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Article

The simplicity premium: Quantifying the value of cognitive ease versus price in the adoption of the Deutschlandticket

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Abstract: With the introduction of the Deutschlandticket (DT), the fare system for public transport has been dramatically simplified. This study examines the DT from the perspective of behavioral economics to identify the psychological mechanisms underlying its acceptance. Specifically, we address three research questions: (i) What is the relative weight of cognitive simplicity compared to financial savings in the purchase decision? (ii) How stable are these drivers over time as users habituate to a "frictionless" mobility experience? and (iii) Which demographic segments exhibit the highest "simplicity sensitivity"? We are examining the factors driving purchasing decisions for the DT based on three separate, independent studies (September 2023, July 2024 and December 2024), which are representative of the German-speaking resident population aged 18 and over. Our results show that, for the majority of users, simplicity is not merely a convenience factor but a key driver—a "simplicity bonus"—that appears to play a central role alongside price. We propose a three-dimensional conceptualization of simplicity—procedural, cognitive, and outcome-oriented. While existing subscribers are primarily motivated by financial relief, new subscribers are more strongly attracted by the radical reduction in cognitive load. Furthermore, we identify a significant "option value"; users derive benefits from the permanent availability of seamless mobility, regardless of the actual frequency of use. The results suggest that in complex service environments, cognitive accessibility is just as crucial as financial accessibility.

Keywords: Deutschlandticket; public transport; cognitive simplicity; option value; transport transition

1. Introduction

For public transport in Germany, the introduction of the Deutschlandticket (DT) on May 1, 2023, represents a paradigm shift that fundamentally changes fare structuring. While the prevailing economic discourse focuses primarily on price elasticity and financial sustainability, a crucial psychological component has remained largely unexplored: the radical reduction of cognitive load through decision simplification. The DT therefore functions not only as a pricing policy tool but also as an approach to behavioral intervention aimed at breaking down the psychological barriers associated with the previously complex, fragmented fare structures (Schlett and Loder, 2024; infas, 2025). The nationwide flat-rate ticket for local and regional public transport aims to simplify the fare structure (Motzer et al., 2024; Gössling and Cohen, 2014), reduce mobility costs, and strengthen the attractiveness of public transport (Deutscher Bundestag, 2024).

Simplicity, also in pricing, acts as a trust-building factor and reduces the psychological costs of engaging in the system (Zajonc, 1968). Complexity is commonly perceived as a hidden barrier that increases the risk of "incorrect" choice (Schwartz and Ward, 2004), such as purchasing the wrong ticket for a specific zone. Furthermore, research by Prelec and Loewenstein (1998) on Mental Accounting indicates that decoupling payment from specific consumption instances minimizes the "Pain of Paying." A simple, universally valid pricing model like the DT fosters habitual usage because the decision to travel is psychologically separated from the individual transaction. Despite the ticket's success and its recent price adjustment to €58 (2025) and €63 (2026) there is a lack of empirical clarity regarding the relative weight of simplicity versus price in the long-term purchase decision.

Extensive research in cognitive psychology demonstrates that individuals operate under inherent cognitive constraints and seek to simplify complex decision-making environments through the use of heuristics (Bounded Rationality; Simon, 1955). This behavior is consistent with the theory of cognitive load, which states that people prefer environments that minimize cognitive effort and information-processing demands (Sweller, 1988). When consumers feel overwhelmed by an abundance of options—a phenomenon widely known as "choice overload"—this often leads to decision paralysis, reduced post-purchase satisfaction, or the decision not to purchase at all (Iyengar and Lepper, 2000). In the context of public transit, this means that the need to analyze fare zones and calculate the break-even point for monthly passes causes significant cognitive friction. Literature on social cognition suggests that humans act as "cognitive misers" (Fiske and Taylor, 2020), seeking to minimize mental effort whenever possible. The DT addresses this fundamental need by reducing the evaluation process to a binary choice, effectively bypassing the "tyranny of choice" that characterized the pre-existing system. Together, these theories suggest that decision-making is shaped by cognitive constraints, effort minimization, habit persistence, and risk reduction.

This article aims to examine the significance of simplifying the fare structure for the DT, specifically how much its ease of use and optional nationwide validity influence the decision to purchase the DT. To this end, we analyze several empirical datasets in which DT holders are asked about their reasons for purchasing the ticket. We demonstrate that the factors of simplicity and convenience are key considerations in the purchasing decision, typically cited in conjunction with the low price. While traditional transport planning assumes that travelers primarily seek to minimize generalized costs, the success of the DT confirms Banister's (2008) alternative paradigm. He notes that 'there always seems to be a reason for not changing' the status quo, suggesting that public transport must not only be affordable but radically simpler to gain the necessary 'public acceptability' for a shift away from car dependency.

While prior research often refers to simplicity, convenience, or cognitive ease interchangeably, these constructs capture distinct psychological mechanisms. Building on existing literature, this paper proposes a three-dimensional conceptualization of simplicity in decision-making contexts. First, cognitive simplicity refers to the reduction of information-processing demands, consistent with Bounded Rationality and Cognitive Load Theory (Simon, 1955; Sweller, 1988). Second, procedural simplicity

captures the ease of accessing and using a system, including subscription, navigation, and interaction processes, and is closely related to transaction cost theory (Williamson, 1981). Third, outcome simplicity refers to the predictability and transparency of outcomes, reducing uncertainty and perceived risk, consistent with Prospect Theory (Kahneman and Tversky, 1979). This distinction allows for a more precise analysis of how simplicity affects decision-making beyond purely monetary considerations and a more precise analysis of how simplicity operates as a multidimensional construct in complex service environments.

The remainder of the paper is structured as follows. Section 2 provides the theoretical background and introduces the research questions. Section 3 describes the data and methodological approach. Section 4 presents the empirical results. Section 5 discusses the findings in the context of the transport transition and derives policy implications. Section 6 concludes.

2. Background and research questions

2.1. The genesis of the Deutschlandticket: From crisis intervention to structural reform

The DT is the successor to the 9-euro ticket, a three-month experiment conducted in the summer of 2022. It was originally designed as a temporary relief measure (in addition to a fuel rebate) during the global energy crisis and ultimately, unexpectedly, became a "natural experiment." The novelty of the DT in the public perception can only be understood in the context of the 9-euro ticket, in which a nationwide flat-rate fare (June–August 2022) at a very low price mobilized a significant portion of society—an effect that many experts had previously deemed impossible (Gohl and Schrauth, 2022; Krämer, 2025). The broad public resonance of the €9 ticket extended beyond its direct transport function. Reflecting this perception, Green parliamentary leader Katharina Dröge described the scheme as a "huge success" and argued that discontinuing it would represent a missed opportunity to provide social relief, mitigate inflationary pressures, and advance climate protection in the transport sector (Münchner Merkur, 2022). Undoubtedly, the unexpected success of the €9 ticket laid the foundation for the introduction of the DT (Bissel, 2023). Broad public approval and massive demand increased pressure on political decision-makers to offer a permanent, affordable nationwide successor service.

Figure 1a illustrates the fundamental structural shift in the German public transport landscape initiated by the introduction of the DT. Prior to May 2023, the system was characterized by a highly fragmented "patchwork" of regional transport network (transport associations; Verkehrsverbünde), each maintaining its own distinct tariff rules, price zones, and boundary restrictions (Bissel et al., 2026). This heterogeneity and complexity presented potential users with significant cognitive hurdles, as crossing regional borders often required the purchase of multiple, unrelated tickets. With the introduction of the DT, it became possible to replace this fare complexity with a uniform, nationwide flat-rate model (Krämer and Korbutt, 2026). This reform effectively eliminates what researchers identify as the primary deterrents

to public transport use: the mental effort of "mental accounting" and the necessity to navigate complex, zone-based fare systems. By providing a single access point to all regional networks, the DT transforms public transport into a frictionless utility, which is a critical prerequisite for breaking long-standing car habits.

