1 Background

Duolingo is the world's most popular language-learning application, with over 500 million users as of 2024. The app offers short, gamified language lessons in over 40 languages for free, with optional premium subscriptions. Unlike the two commercial enterprises discussed above, Duolingo's core offering is educational rather than retail, but its engagement design employs the same behavioural concepts with remarkable

sophistication.

The most prominent feature of Duolingo's engagement design is the Streak: a counter tracking the number of consecutive days on which a user has completed at least one lesson. The streak is prominently displayed in the app interface alongside a flame icon. Users who skip a day lose their streak and are reset to zero, unless they use a 'Streak Freeze' — a purchasable or earnable mechanism that protects the streak for one missed day. Regular push notifications remind users of their streak status, often using emotionally charged language such as 'Your streak is at risk!' or 'Don't let your flame burn out.'

4.3.2 Behavioural Mechanisms

Three interconnected features make this design effective. First, the streak is built over time, so its perceived value grows with its length: a five-day streak is mildly satisfying, while a 200-day streak feels like a genuine, 'earned' accomplishment. Second, losing the streak is total and immediate — there is no gradual erosion or partial credit — which heightens the sense of loss. Third, notifications are deliberately framed to trigger loss aversion rather than positive motivation: they emphasise what will be lost rather than what may be gained. 'Your streak is at risk' is a loss-framed message, whereas 'Keep learning!' is a gain-framed one; Duolingo predominantly uses the former.

The second major mechanism is Commitment Bias (also known as escalation of commitment). As users sustain their streak across days, weeks, and months, they develop a psychological attachment to the consistency of their behaviour. Breaking the streak would contradict their self-image as a learner, so even when the initial motivation to study has faded, users return in order to maintain consistency with their prior behaviour — the same process that keeps investors from selling depreciating assets at a loss.

4.3.3 Analysis and Evaluation

The Duolingo case is analytically interesting because the behavioural mechanisms are unusually explicit, and the firm's core mission — language education — creates an inherent tension with the loyalty mechanisms it deploys.

On the positive side, the streak mechanism is highly effective at increasing daily engagement; users with long streaks are among the most loyal and longest-tenured on the platform. The approach transforms language learning, which is cognitively demanding and easy to deprioritise, into a habit with a psychological cost for quitting, which for many users may genuinely improve learning outcomes by ensuring consistent exposure to the language.

On the negative side, the streak system introduces a tension between engagement and learning quality. A user who completes a single thirty-second review at 11:58 p.m. to avoid losing their streak has technically preserved it, but their actual language acquisition that day is minimal. The metric of engagement (did the user open the app and finish a lesson?) is prioritised over the metric of educational outcome (did the user make meaningful progress?) — a textbook illustration of Goodhart's Law: once a measure becomes a target, it ceases to be a good measure.

The Duolingo case exemplifies a broader trade-off in behaviourally engineered loyalty: such systems are highly effective at producing the behaviours they are designed to induce, but those behaviours may not always align with users' deeper goals. A company whose stated mission is education faces particular ethical scrutiny when its engagement mechanisms prioritise retention over learning quality.

V. Survey-Based Analysis of the Case Studies

5.1 Introduction and Methodology

In today's highly competitive and consumer-driven market, businesses constantly adopt marketing strategies to attract customers and maintain loyalty. Among these strategies, discounts and promotional offers have emerged as some of the most effective tools for influencing consumer purchasing behaviour. Promotional techniques such as seasonal sales, cashback offers, buy-one-get-one deals, loyalty rewards, and limited-time discounts are designed to create a sense of value and urgency, encouraging consumers to make purchasing decisions more quickly. These strategies not only help businesses increase sales and engagement but also shape how consumers perceive brands.

This section explores how consumers respond to pricing incentives, and whether promotional offers affect purchasing frequency, spending habits, product preference, and brand loyalty. It also investigates the psychological factors — urgency, perceived savings, emotional satisfaction, and fear of missing out — that motivate consumers to respond positively to promotional campaigns. The research focuses on Starbucks, Amazon, and Duolingo, which are widely recognised for using discounts, subscription benefits, reward systems, and promotional offers to attract and retain consumers: Starbucks uses reward-based loyalty programmes and point systems to encourage repeat purchases; Amazon attracts consumers through discount events, cashback offers, and premium membership benefits such as Amazon Prime; and Duolingo motivates users through streak

systems, premium subscription offers, and gamified rewards.