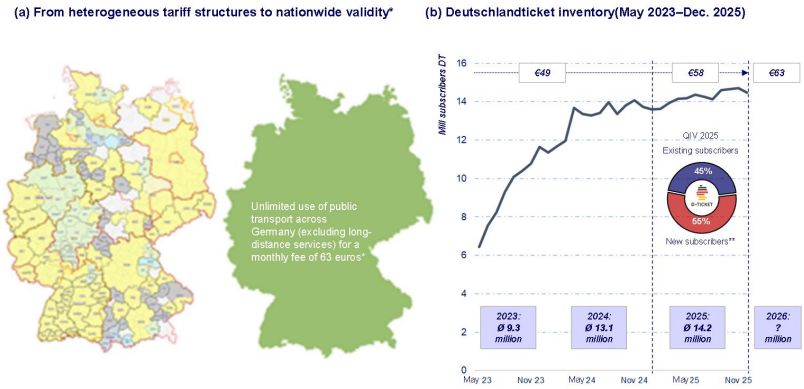

Figure 1. The Deutschlandticket offer (a) based on Bissel et al. (2026) and ticket inventory development (b) for the period May 2023 to Dec. 2025 according to Deutscher Bundestag (2026).

Note:

*: Personal and non-transferable. It's digital only (App or eTicket). Sold as a monthly subscription (Single Euro Payments Area (SEPA)/card payment). Cancel by the 10th of a month to end that month; later cancellations take effect the following month (issue rules may vary).

**: People previously used public transport only occasionally without a flat-rate ticket subscription.

Against the backdrop of supposed saturation effects—Bavarian Transport Minister Bernreiter assessed the situation by considering the expected 13 million tickets to be unrealistic and describing the then inventory of 11 million DT in relation to the population as "not a big hit" (dpa Bayern, 2023)—it later turned out that the market development was dynamic. A stock of around 14.5 million tickets was forecast for December 2024, shortly before the price increase (Abeling-Zuber et al., 2025). Real inventory data, published by Deutscher Bundestag (2026), show a further inventory increase although the monthly price for the DT was increased by 18% beginning of 2025. At the end of 2025, more than 14 million people owned a DT. More than half are new subscribers who did not previously belong to the segment of regular public transport customers (**Figure 1b**). This resilience against price adjustments underscores that the ticket's value proposition is not solely dependent on its low price point but is strongly driven by the simplicity and comfort of the offer.

2.2. The price-simplicity paradox and modal choice: Preferences for flat rates

Prior to the introduction of the DT, the German public transport (PT) system required navigating complex 'honeycomb' structures and rigid zone boundaries. According to Transaction Cost Theory (Williamson, 1981), these 'Information Search Costs' act as significant non-monetary barriers to entry. The DT can be interpreted as a Relief Heuristic, allowing users to decouple travel from fare calculation and effectively minimizing the 'Pain of Paying' (Prelec and Loewenstein, 1998). Traditionally, flat-rate season tickets were primarily offered to PT heavy-users at high price levels as well as with strict regional limitations (Bissel et al., 2026; Krämer and Korbutt, 2026).

In their empirical study of the Swiss rail market, Weibel et al. (2024) differentiate between four primary psychological constructs: the taximeter effect (pain of paying), cost control, and pre-commitment (self-binding)—all favoring flat-rate adoption—versus the flexibility effect, which typically favors pay-per-use tariffs. Notably, the authors explicitly exclude 'convenience' and the 'insurance effect' from their model, arguing that these factors do not significantly differentiate tariff choice in the specific technological context of the Swiss system.

According to Lambrecht and Skiera (2006), the preference for flat-rate plans is largely attributable to an insurance effect. This suggests that subscribers derive value not only from their average consumption but also from the "option" to consume a great deal without incurring additional marginal costs. In the context of the DT, this effect transforms the ticket into a kind of "mobility insurance," whereby the high subjective weighting of infrequent long-distance trips reflects the value of being protected from the financial risk and "transaction costs" of expensive spontaneous trips. Wirtz et al. (2015) emphasize the role of convenience in German public transit. They argue that the primary value of a flat-rate fare lies in the elimination of fare complexity. For the user, the "simplicity bonus" of the Deutschlandticket stems from the removal of spatial boundaries and the elimination of the need for "mental accounting" (Thaler, 1985). Although rational behavior can also be recognized in this, the effects are predominantly classified as "flat-rate bias". As Gaus and Link (2026) point out, ticket choice is subject to strong behavioral inertia, implying that people stick with their choice even if it becomes seemingly irrational at some point to avoid the disutility of collecting information or changing habits."

2.3. Psychology of modal choice: The cognitive asymmetry of switching

The decision-making process between private car usage and public transport (PT) is characterized by a profound cognitive asymmetry. For car owners, vehicle use typically functions as a System 1 operation: a reflexive, habitualized choice requiring near-zero deliberative effort (Kahneman, 2011). In contrast, transitioning from a car to PT—even when economically rational—constitutes a high-effort System 2 intervention. Importantly, by removing the 'tariff-calculation' phase, the DT facilitates the formation of new habits. As Wood and Neal (2007) argue, repeated behaviors in stable contexts become automatic, reducing the need for conscious deliberation.

According to Habit Theory (Verplanken and Wood, 2006), habits function as mental shortcuts that bypass information search. A driver does not rethink their commute every day; the car remains the "default" choice, and the choice of transportation has become habitual. In contrast, switching to public transit requires tackling complex System 2 tasks, such as adhering to schedules and deciphering fare zones. There is a cognitive barrier to entry, as the "mental strain" involved in planning a trip by public transit (including the risk of having the wrong ticket) is often perceived as more exhausting than the actual travel time (Banister, 2008). The DT acts as a crucial intervention by addressing this asymmetry through the neutralization of habit. Experimental evidence suggests that the mere possession of a travelcard can decouple mode choice from established habits. Thøgersen and Møller (2008)

demonstrated in a field experiment that providing car drivers with a free one-month travelcard significantly increased PT usage and, crucially, neutralized the impact of previous car-driving habits during the intervention period. This suggests that a flat-rate subscription like the DT serves as a "structural breaker" of behavioral inertia. By removing the "tariff-calculation" phase and the marginal cost of individual trips, the DT "downgrades" the PT decision from a complex System 2 task toward a System 1 operation, effectively lowering Switching Costs (Burnham et al., 2003).

However, as Thøgersen and Møller (2008) also note, the long-term maintenance of this shift depends on the perceived price-quality relationship once the habit is broken. The DT's radical simplicity and nationwide validity aim to ensure that once the cognitive barrier is breached, the "frictionless" mobility experience provides a sufficiently high utility to prevent a relapse into car-dependent routines.

2.4. The challenge of reproducibility and stability

The preceding analysis of human decision-making reveals a high degree of latent complexity. The interaction between habitual System 1 processes, cognitive entry barriers, and the neutralizing effect of travelcards discussed above demonstrates that modal choice is rarely a linear or purely rational process (Metcalfe and Dolan, 2012). Even more challenging is a major methodological hurdle in behavioral transport research is the Reproducibility Crisis, a phenomenon originally identified in social psychology (Open Science Collaboration, 2015) that has profound implications for mobility studies. Many findings regarding modal shift and price elasticities show high variance; results that appear robust in a specific urban context often fail to replicate in rural settings or under different economic climates (Metcalfe and Dolan, 2012). This lack of stability is primarily attributed to Context-Dependency (Marsden and Docherty, 2013). A "simplicity effect" observed in a metropolitan area with high-frequency service may be entirely neutralized in peripheral regions or across different user segments. Recognizing this instability is crucial for the analysis of the DT. Given that the DT was introduced during a period of high inflation and post-pandemic recovery, it is imperative to distinguish between a transient novelty effect and a stable behavioral shift. To test the robustness of the "Simplicity over Price" hypothesis, this paper addresses these methodological challenges by comparing cross-sectional data across multiple timeframes, thereby validating the consistency of the identified drivers.

2.5. Identification of research gaps and questions

Despite the DT's success, empirical evidence regarding the stability of "simplicity" versus "price" is lacking. This paper addresses this gap through the following Research Questions (RQ):

- RQ1: What are the primary drivers of the purchase decision for the DT, and what relative weight do Cognitive Simplicity and User Comfort carry compared to financial savings?
- RQ2: How stable are these drivers? Does the importance of simplicity increase over time as the user habituates to a "frictionless" mobility experience or across customer segments?

- RQ3: How is the DT typically used, what are specific characteristics of the DT subscribers and which demographic and psychographic segments exhibit the highest "Simplicity Sensitivity"? Do groups with high cognitive load or those crossing regional boundaries prioritize ease of use over price elasticity?

3. Methodology

After the database for the empirical analysis is described in Section 3.1, the methodological approaches are presented in Section 3.2.