The findings reported below are based on survey responses collected from 156 participants and are intended to identify behavioural patterns and assess the overall effectiveness of discounts and promotional offers in shaping consumer decision-making. The survey findings reveal that many consumers are psychologically influenced by reward systems, particularly when they feel close to achieving a benefit — a pattern consistent with the Goal Gradient Effect, which holds that people become more motivated to complete a task as they perceive themselves getting closer to the reward.

5.2 Starbucks: Survey Findings

The survey findings clearly demonstrate that Starbucks' reward and loyalty system has a strong influence on consumer behaviour and purchasing decisions. The survey aimed to examine whether reward systems motivate consumers to make additional purchases, and whether visible progress toward rewards affects spending behaviour.

One key question asked participants whether reward systems such as points, stars, and cashback motivate them to make more purchases. Of 156 respondents, 46.2% answered 'Yes', 28.8% responded 'Sometimes', and 25% answered 'No'. These results indicate that a majority of consumers are positively influenced by reward systems, and that such incentives encourage greater engagement with the brand: consumers often perceive reward programmes as beneficial because they provide a sense of value and savings, making them more willing to continue spending.

Do reward systems (points, stars, cashback) motivate you to make more purchases?
156 responses

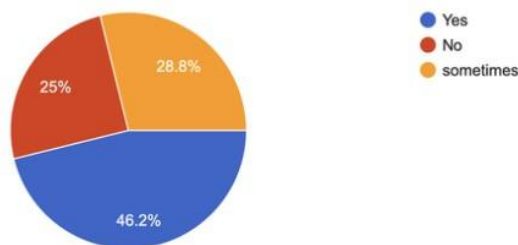


Figure 1. Consumer responses on whether reward systems (points, stars, cashback) motivate additional purchases.

If a reward is close to completion, how likely are you to make an extra purchase?
156 responses

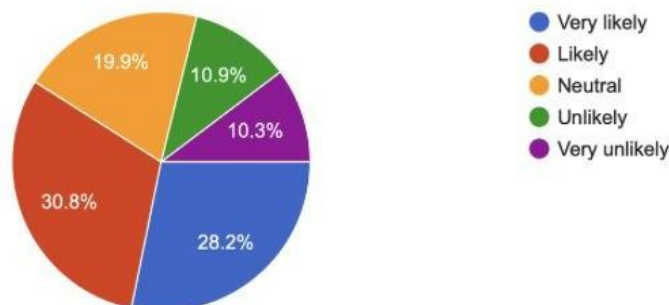


Figure 2. Distribution of responses on the influence of reward systems on purchasing decisions.

The survey also explored whether consumers had ever made an extra purchase specifically to complete a reward. Of the respondents, 56.1% answered 'Yes'. This is consistent with the Goal Gradient Effect: consumers who feel close to earning a reward are more likely to increase their spending or make impulsive purchases in order to reach the goal. In the Starbucks context, a consumer may purchase an extra drink or snack simply because they are a few points away from receiving a free reward, illustrating how reward systems can psychologically encourage consumers to spend more than originally planned.

A further question asked respondents how likely they would be to make an extra purchase if a reward was close to completion. In total, 28.2% selected 'Very likely' and 30.8% selected 'Likely'

— together representing more than half of respondents — while 19.9% remained neutral and smaller

proportions selected 'Unlikely' or 'Very unlikely'. These findings reinforce the idea that visible progress toward rewards creates a psychological sense of motivation and urgency: the closer consumers feel to achieving a reward, the more emotionally invested they become in completing the process.

The survey also investigated how consumers react when they can visually track their progress toward a reward. Respondents were asked whether seeing this progress makes them buy more frequently, continue purchasing at the same level, or has no effect. The results showed that 34.6% would buy more frequently and 38.5% would continue purchasing at the same level, while only 26.9% reported no effect.

Seeing your progress toward a reward makes you want to:

156 responses

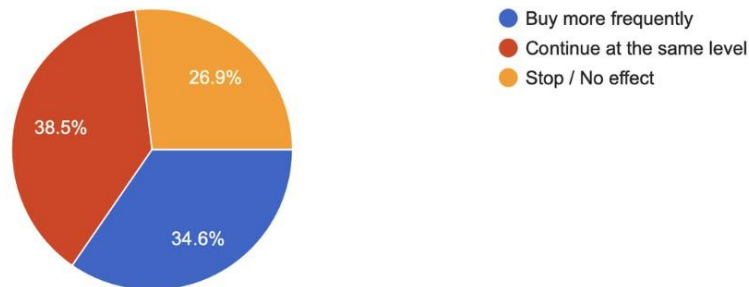


Figure 3. Consumer purchasing frequency in response to visible reward progress.

These findings indicate that progress-tracking systems are highly effective in maintaining engagement. Starbucks uses this strategy through its app and rewards dashboard, where consumers can track their Stars and see how close they are to a reward; this visual progress creates a sense of achievement and encourages consumers to remain connected with the brand.

The survey further analysed the importance of reward points in encouraging consumers to revisit a brand: 24.4% of respondents considered reward points 'Very important', 27.6% 'Important', 27.6% were neutral, and 20.5% considered them 'Not important'. These responses demonstrate that loyalty programmes play a major role in encouraging repeat visits and strengthening customer retention, as rewards create a sense of appreciation and added value.

Overall, the survey findings reveal several psychological factors that shape consumer behaviour in reward-based systems, including perceived value, emotional satisfaction from completing rewards, and urgency or fear of missing out when rewards or offers are time-limited. These influences help explain why reward systems are such effective marketing tools.

5.3 Starbucks: Behavioural Economics Interpretation

Behavioural economics plays an important role in understanding how discounts, promotional offers, and reward systems influence consumer decision-making. Unlike traditional economics, which assumes that consumers always make rational decisions, behavioural economics explains how psychological, emotional, and cognitive factors affect purchasing behaviour.

The primary concept reflected in the Starbucks findings is the Goal Gradient Effect: individuals become increasingly motivated to achieve a goal as they perceive themselves getting closer to it.

Reward systems such as points, cashback, loyalty stars, and streaks encourage consumers to continue spending or engaging with a brand because they feel close to receiving a reward. Starbucks encourages repeat purchases through its Star reward system, motivating customers to buy more frequently in order to unlock free products and benefits.

A second relevant concept is the perception of savings and value: discounts and promotional offers create the impression that consumers are receiving greater value for their money, even when a purchase was not originally planned. Limited-time offers and flash sales also create urgency and fear of missing out (FOMO), encouraging consumers to make quicker purchasing decisions.

Behavioural economics also explains the role of emotional satisfaction: completing a reward, maintaining a streak, or earning loyalty points provides consumers with a sense of achievement, which strengthens the relationship between consumers and brands and increases the likelihood of repeat purchases and long-term loyalty.

Overall, the Starbucks findings strongly support the idea that promotional offers and loyalty programmes significantly influence consumer choices and purchasing behaviour. Consumers are highly responsive to reward-based marketing strategies and are often willing to increase spending to achieve rewards, confirming that reward systems are powerful tools in shaping modern consumer behaviour.

5.4 Amazon: Survey Findings

The survey findings clearly demonstrate that Amazon's subscription model, particularly Amazon Prime, significantly influences consumer behaviour and purchasing decisions. The survey examined whether paying for a subscription encourages greater usage, affects switching behaviour, and contributes to loyalty through mechanisms such as the sunk cost fallacy and loss aversion.

One key question asked participants whether they try to use a subscription more often after paying for it. Of 156 respondents, 50% answered 'Yes', 22.4% answered 'Sometimes', and 27.6% answered 'No'. These results indicate that a large majority of consumers increase their usage after purchasing a subscription, suggesting that once consumers have made a financial commitment, they are motivated to maximise its value by using the service more frequently.

If you pay for a subscription (e.g., Amazon Prime), do you try to use it more often?
156 responses

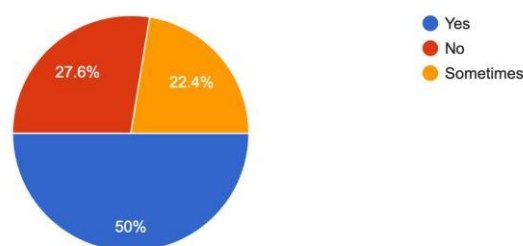


Figure 4. If you pay for a subscription (e.g., Amazon Prime), do you try to use it more often? (n = 156).

The survey also explored whether consumers had continued using a service mainly because they had already paid for it. Of the respondents, 57.7% answered 'Yes' and 42.3% answered 'No'. This provides strong evidence of the sunk cost fallacy: even when consumers no longer need or fully use a service, they often continue using it because cancelling would feel like wasting money already spent.