3.1. Data basis (nation-wide survey)

To ensure scientific robustness, this study employs a triangulated research design. This approach addresses the reproducibility crisis (Open Science Collaboration, 2015) and the high context-dependency of behavioral interventions (Metcalfe and Dolan, 2012). In order to obtain a valid picture of the impact of the DT, it is necessary, on the one hand, to use available secondary data to calibrate the results (data from publicly available statistics, research reports and other sources). Secondly, in the following, we combine three different studies conducted in 2023–2024 (for study design details, see **Appendix A**). The key characteristics of these waves are summarized in **Table 1**.

Table 1. Key characteristics of the empirical studies (2023/24).

Description	Study #1	Study #2	Study #3
Month	September 2023	July 2024	December 2024
Method	Online Survey (open acces panel); 18+ years	Online Survey (open acces panel); 18+ years	Online Survey (open acces panel); 18+ years
Focus/topics	Consumption (inflation)/Mobility/DT	Mobility/DT	Mobility/DT
Owner DT	N = 648	N = 1848	N = 607
Owner DT (share of sample, weighted)	17.1%	20.7%	21.3%

Analyses are based on a sample of respondents aged 18+ who, in terms of their composition by age, gender, place of residence, and mobility behavior, represent the German population.

3.2. Validation of relevant reasons for purchasing the Deutschlandticket

To ensure direct comparability with national reference data, the instruments used in this study were aligned with the survey framework of the official VDV evaluation (Verband Deutscher Verkehrsunternehmen/Association of German Transport Companies; VDV and Deutsche Bahn, 2025). This methodological coordination ensures that the identified purchase motives and behavioral patterns are not viewed in isolation but are interpreted within the broader context of DT sales trends. A central element of this approach is the analysis of purchase motives, which utilized an aided recall design. In motivation research, the use of aided questions offers the decisive advantage of minimizing cognitive biases stemming from memory lapses while simultaneously ensuring a high degree of standardization across survey

waves (Bradburn et al., 2004). To ensure the validity of the response categories and reduce the risk of "measurement errors," the design was tested in a qualitative pilot study and compared to previously used question designs (VDV and Deutsche Bahn, 2025). During this exploratory phase, the response options were refined and checked for completeness and selectivity (see **Appendix B** for further details).

3.3. Limitations

Several limitations must be acknowledged. First, the study relies on self-reported data, which may be subject to recall bias and social desirability effects. Second, as all variables were collected using the same survey instrument, common method bias cannot be ruled out. Third, while the use of an open-access online sample may initially raise concerns regarding representativeness, several rigorous steps were taken to mitigate potential selection bias. To ensure that the findings reflect the broader population of DT users, the data were post-stratified and weighted according to key socio-demographic benchmarks (age, gender, and regional distribution) provided by official mobility statistics (see **Appendix A**).

4. Results

This chapter presents the empirical findings regarding the DT impact, following a three-stage analytical progression. First, Section 4.1 identifies the primary drivers of the subscription acquisition. By comparing data across three distinct survey waves from September 2023 to December 2024, this analysis evaluates the temporal stability of purchase motives beyond the initial market launch phase. Building on this, Section 4.2 goes beyond neoclassical decision-making frameworks based on the concept of Homo Economicus to highlight the psychological significance of "simplicity" rather than purely "financial savings." Finally, Section 4.3 differentiates between specific user segments and their respective travel behaviors. The focus of this final stage lies in identifying "Simplicity-Sensitive" groups.

4.1. Reasons for purchasing the Deutschlandticket

Figure 2 presents longitudinal data on the self-reported reasons for purchasing the DT across three distinct measurement points: September 2023 (t_1), July 2024 (t_2), and December 2024 (t_3). The survey utilized a multi-response format ("assisted purchase reasons"), allowing respondents to select all applicable drivers. The factors are categorized into three primary dimensions: Simplicity/Comfort (dark blue), Price/Savings (grey), and Other/Contextual Factors (white). Repeating the survey is particularly valuable because it captures changing perceptions of the ticket across various dynamic market phases (from the market launch phase to the phase of intense discussions regarding necessary price increases in 2024; see **Figure 1** and Koordinierungsrat Deutschlandticket, 2024).

The empirical results indicate that the nationwide validity consistently ranks as the most significant driver, peaking at 50% in July 2024. Notably, the psychological dimension of Decision Simplicity—specifically the relief from worrying about tariff zones—initially accounted for 38% of responses. Although this specific value showed

a decline to 28% in late 2024, it remains a pillar of the ticket's value proposition. When comparing the dimensions, a "Price-Simplicity Paradox" becomes visible: while financial motives (e.g., "Cheaper than previous subscription") showed significant volatility and even a temporary decline (from 27% to 16% at t_2), the drivers related to User Comfort and Flexibility remained relatively robust. This suggests that the DT has transitioned from a mere "discount product" to a "lifestyle utility," where the reduction of transactional friction provides a stable utility that partially compensates for price fluctuations.

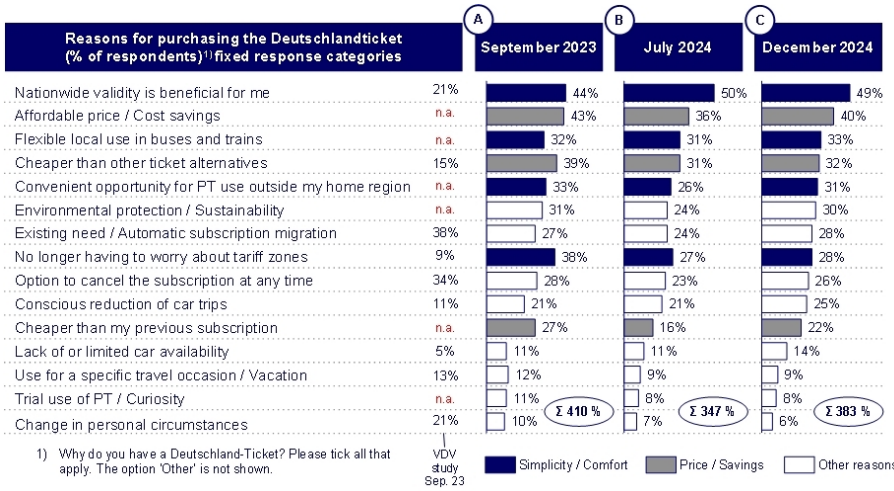

Figure 2. Reasons for purchasing the Deutschlandticket (% of respondents; DT subscribers).

Against the backdrop of the reproducibility crisis in transportation research (see Section 2.4), **Figure 2** presents a nuanced picture of behavioral stability. The survey results show that while aggregated purchase motives are present across all time points, the extent to which individual influencing factors play a role varies, suggesting a high degree of context dependence. It is also important to note that the standardized procedure minimizes the influence of the evaluator on the results (Miske et al., 2026).

Even amidst ongoing fiscal uncertainty surrounding the DT's future (Krämer and Korbutt, 2026), user preferences showed remarkable resilience, since data across all survey waves confirm that the desire for cognitive and procedural ease consistently outweighed price-driven considerations. This robustness suggests that the 'Simplicity Premium' is not a transient novelty effect but a stable psychological construct.

4.2. The relevance of "Simplicity/Comfort" vs. "Price/Savings" in decision making

The reasons for purchasing the DT described above are analyzed in more detail below. The focus is not only on the importance of each factor in isolation, but also on how frequently they are cited in combination (**Figure 3**). The data presented in the 2 × 2 contingency matrices illustrate the cross-tabulation of respondents who identified either "Price/Savings," "Simplicity/Comfort," or both as primary purchase motives. This quadrant-based approach allows for a granular differentiation between users driven by financial incentives, those prioritizing cognitive relief, and "hybrid" users:

- The Hybrid Segment (Bottom-Left): In September 2023, a significant majority

(49%) of respondents cited both dimensions as crucial. By December 2024, the share of this group decreased to 45%, indicating a slight decoupling of the two motives over time.

- The Simplicity-Only Segment (Bottom-Right): This segment represents users who prioritize convenience regardless of whether they perceive the ticket as a significant cost-saver. This group covers 20% to 28% of the DT-holders.
- The Price-Only Segment (Top-Left): Respondents citing price as the sole driver fluctuated between 12% and 16%.