Have you continued using a service mainly because you already paid for it?
156 responses

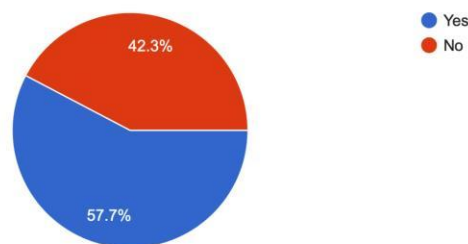


Figure 5. Have you continued using a service mainly because you already paid for it? (n = 156).

Respondents were also asked how likely they would be to switch to another service after paying for a subscription: 21.8% selected 'Very likely' and 20.5% selected 'Likely', while 26.9% remained neutral, 21.2% selected 'Unlikely', and approximately 9.6% selected 'Very unlikely'. These findings indicate that many consumers are hesitant to switch services once committed to a subscription, reflecting consumer inertia and status quo bias.

The survey further examined how frequently consumers actively use subscription services: 34.8% reported using them very often and 27.7% often, 21.3% sometimes, and a smaller proportion rarely. These findings suggest that subscription services have become deeply integrated into consumers' daily lives, and that frequent usage increases familiarity and dependence, further strengthening loyalty and reducing the likelihood of cancellation.

How often do you actively use subscription services?
155 responses

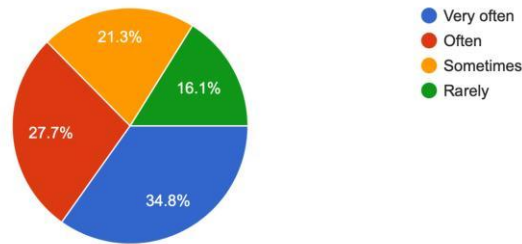


Figure 6. How often do you actively use subscription services? ($n = 155$).

The survey also asked whether consumers had ever felt like cancelling a subscription but ultimately decided not to: 60% answered 'Yes' and 40% answered 'No'. This highlights the strong psychological influence of subscription models — many consumers continue paying for services despite considering cancellation, focusing on the benefits they might lose rather than the money they could save, a pattern consistent with loss aversion.

Have you ever felt like cancelling a subscription but decided not to?
155 responses

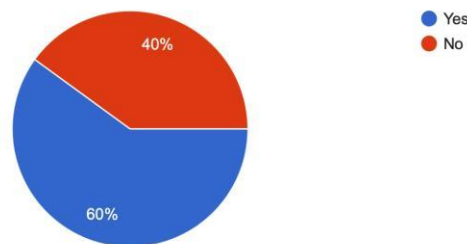


Figure 7. Have you ever felt like cancelling a subscription but decided not to? ($n = 155$).

Finally, an open-ended question asked respondents about their main reason for continuing a subscription. Common responses included access to content, convenience, service quality, entertainment, faster delivery, and habit, with several participants specifically citing Amazon Prime's convenience and delivery benefits. These responses indicate that while behavioural biases influence subscription decisions, consumers also remain loyal because they perceive genuine value from the service.

5.5 Amazon: Behavioural Economics Interpretation

The most important concept reflected in the Amazon findings is the Sunk Cost Fallacy: individuals continue investing time, money, or effort into something because of resources already invested in the past. The finding that 57.7% of respondents continued using a service mainly because they had already paid for it provides clear evidence of this bias, as consumers often feel reluctant to cancel subscriptions in order to justify their previous spending.

A second important concept is Loss Aversion: consumers tend to fear losing benefits more than they value gaining an equivalent amount of money, which helps explain why 60% of respondents considered cancelling a subscription but ultimately decided not to. Amazon Prime members may continue their subscriptions because they do not want to lose benefits such as free delivery, exclusive offers, streaming content, and member discounts.

The findings also reflect Status Quo Bias, the tendency of individuals to prefer maintaining their current situation rather than making a change; many respondents were neutral or unlikely to switch after paying for a subscription, suggesting that once consumers become accustomed to a service, they often continue using it even when alternatives are available. Behavioural economics also explains the role of habit formation and convenience: frequent use of subscription services creates routines that make the service an important part of everyday life, and Amazon strengthens this by bundling multiple benefits within a single subscription.