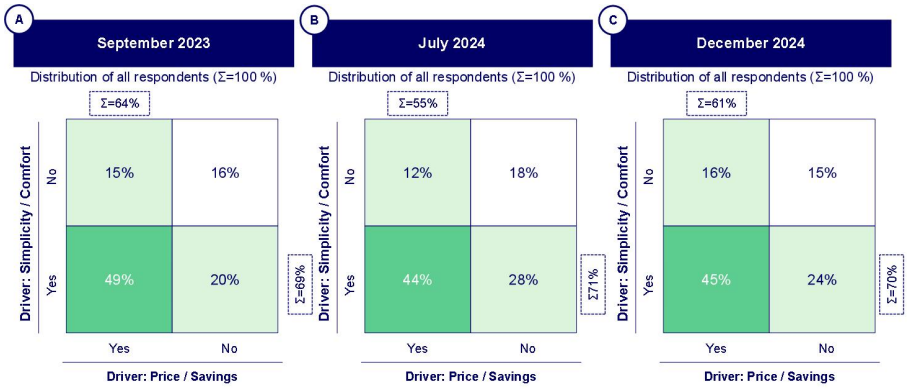

Figure 3. Driver of the Deutschlandticket purchase: Simplicity/Convenience vs. Price/Savings (% of respondents).

The empirical interaction between the identified drivers suggests that the success of the DT is anchored in a profound cognitive shift. The consistent dominance of the "Simplicity/ Comfort" dimension—accounting for 69% to 71% of the respondent base across all measurement waves—strongly supports the hypothesis that the DT functions as a Relief Heuristic (Shah and Oppenheimer, 2008). By radically reducing the necessity for System 2 deliberative processing (Kahneman, 2011), the ticket transforms public transport from a complex logistical challenge into a seamless System 1 operation.

Furthermore, the longitudinal comparison provides a compelling argument regarding the Stability and Reproducibility of these behavioral predictors. While the "Price" driver exhibited significant volatility—dropping to 55% in July 2024 before rebounding to 61% in December—the "Simplicity" driver maintained a remarkably narrow variance of only seven percentage points. This identifies Cognitive Simplicity as a more robust and reproducible predictor of purchase intent than fluctuating price perceptions.

4.3. Usage and users of the Deutschlandticket

The empirical data confirms that the DT is primarily utilized for short-distance, everyday mobility. In September 2023, 60% of all trips were conducted within the user's immediate place of residence, a figure that remained largely stable at 53% by December 2024 **(Figure 4)**. Furthermore, a substantial portion of travel (23–29%) extends beyond the immediate municipality but stays within the boundaries of the local PT association. This concentration of more than 80% of total trip volume within the transportation network area underscores the ticket's function as a structural replacement for traditional local transit subscriptions, successfully anchoring the user

in the public transport (PT) system for their daily routines. Similar results are shown by several large-scale national evaluation studies commissioned by the Deutschlandticket Coordination Council (Koordinierungsrat Deutschlandticket, 2024), the Association of German Transportation Companies (VDV and Deutsche Bahn, 2025), the Federal Ministry of Digital and Transport (VDV and Deutsche Bahn, 2025) and Gaus and Link (2026).

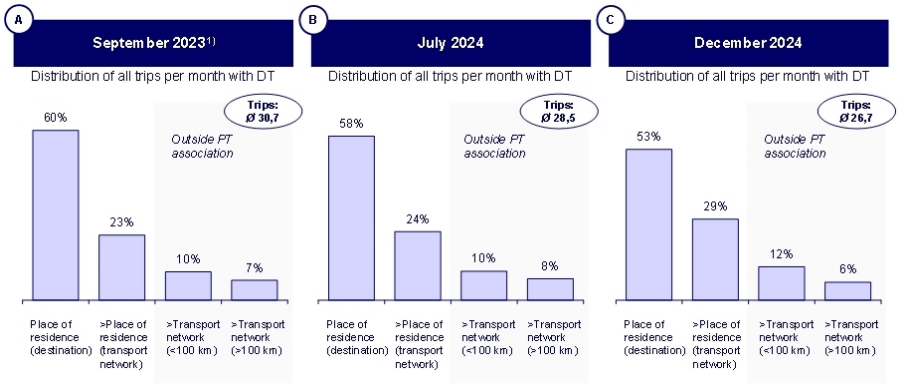

Figure 4. Trips with Deutschlandticket according to journey type and survey period (study).
Note: 1) For how many individual journeys did you use the Deutschlandticket in December 2024? One journey counts as one trip (a return journey = 2 trips).

Although long-distance journeys exceeding 100 km constitute the smallest segment of total usage (7–8%), their persistent presence is theoretically significant. From a behavioral perspective, the constant availability of interregional travel—regardless of its frequency—represents an "Option Value" that enhances the psychological utility of the ticket (Bissel et al., 2026). Even when users primarily travel within their immediate neighborhood, the radical simplicity of being able to cover longer distances without additional administrative effort reduces the cognitive friction associated with occasional, non-routine trips. In this context, **Table 2** compares the distribution of trips using the DT as well as their relative importance by trip category. The results reveal a significant discrepancy between the actual distribution of trips (in retrospect, relative to the reference month) and the subjective importance that DT users attribute to individual trip types (reported importance of trip types). This discrepancy can be interpreted as an indicator of the "option value" inherent in the DT (Krämer, 2025). Data for December 2024 show that while 53% of all trips are concentrated in the immediate "place of residence," respondents assign only 44% of their subjective "importance points" to this category. Conversely, long-distance trips (>100 km, >Transport network) account for only 6% of actual usage but receive 13% of the relative importance, representing a moderate effect size (Cohen's d = 0.43). Similarly, trips within the transit network but outside the immediate place of residence account for 29% of trips but receive 27% of the subjective weighting.

The multivariate analysis of the discrepancy between perceived importance and actual usage (DiffVerb) reveals no consistent socio-demographic drivers (see **Appendix C**), suggesting that the identified "option value" is a cross-sectional phenomenon rather than a segment-specific trait. The low explanatory power suggests that the valuation gap is not primarily driven by observable characteristics. The dependent

variable captures the difference between perceived importance and realized usage. This specification allows us to directly model deviations between subjective valuation and observed behavior, while acknowledging that it mechanically incorporates components of both measures.

Table 2. The relevance of travel categories when using the Deutschlandticket in December 2024.

Attribute	Place of residence (destination)	>Place of residence (transport network)	>Transport network (<100 km)	>Transport network (>100 km)
(1) Trips with the DT[1)]	53%	29%	12%	6%
(2) Relative importance[2)]	44%	27%	16%	13%
Delta (2)–(1)%-pts.	−9%	−2%	4%	7%
Significance (*t*-test); (effect size)	$p < 0.001$ (d = 0.30)	$p = 0.193$ (d = 0.06)	$p < 0.001$ (d = 0.23)	$p < 0.001$ (d = 0.43)

Note:
1) For how many individual journeys did you use the Deutschlandticket in December 2024? One journey counts as one trip (a return journey = 2 trips).
2) When you think of the Deutschlandticket, which use is particularly important to you? Please allocate 100 points across the following categories according to importance. The use you consider most important should receive the most points.

Using the study from December 2024 as an example, the following section examines the structure of the study participants with regard to their affinity for the DT (**Table 3**). A distinction is made between DT owners in the current survey month (21%), former DT owners (people who do not own a DT in the reference month but have owned one in the past) (11%), and non-DT owners (68%). Nearly one-third of the population aged 18 and older (21% + 11%) had owned a DT for at least one month since its market launch by the time of the survey.

Table 3. Structure of Deutschlandticket user segments in December 2024.

Category	Characteristic	Chi-square test	A. DT owners in the current month (21%)	B. Previous DT ownership (11%)	C. No ownership DT to date	Total population (100%)
Gender	Female[1)]	$\chi^2(4) = 9.61$; $p < 0.005$; V = 0.045	49%	55%	51%	51%
	Male		51%	44%	49%	49%
	Various		0%	1%	0%	0%
Age classes	Up to 26 years	$\chi^2(4) = 210.51$; $p < 0.001$; V = 0.211	28%	23%	10%	15%
	27–64 years		62%	63%	54%	57%
	65+ years		10%	14%	36%	28%
Public transport use (before DT)	Regular customer (4+ days/week)	$\chi^2(4) = 772.21$; $p < 0.001$; V = 0.407	57%	23%	9%	21%
	Medium users		35%	45%	22%	27%
	Non-users or infrequent users		8%	32%	69%	52%
Rail use (before DT)	Weekly	$\chi^2(4) = 613.41$; $p < 0.001$; V = 0.362	41%	22%	6%	15%
	Monthly or less frequently		49%	67%	38%	44%
	Never		10%	11%	56%	41%
Residential place	<10,000 inhabitants	$\chi^2(4) = 95.51$; $p < 0.001$; V = 0.144	14%	24%	30%	26%
	10,000–<100,000 inhabitants		39%	48%	44%	43%
	100,000+ inhabitants		47%	28%	26%	31%
Net household income	<EUR 2,000	$\chi^2(4) = 21.69$; $p < 0.001$; V = 0.071	28%	29%	37%	34%
	2,000–<3,000 EUR		24%	22%	24%	23%
	3,000+ EUR		48%	50%	39%	42%

Note: 1) The column total equals 100%. Interpretation: 49% of DT owners in the current month are female, 51% are male.

A chi-square test reveals a highly significant association between all examined characteristics and ownership of a DT-type vehicle (χ^2; $p < 0.001$). Since the effect size for public transit usage behavior prior to the introduction of the DT is particularly high (Cramér's V = 0.407), a significant influence can be assumed here. While 57% of DT owners previously used public transit at least 4 days per week, 69% of non-owners are occasional users with fewer than one day of use per month. Smaller but equally relevant effect sizes are observed with regard to age groups and city size (e.g., V = 0.211 for age). It becomes apparent that young people and residents of large cities are overrepresented among DT owners. In contrast, people aged 65 and older and residents of small towns have a lower DT usage rate (Gaus and Link, 2026). Neither household net income nor gender has a significant impact on smartphone ownership, and the effect sizes are small. (e.g., V = 0.071 for net household income). Similar dependencies are reported by the latest research papers (infas, 2025; Bissel et al., 2026; Krämer and Korbutt, 2026).

Given the intense debate surrounding the financing of the DT, it is often emphasized that most people who already had a public transit pass before the DT was introduced are benefiting from a significant reduction in their transportation costs (for example, monthly passes in cities like Hamburg or Frankfurt used to cost 100 euros or more per month). However, they account for only about half of today's DT users (see **Figure 1**), while the other half consists of new customers who previously used public transportation only occasionally and for whom monthly expenses are now higher with the DT than without it (Koordinierungsrat Deutschlandticket, 2024). New subscribers in particular represent a key customer segment for the demand and modal shift effects of the DT. The data used for Dec. 2024 show a share of 53% new subscribers and 47% of previous subscribers.

Figure 5 illustrates a comparative analysis of the two primary driver dimensions—Monetary Advantage and Procedural Simplicity/ Comfort—across distinct user segments. The data reveals that the "Simplicity and Comfort" dimension is of paramount importance for senior citizens and individuals who were previously infrequent users of public transport. This finding is highly consistent with established research suggesting that these specific groups faced disproportionately high barriers to entry within the traditional, fragmented tariff systems. Historically, public transport ridership among seniors has remained lower than in other age brackets, largely due to a dual burden of perceived complexity and high costs (BMDV, 2025).

To analyze the motivational structure underlying the decision to purchase the DT—beyond purely financial considerations—we developed a Simplicity-Price Index (scoreS) that accounts for the trade-off between financial savings and psychological relief, ranging from −3 (pure price dominance) to +4 (pure simplicity dominance). Here, individual purchase motives are weighed against one another: Positive values (+1–+4) indicate a dominance of simplicity and convenience motives. These include aspects of cognitive simplicity (e.g., elimination of tariff boundaries) and procedural simplicity (e.g., straightforward sign-up). In contrast, negative values (−1–−3) indicate a dominance of price-related motives, such as direct financial savings compared to previous subscriptions or the generally low price of 49 euros. Individuals who achieve an index value of 4 cited all 4 reasons associated with the simplicity factor as purchase

motives for the DT, while at the same time, no purchase motives from the "price/cost reduction" dimension were cited.

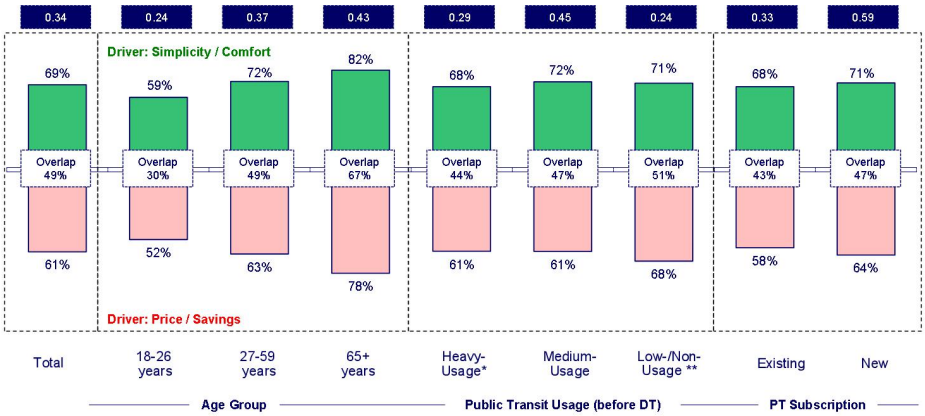

Figure 5. Driver of the Deutschlandticket purchase decision according to customer segments.
Note:
Dark blue rectangle box (Øxx): Simplicity-Price Index (mean value).
*: Minimum use at least 4 days a week; **: Used less than once a month.
Overlap xx%: Both factors were specified: "Simplicity/Comfort" as well as "Price/Savings".

The multivariate analysis of the Simplicity-Price Index (scoreS) confirms that the preference for simplicity over price is a statistically significant and robust phenomenon ($p = 0.003$), which is primarily determined by the user's previous subscription status ($p = 0.001$) and to a lesser extent by sociodemographic factors (see **Appendix D**). This suggests that while the "simplicity bonus" is a universal requirement across all age and income groups, the relative weighting of cognitive simplicity over financial savings is significantly more pronounced among new subscribers. New DT customers are not generated solely by price.

In this context, the proposed three-dimensional conceptualization of simplicity is helpful: (1) procedural simplicity (reducing barriers to entry), (2) outcome-related simplicity (ensuring transparency and eliminating "tariff traps"), and (3) cognitive simplicity (minimizing mental processing demands). Ultimately, the results of the evaluations and the analysis of the evaluation gap (DiffVerb, see **Appendix C**) suggest that simplicity serves as a universal psychological prerequisite.

5. Discussion

The empirical findings of this study—specifically the disproportionate importance assigned to long-distance mobility despite its low trip frequency—challenge the traditional economic interpretation of the flat-rate bias. While classical utility maximization models often label the preference for a fixed-price subscription over a cheaper pay-per-use alternative as an "irrational bias" (Lambrecht and Skiera, 2006; Wirtz et al., 2015), our data suggest that for DT users, this choice might be a rational response to the demand for simplicity and flexibility.

According to Lambrecht and Skiera (2006), the preference for flat rates is largely driven by the "insurance effect." For DT users, the ticket serves as a hedge against the financial risk of high-cost, non-routine journeys (>100 km). Our finding that 14% of perceived importance is attributed to a category that accounts for only 8% of actual trips

is consistent with this interpretation: users derive significant utility from the permanent option to travel across regions without incurring marginal costs or administrative hurdles. This is further reinforced by the work of Wirtz et al. (2015), who identify "convenience" as a primary driver of tariff choice in the German public transport sector. They argue that the elimination of tariff complexity (e.g., crossing zone boundaries) reduces transaction costs and mental effort. Our research indicates that the "Simplicity Premium" is an important component of the ticket's value proposition. The DT has the potential to transform public transport into a frictionless "System 1" utility, mirroring the ease of private car use. Furthermore, Weibel et al. (2024) demonstrate that psychological factors such as "cost control" and "peace of mind" are statistically significant predictors for flat-rate adoption, often outweighing purely distance-based calculations. In this light, the user's decision to maintain a DT subscription is not an erroneous "bias" but a strategic choice to secure cognitive relief. By decoupling the act of consumption from the "pain of paying" (Prelec and Loewenstein, 1998), the flat rate provides a psychological surplus that exceeds the monetary difference to cheaper single tickets. In this light, the user's decision to maintain a DT subscription is not an erroneous 'bias' but a strategic choice to secure cognitive relief. This suggests a re-evaluation of the 'flat-rate bias' within the framework of Psychological Rationality. While neoclassical models label the preference for a subscription despite lower pay-per-use costs as irrational, we argue that users are performing a trade-off between monetary efficiency and cognitive bandwidth. For many, the 'Peace of Mind' effect acts as a risk-mitigation strategy against the 'mental taxes' of unpredictable travel costs, especially in the group of new subscribers (Bissel et al., 2026).