Overall, the Amazon findings strongly support the idea that behavioural economics significantly influences consumer behaviour and loyalty. Consumers are often motivated by the sunk cost fallacy, loss aversion, status quo bias, and habit formation, and Amazon successfully combines genuine customer value with

these behavioural influences to encourage continued engagement, repeat usage, and long-term retention.

5.6 Duolingo: Survey Findings

The survey findings clearly demonstrate that Duolingo's streak feature has a significant influence on user behaviour and engagement. Duolingo is widely recognised for its streak system, which tracks the number of consecutive days a user completes lessons; maintaining a streak generates a sense of achievement and progress, while losing one can create feelings of disappointment. The survey examined whether streaks motivate users to continue using the app, whether fear of losing progress influences behaviour, and how loss aversion affects engagement.

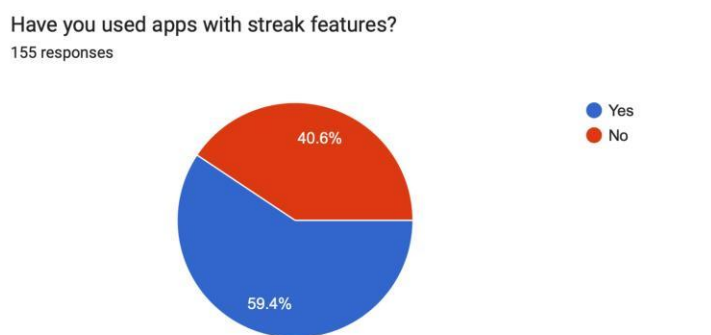


Figure 8. Have you used apps with streak features? ($n = 155$).

One key question asked participants whether they had ever used apps with streak features. Of 155 respondents, 59.4% answered 'Yes' and 40.6% answered 'No', indicating that a majority of consumers are already familiar with streak-based systems and highlighting their growing importance as a tool for increasing user engagement.

The survey also explored whether consumers feel motivated to continue using an app in order to avoid losing their streak: 34.2% answered 'Yes', 16.1% answered 'Sometimes', and 49.7% answered 'No'. Although nearly half of respondents stated that streaks do not influence their behaviour, a substantial proportion admitted that maintaining a streak motivates them to continue using an app, suggesting that streak features can create a psychological commitment that keeps users active even when they had not originally intended to remain engaged.

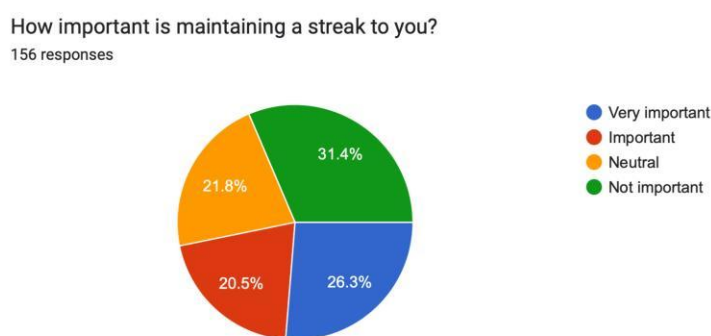


Figure 9. How important is maintaining a streak to you? ($n = 156$).

A further question asked respondents how important maintaining a streak is to them: 26.3% selected 'Very important' and 20.5% selected 'Important', while 21.8% remained neutral and 31.4% considered it 'Not important'. These findings indicate that for a substantial share of respondents, streaks act as visible indicators of progress and achievement, creating a sense of responsibility to continue participating.

The survey also investigated whether users had ever opened an app primarily to maintain their streak rather than for its intended purpose: 41.3% answered 'Yes' and 58.7% answered 'No'. Although the majority reported that they had not done so, a significant proportion admitted to using the app solely to preserve their streak — demonstrating how streak systems can lead users to prioritise maintaining progress over the underlying activity itself. In the case of Duolingo, users may complete a lesson not to learn new material, but simply to avoid breaking their streak.

Have you ever used an app just to maintain your streak rather than its main purpose?
155 responses

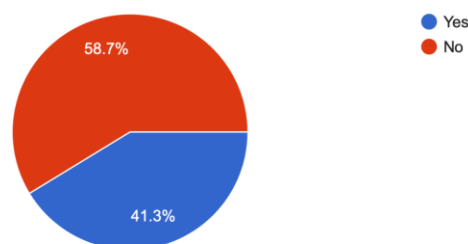


Figure 10. Have you ever used an app just to maintain your streak rather than its main purpose? ($n = 155$).