While economic literature frequently debates whether pay-per-use models are superior for consumers by aligning costs with actual consumption and avoiding cross-subsidization (Weinman, 2018), our findings highlight a distinct psychological advantage of the flat-rate structure. Although research on the "flat-rate bias" suggests that consumers often over-estimate their need for flexibility (Krämer and Wiewiorra, 2012), the DT demonstrates that the utility of a flat rate extends far beyond realized trips. A key advantage lies in the permanent availability of long-distance mobility; the ticket holder possesses the capability to undertake a journey at any time, even if this option is rarely exercised in practice. This phenomenon is directly rooted in the concept of transport option values. As Geurs et al. (2006) argue—building on the foundational work of Arrow and Fisher (1974)—option values can be interpreted as a "risk premium" that individuals are willing to pay to ensure the continued availability of a service, over and above their expected user benefit (since the data reflect realized usage rather than expectations, pure overestimation is unlikely to fully explain the observed gap). In the context of the DT, this option value is intrinsically linked to procedural and cognitive simplicity. While pay-per-use models impose a "transaction pain" by requiring a new decision for every trip, the flat rate eliminates these barriers entirely. The discrepancy we identified between perceived importance and actual usage (see **Table 2**) is therefore not an expression of irrationality, but a reflection of the high value placed on the reduction of uncertainty.

While the economic literature frequently debates whether usage-based models are more advantageous for consumers—since they align costs with actual consumption—while consumers simultaneously favor flat-rate plans due to their distorted perceptions (Weinman, 2018), our results demonstrate a clear psychological advantage of the flat-rate structure. Although studies on "flat-rate bias" suggest that consumers often overestimate their usage intensity and need for flexibility (Krämer and Wiewiorra, 2012; Wirtz et al., 2015; Lambrecht and Skiera, 2006), the DT shows that the benefits of a flat rate extend far beyond the trips actually taken (Bissel et al., 2026). A key advantage lies in the permanent option to use the ticket at any time for a longer trip, even if this possibility is rarely utilized in practice. This phenomenon is directly rooted in the concept of transport option values. Here, for example, Geurs et al. (2006)—building on the foundational work of Arrow and Fisher (1974)—suggest that option values could be interpreted as a kind of "risk premium" that individuals are willing to pay to ensure the continued availability of a service, beyond their expected user benefit. Since the data reflect actual usage rather than expectations, it is unlikely that a pure overestimation fully explains the observed gap. In the context of DT, this option value is inextricably linked to procedural and cognitive simplicity. While pay-per-use models create a "transaction cost" (System 2) due to the need for a new decision with every ride, the flat rate completely eliminates these barriers and operates in System 1. The discrepancy we observed between perceived importance and actual usage (see **Table 2**) is therefore not an expression of irrationality (which would legitimize the term "bias"), but rather reflects the high value placed on reducing uncertainty.

To place our own findings on the Deutschlandticket within a broader international context, we can examine the interplay between cognitive ease and pricing in public transport across various European systems. Some nationwide integrated ticketing models have been in place for some time, such as the Swiss Generalabonnement, whilst others, such as the Austrian Klimaticket, were introduced more recently (Krämer, 2025). Other European countries have recently launched similar flat-rate initiatives. For instance, Portugal introduced its nationwide 'Passe Ferroviário Verde' (Green Rail Pass) at the end of 2024, offering unlimited travel on regional and intercity trains for a flat fee of €20 per month. Similarly, Spain introduced a nationwide public transport pass ("Abono Único") in 2026 at a monthly price of €60, representing a shift from fragmented fare-subsidy programs towards a more integrated and simplified national ticketing system. During the period mid-June 2026 until the end of August 2026, the Dutch national railway company (NS) offers the "Nederland Dal Vrij Trein" monthly pass for €49. These developments illustrate a broader European trend towards simplified and nationally integrated ticketing schemes. At the same time, public transport systems across Europe remain highly fragmented with regard to multimodal accessibility and fare structures (Unger et al., 2026). Crucially, the report demonstrates that while low prices are a mandatory baseline for social inclusion, non-price barriers—specifically administrative hurdles, fragmented regional tariff zones, and a lack of integrated digital ticketing—critically impede widespread adoption. These international discrepancies highlight that reducing economic costs

alone is insufficient if cognitive barriers—such as navigating fragmented tariff zones—persist. Consequently, implementing simplified, flat-rate pricing mechanisms like the 'Simplicity Premium' identified in this study represents a crucial behavioral lever to mitigate transport exclusion and accelerate modal shifts globally.

Overall, the psychological surplus of 'peace of mind' explains the high retention and perceived value of the flat rate; empirical data confirms that this cognitive relief translates directly into observable behavioral changes. The DT's role as a driver of modal shift is particularly evident in specific regional analyses. Evidence from the Hamburg metropolitan area underscores this transition; a notable decline in private vehicle usage coincided with a surge in public transit adoption. This modal shift is directly linked to the acquisition of the Deutschlandticket (Krämer and Korbutt, 2026). Furthermore, there is increasing evidence that the DT is fundamentally transforming commuter mobility, as the removal of tariff boundaries and reduced marginal costs encourage a more flexible and frequent use of public transport for daily work-related travel. The current shift in German commuter mobility—highlighted by a decrease in car usage to 65% and a simultaneous rise in public transport shares to 16% (Destatis, 2025)—suggests that the DT acts as a critical intervention in long-standing mobility habits. While car and public transport usage rates have remained very stable over two decades (2000–2020), a stronger dynamic in commuter traffic is currently becoming apparent: For 2024, the Federal Statistical Office reports a reduced share of 65% for cars (−3 percentage points compared to 2020) and an increase to 16% for public transport (+2 percentage points compared to 2020). Even though these structural changes in commuter traffic do not directly indicate the impact of the DT on commuter mobility, a more robust picture emerges when survey data on commuter mobility are included (Krämer and Korbutt, 2026). While traditional research focuses on the financial calculation of tariffs, our findings indicate that the DT's value lies in its ability to facilitate a habit effect. By bundling a month's worth of commuting decisions into a single, effortless subscription, the ticket lowers the cognitive entry barrier for the 20.6 million inter-municipal commuters currently active in Germany (BBSR, 2025).

However, this "Simplicity" perspective stands in direct contrast to recent neoclassical critiques. While our results underscore that simplicity and convenience/comfort are primary drivers, researchers such as Andor et al. (2023) and Andor and Hansteen (2026) challenge the long-term efficiency of such flat-rate models. Instead, the authors argue that flat-rate ticketing should be replaced by dynamically priced fares (pay-per-use) that reflect the actual cost structure of public transport, where peak times are priced higher than off-peak times to alleviate overcrowding and improve service quality. This creates a fundamental tension: while traditional economic models prioritize price-driven efficiency and infrastructure investment to solve the "last mile" problem in rural areas, our findings suggest that the "Simplicity Premium" addresses a critical psychological barrier. By reducing the cognitive load of commuting, the DT facilitates a habit effect that remains overlooked in purely econometric evaluations.

Although the DT is fundamentally celebrated for its "Simplicity Premium" and its role as a habit-breaker, a critical evaluation reveals that the current framework

still contains elements that contradict the goals of maximum consumer-friendliness and radical simplification. These frictions are primarily embedded in the subscription and cancellation conditions. A prime example of this "residual complexity" occurs when a customer decides to purchase the DT in the middle of a month. Due to the requirement that cancellations must be submitted by the 10th day of the current month to take effect by the month's end, a new user is effectively locked into a minimum two-month commitment. This rigid "10th-day rule" creates a significant hurdle for spontaneous or flexible usage, which is a hallmark of private car mobility. From a behavioral perspective, such conditions reintroduce cognitive friction and financial risk into a system that was designed to be "effortless." While the flat rate reduces the "Pain of Paying" for individual trips, the administrative rigidity of the subscription management can be perceived as a new form of "mental tax." This highlights that there is still significant potential for further simplification—for instance, through daily pro-rata billing or more flexible digital "one-click" cancellation options. Ultimately, for the DT to fully function as a frictionless "System 1" utility, the administrative ease of exiting the system must match the ease of entering it. The DT suggests that in complex public service environments, cognitive ease is a more potent driver for behavioral change than price level alone.

6. Conclusion

The introduction of the DT marks a paradigm shift in the German transportation sector: the transition from a multitude of regional fare structures, each with its own specific pricing logic, to a uniform, nationwide mobility solution. This paper has demonstrated that the success of the DT is not solely due to its low price, but is deeply rooted in the radical simplification of the user experience. By eliminating the "taximeter effect" and the cognitive burden of navigating complex fare zones, the DT serves as an effective tool for changing habits.