Finally, the survey analysed how users feel when they lose a long streak: 28.8% reported feeling very frustrated, 25.6% felt slightly disappointed, and 45.5% reported that losing a streak had no impact on them. While emotional reactions to streak loss vary, more than half of respondents experienced some level of disappointment or frustration, indicating that streaks create an emotional attachment capable of influencing future behaviour. An accompanying open-ended question found that common descriptions of missing a streak included sadness, disappointment, frustration, incompleteness, and regret, alongside some neutral or unaffected responses.

How do you feel when you lose a long streak?
156 responses

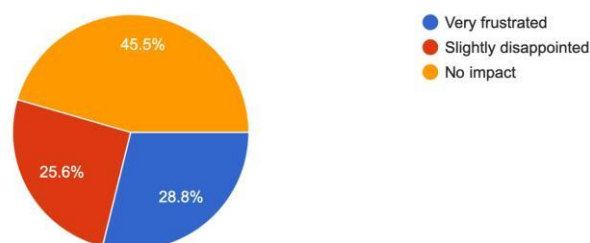


Figure 11. Emotional response to losing a long-standing streak.

5.7 Duolingo: Behavioural Economics Interpretation

The most important concept reflected in the Duolingo findings is Loss Aversion: individuals experience the pain of losing something more strongly than the satisfaction of gaining something of equal value. Users may continue completing lessons primarily because they wish to avoid losing their existing streak, and the finding that many respondents feel frustrated or disappointed when losing a streak provides direct evidence of this principle.

A second relevant concept is the Endowment Effect, whereby people place greater value on something once they perceive it as their own. As users build longer streaks, they begin to view them as personal achievements built through invested time and effort, making the prospect of losing a streak increasingly difficult to accept and motivating continued engagement.

The findings also reflect the role of Habit Formation: streak systems encourage users to perform actions consistently over time, eventually transforming these actions into habits. By rewarding daily participation and visually displaying progress, Duolingo encourages users to integrate language learning into their daily routines, increasing the likelihood of long-term app use.

A further concept visible in the findings is Commitment and Consistency Bias. Once users have invested significant time and effort in maintaining a streak, they feel motivated to behave consistently with their previous actions, which explains why many respondents admitted to opening the app simply to preserve their streak rather than for its primary purpose — breaking the streak would feel inconsistent with their past commitment.

Overall, the Duolingo findings strongly support the idea that behavioural economics significantly influences user engagement. Many users develop emotional attachments to streaks and are motivated to continue using the application in order to preserve their progress; through streak tracking, visual progress indicators, and daily engagement incentives, Duolingo successfully encourages consistent participation and long-term retention.

5.8 Strengths and Limitations of the Survey

This survey successfully achieved its objective of examining how discounts, promotional offers, reward systems, subscription models, and streak features influence consumer behaviour. The findings provide strong evidence that consumers are not always guided by rational decision-making and are often influenced by psychological factors that affect their purchasing habits, engagement levels, and brand loyalty.

One strength of this study is that it collected responses from 156 participants across three distinct industries — retail, e-commerce, and digital learning — allowing comparisons between different types of promotional strategies and demonstrating that behavioural economics principles apply across sectors. The results consistently showed that reward systems, subscriptions, and streak-based features influence consumer behaviour: Starbucks' loyalty programme demonstrated the impact of the Goal Gradient Effect, Amazon's subscription model highlighted the role of the Sunk Cost Fallacy, Loss Aversion, and Status Quo Bias, and Duolingo's streak feature revealed how Loss Aversion, Habit Formation, and Commitment Bias motivate continued engagement.

The research also has several limitations. First, the survey relied on self-reported responses, meaning participants may not always accurately reflect their actual behaviour, and may underestimate or overestimate the extent to which promotional strategies influence their decisions. Second, while the sample size is sufficient for identifying general trends, it may not fully represent consumer groups across different age groups, cultures, and income levels. Third, some questions required participants to recall past experiences, which may have introduced recall bias. Finally, the study focused on only three companies; future research could examine additional companies and industries to provide a broader understanding of behavioural economics in consumer markets, ideally using larger and more diverse samples and experimental methods to explore the long-term effects of promotional strategies.

5.9 Summary of Survey Findings

The purpose of this survey was to investigate how discounts, promotional offers, reward systems, subscriptions, and streak-based features influence consumer behaviour and decision-making. Through the analysis of responses from 156 participants and the examination of the Starbucks, Amazon, and Duolingo case studies, the research demonstrates that behavioural economics plays a significant role in shaping consumer actions and loyalty.

The findings reveal that consumers are strongly influenced by psychological factors such as the Goal Gradient Effect, Loss Aversion, the Sunk Cost Fallacy, Status Quo Bias, Habit Formation, and Commitment Bias. In the Starbucks case, reward systems and visible progress tracking encouraged consumers to make additional purchases and remain engaged with the brand. In the Amazon case, subscriptions created psychological commitment, making consumers more likely to continue using services and less likely to cancel memberships, though this was also supported by genuine benefits such as convenience and exclusive services. In the Duolingo case, streak systems encouraged consistent engagement by creating emotional attachment and motivating users to avoid losing progress.

Together, these findings show that consumers are not always rational decision-makers: emotions, perceived value, urgency, rewards, and fear of losing benefits frequently influence their behaviour, and businesses successfully use these psychological principles to increase engagement, encourage repeat purchases, and strengthen loyalty. The study confirms that promotional strategies are highly effective because they appeal to underlying psychological motivations rather than purely economic considerations, and that reward systems, subscriptions, and streak-based features have become powerful tools shaping modern consumer behaviour.

VI. Ethical Evaluation of Behaviourally Engineered Loyalty

The marketing strategies used by Starbucks, Amazon, and Duolingo demonstrate how behavioural economics can be applied to influence consumer decision-making. While these strategies are highly effective in increasing customer engagement, repeat purchases, and long-term loyalty, they also raise important ethical questions regarding consumer autonomy, informed decision-making, transparency, and the extent to which businesses should influence consumer behaviour. The central ethical issue is whether these strategies empower consumers by simplifying choices and providing genuine value, or whether they manipulate consumers by exploiting predictable cognitive biases.

One primary concern is the use of psychological biases to encourage actions that consumers may not otherwise have taken. Starbucks' rewards programme uses the Goal Gradient Effect by displaying customers' progress towards earning free drinks or rewards, encouraging additional purchases simply to reach the next reward level. While consumers benefit from discounts and complimentary products, the visible progress tracker creates a strong psychological incentive to keep spending even when additional purchases are not strictly necessary, shifting purchasing decisions from genuine need toward the desire to complete a reward. This raises the question of whether Starbucks is creating customer value or subtly encouraging unnecessary consumption

through behavioural influence.

Similarly, Amazon's Prime subscription model relies on the Sunk Cost Fallacy, Loss Aversion, and Status Quo Bias to encourage long-term membership. After paying for a subscription, many consumers continue using the service because they do not want their payment to feel wasted, or because they fear losing exclusive benefits. The survey findings support this: most respondents reported continuing to use a subscription because they had already paid for it, and many admitted to considering cancellation but ultimately choosing not to. While Amazon provides genuine benefits such as free delivery, entertainment, and exclusive discounts, the subscription model may discourage consumers from objectively evaluating whether membership continues to meet their needs, raising concerns that psychological commitment may reduce consumer autonomy and encourage continued spending based on past investment rather than rational judgement.

Duolingo's streak system presents a further ethical consideration through its use of Loss Aversion, Habit Formation, and Commitment Bias. By rewarding consecutive days of learning, the platform successfully encourages users to develop consistent study habits, which from an educational perspective creates positive outcomes by promoting discipline and continuous learning. However, the survey findings indicate that many users continue using the application primarily to preserve their streak rather than because they genuinely wish to learn, suggesting that engagement may become driven by fear of losing progress rather than intrinsic motivation. Although habit formation can be beneficial, it raises ethical concerns when users feel psychologically pressured to maintain participation regardless of their underlying educational goals.

A further issue concerns consumer awareness and informed consent. Although users voluntarily join reward programmes, purchase subscriptions, or build streaks, many consumers may not fully understand how behavioural economics shapes their decisions. Most consumers recognise that these systems exist, but few are aware that they are intentionally designed around cognitive biases such as loss aversion or the goal gradient effect. This lack of awareness raises questions about whether consumers are making fully informed decisions, or whether companies are benefiting from psychological mechanisms that remain largely invisible to users.