Although the DT is technically a commuter pass for public transportation, it differs from conventional local transit tickets in that it is valid nationwide and virtually eliminates the need to pay fares when using PT. The psychological superiority of the DT can be illustrated using a three-dimensional conceptualization of simplicity that goes beyond mere convenience. First, the ticket increases cognitive simplicity by eliminating the mental burden of fare selection and zone calculation, thereby minimizing unnecessary cognitive load; in this function, the DT acts as a seamless "mental default." For people traveling to a destination city, for example, and wishing to use local public transportation there, it has previously been very difficult to find the "right fare." Second, it optimizes the procedural dimension (procedural simplicity), as the "transaction effort" is completely reduced through the subscription model and the elimination of physical barriers when boarding, enabling a smooth mobility routine (System 1-based decisions proceed habitually without significant cognitive effort). Third, the DT offers outcome simplicity: the user gains the certainty that their mobility decision remains valid and "fair" regardless of regional fare boundaries. This triad transforms the DT from a mere local transit ticket into an instrument of psychological relief, whose benefit lies in the permanent availability of an uncomplicated option

(option value), suggesting that its attractiveness cannot be explained by price-related factors alone.

The empirical analysis suggests that simplicity and price do not act as competing drivers, but rather as complementary components of a shared value proposition. While financial savings serve as the initial trigger for acceptance (the media frequently highlighted the significant savings of individuals who already had a public transit subscription prior to the DT's introduction), simplicity acts as a decisive factor that breaks down cognitive barriers and stabilizes long-term usage. Therefore, the effectiveness of pricing strategies in public transit cannot be fully understood without considering the psychological costs associated with system complexity. Simplicity does not replace price as the primary driver, but rather amplifies its effect by making the system more accessible, predictable, and cognitively manageable.

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Informed consent statement: All study participants provided written informed consent; recruitment was via Open Access Panel and conducted in compliance with data protection regulations (GDPR), and additional consent was obtained from next of kin or legal guardians where participants were vulnerable or deceased.

Data availability statement: The data used in this study were collected by exeo Strategic Consulting. Due to contractual confidentiality obligations and the proprietary nature of the dataset, the data are not publicly available.

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AI use statement: During the preparation of this work, the authors used artificial intelligence (AI) tools to verify the interpretation of the results of statistical analyses (Gemini) and to check the translation prepared by the authors (DeepL). After using the tools, the authors reviewed and edited the content as needed and took full responsibility for the content of the published article.

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Appendix A. Details on survey sample, instrument, and data quality

Appendix A.1. Survey design and sample

The survey on which the analysis is based is systematically divided into five thematic sections (S, A, B, C, Z) to provide a comprehensive picture of attitudes toward the DT, the motives for purchasing tickets, and the impact of DT ownership on mobility behavior. The sections cover the following aspects: Segmentation of the sample by affinity for public transportation (S), comparison of usage frequency before and after the introduction of the DT (A), identification of purchase motives and information sources (B), detailed analysis of usage patterns and mode-switching (C), and the collection of specific additional aspects such as car availability and sociodemographic variables (Z). Since the survey design was largely kept unchanged (consistency of characteristics and attributes), changes in purchase motives over time, among other things, can be observed.

Appendix A.2. Sample and population

To ensure data quality and representativeness, a multistage procedure was used. The sample was controlled by setting quotas for gender, age groups, and federal state. In addition, a quality control process was conducted to eliminate implausible responses (e.g., “speeders” or “straightliners”), along with a general plausibility check. The representativeness of the results was ensured through a final multi-stage weighting process, in which the raw data was adjusted using external anchor and inventory data (such as actual DT subscriber numbers, distribution channels, and carrier media). This methodological framework provides a valid and transparent data foundation for examining DT purchase motives.

Appendix A.3. Structure of the survey

Figure A1 illustrates the topics covered in the interview and describes how the quality and representativeness of the results are ensured.

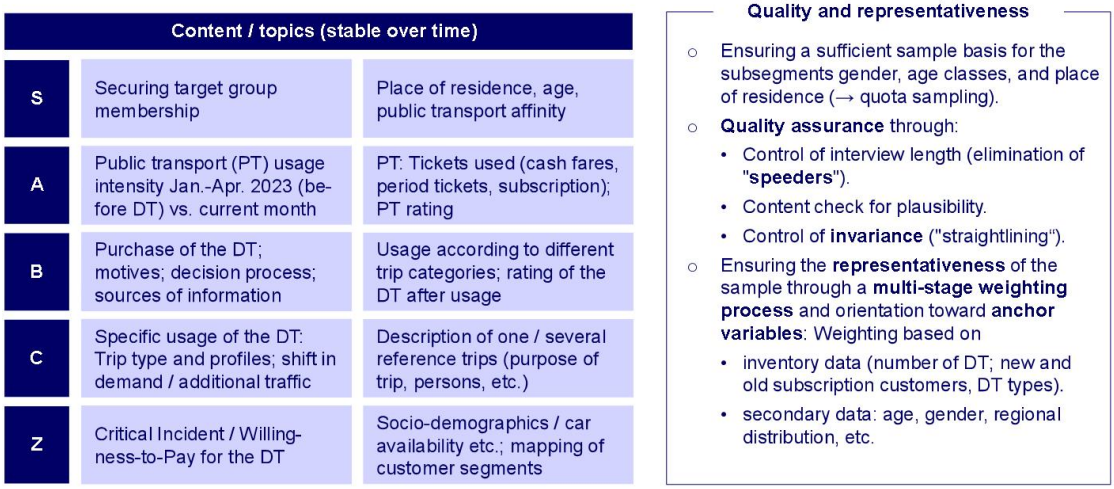

Figure A1. Structure of the survey.

Our research design is based on a one-month period of DT usage, with surveys conducted at the end of each calendar

month to ensure that respondents provide a comprehensive assessment of their actual use of DT over the entire validity period. Data collected included usage intensity and a detailed categorization of trip types (from local to interregional), thereby minimizing recall bias. In Part B, which is particularly important for this study, not only were purchase motives surveyed (see **Appendix B**), but the importance of certain trip types was also determined, serving as input for **Table 2**.

Appendix B. Scale development and qualitative pre-testing

Appendix B.1. Qualitative pre-testing

To ensure the high content validity of the survey instrument, the development of response categories followed a multi-stage process. Initially, the established items from official national evaluation studies (e.g., VDV and Deutsche Bahn, 2025) were used as a baseline. However, to more precisely capture the specific psychological nuances of the "Relief Heuristic" and cognitive ease, a qualitative pilot phase (N = 30) was conducted prior to the main study. Following the principles of cognitive interviewing (Beatty, 2016), participants were asked to evaluate whether the standard VDV categories fully represented their decision-making process.

Appendix B.2. Results of qualitative pre-testing

The results of this qualitative phase revealed that participants perceived the existing categories as too coarse. Specifically, the constructs of "Price" and "Simplicity" proved to be multi-dimensional:

- Price Facets: Participants distinguished between direct monetary savings (utilitarian calculation) and financial protection against unpredictable costs for long-distance trips (the insurance effect).
- Simplicity Facets: A clear distinction emerged between procedural ease (the subscription/purchase process) and cognitive relief (the elimination of tariff-zone calculations).

Appendix B.3. Comparison of own studies and VDV-design (reasons for purchasing the Deutschlandticket)

In accordance with Churchill Jr.'s (1979) paradigm for developing improved measurement scales, the item pool was subsequently expanded. This differentiation prevents construct underrepresentation and allows for a granular analysis of how "Simplicity" psychologically outweighs purely price-driven elasticity.

Table A1 shows the list of studies initiated by VDV and the extended list of items in our studies:

Table A1. Comparison of purchase motive items between own studies (exeo) and the VDV framework.

Reasons for purchasing the Deutschlandticket	Own studies	VDV study	Factor
Existing need/Automatic subscription migration	*	*	Others
Nationwide validity is beneficial for me	*	*	Simplicity/Comfort
Affordable price/Cost savings	*		Price/Savings
Cheaper than other ticket alternatives	*	*	Price/Savings
Cheaper than my previous subscription	*		Price/Savings
No longer having to worry about tariff zones	*	*	Simplicity/Comfort
Flexible local use in buses and trains	*		Simplicity/Comfort
Convenient opportunity for PT use outside my home region	*		Simplicity/Comfort
Use for a specific travel occasion/Vacation	*	*	Others
Option to cancel the subscription at any time	*		Others
Trial use of PT/Curiosity	*		Others
Lack of or limited car availability	*	*	Others
Conscious reduction of car trips	*	*	Others
Environmental protection/Sustainability	*	*	Others

Table A1. *Cont.*

Reasons for purchasing the Deutschlandticket	Own studies	VDV study	Factor
Change in personal circumstances	*	*	Others
Others (open)	*	*	Others
No answer	*	*	Not considered for analysis

Note: Statements marked with * are used in the study.