The ethical acceptability of these strategies also depends on transparency. When businesses clearly explain how reward systems, subscriptions, and engagement features operate, provide straightforward cancellation processes, and allow consumers to make informed choices, behavioural nudges can reasonably be viewed as ethical tools that improve the customer experience. However, if companies intentionally design systems that encourage overspending, excessive participation, or habit formation, or that make cancellation unnecessarily difficult, they risk crossing the line from persuasion into manipulation, prioritising commercial success over consumer welfare.

Despite these concerns, it would be inaccurate to conclude that these strategies are entirely unethical. Starbucks rewards customer loyalty with tangible benefits, Amazon Prime provides convenience and added value through multiple services, and Duolingo offers millions of users free access to language education while encouraging regular learning habits. Consumers ultimately retain the freedom to reject rewards, cancel subscriptions, disable notifications, or discontinue using these platforms; the companies do not remove consumer choice so much as shape the environment in which those choices are made.

Ultimately, the ethical challenge lies in balancing business objectives with consumer well-being. Businesses naturally seek to maximise customer retention, engagement, and profitability, while consumers expect fair treatment, transparency, and respect for their autonomy. Behavioural nudges can strengthen customer relationships when they genuinely improve consumer experience and create mutual value; however, loyalty built primarily through psychological pressure rather than customer satisfaction may not be sustainable or ethically justified in the long term. Long-lasting customer loyalty should ultimately result from trust, product quality, and genuine value rather than reliance on cognitive biases alone.

Overall, Starbucks, Amazon, and Duolingo operate within an ethical grey area. Their behavioural strategies successfully increase engagement and customer loyalty while offering real benefits to consumers, but they also leverage predictable psychological biases that influence purchasing decisions beyond purely rational thinking. Businesses therefore carry an ethical responsibility to ensure that behavioural marketing techniques remain transparent, proportionate, and respectful of consumer autonomy. By balancing commercial objectives with consumer welfare, companies can build sustainable customer relationships founded not only on behavioural influence but also on trust, fairness, and genuine value.

VII. Conclusion

The aim of this research was to investigate how behavioural economics influences consumer behaviour and customer loyalty by examining the marketing strategies of Starbucks, Amazon, and Duolingo. Through the analysis of survey responses from 156 participants and three real-world case studies, the research demonstrates that consumer decisions are influenced not only by rational evaluations of price, quality, and utility, but also by

psychological biases that shape purchasing behaviour, engagement, and long-term brand loyalty.

The Starbucks case study showed that reward programmes and visible progress tracking encourage repeat purchases and stronger customer engagement: consumers were more likely to make additional purchases when they felt close to earning rewards, demonstrating the Goal Gradient Effect, while reward points were also shown to increase consumers' willingness to revisit a brand.

The Amazon case study highlighted the influence of the Sunk Cost Fallacy, Loss Aversion, and Status Quo Bias on subscription behaviour. Many respondents continued using subscriptions because they had already paid for them and hesitated to cancel despite considering it, suggesting that subscription models create psychological commitment that encourages continued engagement and long-term loyalty — though Amazon's success is also supported by genuine customer benefits such as convenience, entertainment, and exclusive Prime services.

The Duolingo case study demonstrated how Loss Aversion, Habit Formation, and Commitment Bias encourage users to remain consistently engaged. The streak feature motivates users to continue learning by creating a sense of achievement and discouraging the loss of progress; while this successfully increases retention and promotes consistent learning habits, some users admitted that they maintained their streak primarily to avoid losing it rather than to improve their language skills.

Together, these findings demonstrate that behavioural economics provides a valuable framework for understanding modern consumer behaviour. Psychological biases contribute to increased engagement, repeat purchasing, subscription retention, and stronger relationships between consumers and brands, challenging the traditional assumption that consumers always make rational decisions and showing instead that emotions, habits, perceptions, and cognitive biases significantly influence decision-making.

The study also acknowledges several limitations. The findings are based on self-reported survey responses, which may not always reflect actual behaviour, and the sample of 156 respondents may not represent all consumer groups. The research also focused on three companies, which limits the generalisability of the findings. Future research could draw on larger and more diverse samples while examining additional industries and behavioural strategies.

Finally, the ethical evaluation in Section 6 emphasised that although behavioural marketing creates value and improves customer experiences, businesses must use these techniques responsibly. Sustainable customer loyalty should be built on transparency, trust, and genuine value rather than psychological influence alone. Overall, the research confirms that consumer loyalty is shaped by both rational evaluation and behavioural factors, underlining the importance of applying behavioural economics ethically to benefit both businesses and consumers in an increasingly competitive marketplace.

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