As illustrated in **Table A1**, the qualitative pre-test necessitated a more granular decomposition of the original VDV items. While the standard VDV categories provide a valuable baseline for general market monitoring, they tend to conflate distinct psychological mechanisms. For instance, our refinement of the "Simplicity" construct allows us to distinguish between procedural simplicity (the ease of the subscription process) and cognitive simplicity (the elimination of complex zone boundaries). This distinction is crucial for applied psychology: while procedural simplicity lowers the barrier to entry, it is the cognitive simplicity that fosters long-term habit formation by transforming public transport into a frictionless "default" mode. By capturing the "Insurance Effect" separately from "Monthly Savings," we can also empirically validate the "Peace of Mind" hypothesis (Weibel et al., 2024), which suggests that the psychological value of a flat rate often exceeds its purely mathematical benefit.

Appendix C. Multivariate analysis to determine the discrepancy between perceived importance and actual usage of the Deutschlandticket

Appendix C.1. Methodological approach

To further investigate the determinants of the discrepancy between perceived importance and actual usage, a multivariate analysis was conducted. The dependent variable, DiffVerb, captures the individual-level difference between reported importance and realized usage of the DT across different trip categories. This specification allows us to directly model deviations between subjective valuation and observed behavior.

An analysis of variance (ANOVA), equivalent to a linear regression model with categorical predictors, was estimated using Type III sums of squares. The model includes a set of socio-demographic and behavioral covariates: age group (three categories), income group (three categories), public transport usage intensity (three categories), municipality size (three categories), and subscription status at the time of ticket introduction (two categories). All independent variables were included as categorical factors.

Appendix C.2. ANOVA results

The overall model does not reach conventional levels of statistical significance ($F = 1.647$, $p = 0.100$), and the explanatory power is low ($R^2 = 0.038$; adjusted $R^2 = 0.015$), indicating that only a small proportion of the variance in DiffVerb is explained by the included covariates. Among the explanatory variables, only public transport usage intensity shows a statistically significant effect at the 5% level ($F = 3.156$, $p = 0.044$). However, the corresponding parameter estimates do not reveal a clear and consistent pattern across categories. All other variables, including age, income, municipality size, and subscription status, do not exhibit statistically significant effects.

Table A2. Determination of the Discrepancy between perceived importance and actual usage of the DT.

Variable	df	F	*p*-value	Additional information
Adjusted model	9	1.647	0.100	$R^2 = 0.041$ (adjusted $R^2 = 0.015$)
Age group	2	0.492	0.612	(1) <27 years; (2) 30–64 years; (3) 65+ years (Ref.)
Net income group	2	0.682	0.506	(1) <2,000 EUR; (2) 2,000–3,000 EUR; (3) >3,000 EUR (Ref.)

Table A2. *Cont.*

Variable	df	F	*p*-value	Additional information
Public transport usage	2	3.156	0.044*	(1) Heavy (4+ days); (2) Medium; (3) Infrequent (Ref.)
Municipality size	2	0.238	0.789	(1) <10 k Inhab.; (2) 10 k–100k Inhab.; (3) >100 k Inhab. (Ref.)
Subscription status	1	0.011	0.917	(1) Existing Subscribers; (2) New Subscribers (Ref.)

Note: The dependent variable is the difference between perceived importance and actual usage of the DT across different trip categories (DiffVerb). All independent variables are included as categorical factors. Significance levels: * $p < 0.05$.

Appendix C.3. Interpretation of ANOVA results

The results suggest that the observed discrepancy between perceived importance and actual usage of long-distance travel is not strongly associated with standard socio-demographic characteristics or observable usage patterns. The low explanatory power of the model and the absence of consistent group-specific effects indicate that the valuation gap represents a broadly distributed phenomenon rather than one driven by particular user segments.

This finding implies that the overvaluation of infrequently used travel options cannot be fully explained by differences in realized behavior or structural characteristics. Instead, it points toward more general behavioral mechanisms underlying user valuation. In line with the main argument of this study, the results are consistent with the presence of an option value component, whereby individuals derive utility from the availability of travel options independent of their actual usage.

At the same time, the limited explanatory power of the model suggests that additional factors—potentially related to perception, salience, or cognitive evaluation—may play an important role and warrant further investigation.

Appendix D. Multivariate analysis to determine the Simplicity-Price Index (scoreS)

Appendix D.1. Methodological approach

To quantify the relative importance of cognitive ease versus financial incentives in the adoption of the DT, a bipolar composite Simplicity-Price Index, termed scoreS, was constructed. This index serves as a metric for the individual's motivational orientation during the purchase decision. The score was operationalized by contrasting two distinct factor groups derived from a multi-select motive inventory: Respondents received +1 point for each selected motive related to cognitive de-burdening and operational ease (e.g., "ease of subscription," "elimination of tariff boundaries," and the "anywhere-anytime" capability). A maximum of 4 points could be achieved in this dimension. Price and Savings Component: Conversely, the score was reduced by 1 point for each motive strictly related to monetary benefits (e.g., "monthly savings," "cheaper than previous subscriptions"). This component allowed for a reduction of up to 3 points. The resulting index, ranging from -3 (pure price dominance) to +4 (pure simplicity dominance), provides a nuanced view of the "Simplicity Premium" discussed in this paper. A score of zero represents a state of motivational equilibrium where financial and cognitive benefits carry equal weight. A univariate analysis of variance (ANOVA), was estimated using Type III sums of squares, similar to section **Appendix C**.

Appendix D.2. ANOVA results

The overall model is statistically significant ($F = 2.727$, $p = 0.003$), indicating that the included variables jointly explain a small but non-random portion of the variation in scoreS. However, the explanatory power of the model remains limited ($R^2 = 0.041$; adjusted $R^2 = 0.026$), suggesting that most of the variation in the valuation gap is not captured by the included covariates. Among the explanatory variables, only subscription status shows a statistically significant effect ($F = 7.685$, $p = 0.001$). The corresponding parameter estimates indicate that certain groups—particularly those without a subscription—exhibit a higher valuation gap compared to the reference category. In contrast, age, income, public transport usage intensity, and municipality size do not display statistically significant effects.

Table A3. Determination of the drivers of the Simplicity-Price Index (scoreS).

Variable	df	F	*p*-value	Additional information
Adjusted model	10	2.727	0.003***	R^2 = 0.041 (adjusted R^2 = 0.026)
Age group	2	0.003	0.997	(1) <27 years; (2) 30–64 years; (3) 65+ years (Ref.)
Net income group	2	1.048	0.351	(1) <2,000 EUR; (2) 2,000–3,000 EUR; (3) >3,000 EUR (Ref.)
Public transport usage	2	2.038	0.131	(1) Heavy (4+ days); (2) Medium; (3) Infrequent (Ref.)
Municipality size	2	1.210	0.299	(1) <10 k Inhab.; (2) 10 k–100 k Inhab.; (3) >100 k Inhab. (Ref.)
Subscription status	2	7.685	0.001***	(1) Existing Subscribers; (2) New Subscribers (Ref.)

Note: The dependent variable is scoreS (Simplicity-Price Index). All independent variables are included as categorical factors (Type III sums of squares). Significance levels: *** $p < 0.01$.

Appendix D.3. Interpretation of ANOVA results

The results indicate that the discrepancy between perceived importance and actual usage of long-distance travel is not strongly associated with standard socio-demographic characteristics or observed usage behavior. The absence of significant effects for age, income, and usage intensity suggests that the valuation gap is not driven by differences in realized mobility patterns or structural user characteristics.

Instead, the only systematic variation arises with respect to subscription status, pointing to differences related to access, experience, or expectations regarding the DT. At the same time, the low explanatory power of the model indicates that a substantial share of the variation in the valuation gap remains unexplained by observable factors.

Taken together, these findings suggest that the overvaluation of infrequently used travel options reflects a more general behavioral pattern rather than a phenomenon confined to specific user groups. This is consistent with the interpretation that individuals derive utility not only from realized trips but also from the availability of travel options, in line with an option value perspective. At the same time, alternative explanations such as salience or cognitive evaluation cannot be ruled out.