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CHARGED LESS, PAID MORE – NON-OPTIMAL TARIFF CHOICE DECISIONS IN THE ELECTRIC VEHICLE SERVICES MARKET

Research in Progress

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Abstract

Electric vehicle users need to subscribe to an Electric Mobility Platform Service provider to gain access to public charging networks. Consequently, consumers need to form beliefs about their future demand for the (charging) service in order to choose a tariff that maximizes their surplus. Using a unique dataset from a large Western European Electric Mobility Platform Service provider, we show that a significant share of customers conducts systematic tariff-choice errors. We find that customers of two-part tariffs are more likely to choose a non-optimal tariff than customers of a pay-per-use tariff. Additionally, the likelihood of a non-optimal pay-per-use tariff choice depends on the user's type of plug-in electric vehicle. We explain the non-optimal tariff choices by cognitive biases related to reference dependence and overconfidence. We further outline our next steps to better understand non-optimal choice behavior in the electric vehicle services market and provide implications for managers and policymakers.

Keywords: cognitive bias, tariff choice, electric vehicle, overconfidence.

1 Introduction

Electric mobility systems lead to a significant disruption in the automotive industry as they demand a change from a goods-dominant towards a service-dominant market (Benzidia et al., 2021; Gilsing et al., 2018; Kley et al., 2011; Vargo and Lusch, 2017; Vargo et al., 2008). The operation of electric vehicles demands new market players - first and foremost, Electric Mobility Platform Services providers (EMPSP), which provide the mandatory mobility-related electric vehicle front-end and back-end services (Busse et al., 2014; Kley et al., 2011; Stryja et al., 2015). Electric vehicle users can independently choose from various public charging tariffs offered by EMPSP to gain access to a public charging network, leading to a close affiliation with one service provider (Abdelkafi et al., 2013; Bessler et al., 2011; Busse et al., 2014; Noyen et al., 2013).

Consumers need to form beliefs about their future demand of the (charging) service in order to choose a tariff that maximizes their surplus, that is, select the tariff that minimizes the bill amount for the respective billing period given the usage amount (e.g., Della Vigna and Malmendier, 2006; Lambrecht et al., 2007). However, electric vehicles involve many new or unfamiliar technological features (e.g., Kurani et al., 1994), e.g., the limited technical range of electric vehicles (Franke et al., 2012), the charging procedure, information and communication technologies (Hinz et al., 2015; Urban et al., 1996) as well as new pricing mechanisms (Bühler et al., 2014; Stryja et al., 2015), which lead to an increase in the diversity of the information consumers have to process. Therefore, it is likely that individuals will apply heuristics to reduce the complexity of the decisions and, consequently, conduct cognitive biases

in the form of systematic decision-making errors, i.e., objectively nonrational decisions in the form of non-optimal tariff choices (Aljukhadar et al., 2014; Della Vigna and Malmendier, 2006; Fleischmann et al., 2014; Goes, 2013; Lambrecht and Skiera, 2006; Simon, 1990).

Therefore, our goal is to analyze pricing plan decisions of plug-in electric vehicle users in the novel electric vehicle services market. Using panel data from a large Western European *EMPSP*, our results suggest that customers of a two-part tariff are more likely to conduct a non-optimal tariff choice than customers of a linear pay-per-use tariff. However, among the pay-per-use tariff customers, plug-in hybrid electric vehicle users are more likely to choose a non-optimal tariff than battery electric vehicle users. We explain the non-optimal tariff choices by cognitive biases related to reference dependence and overconfidence (DellaVigna, 2009; Dowling et al., 2020a; Fleischmann et al., 2014).

With our findings, we hope to contribute to the literature on nonrational decision-making in the research field of information systems usage. Using data from a novel services market, we show how biased beliefs and preferences can lead to non-optimal systematic product choice errors and add further insights to the bias-related research in the e-commerce cluster of IS usage (Fleischmann et al., 2014). Further, we add to the literature on consumers' tariff choice decisions in a new services market. In addition, we contribute to research on the gap between intention to use electric vehicles vs. the actual usage behavior of electric vehicle adopters (Rezvani et al., 2015). Finally, our findings provide implications for service providers and policymakers concerning customer relationship management, pricing plan design, and the acceptance of electric vehicles.

2 Technical Foundation and Hypothesis Development

2.1 Electric Vehicles and Electric Mobility Platform Services

Plug-in Electric vehicles (*EV*) are a subgroup of alternative fuel vehicles powered partially or entirely by electricity stored in a battery which can be recharged by external electric sources (Egbue and Long, 2012; Pevec et al., 2020). Plug-ins can be divided into plug-in hybrid electric vehicles (*PHEV*), battery electric vehicles (*BEV*), and range-extended electric vehicles (*REEV*). *PHEVs* operate using an internal combustion engine and/or a battery. *BEVs* run using an all-electric drivetrain powered by a (usually larger than the *PHEVs*') electric battery, which must be recharged via an electrical outlet (Egbue and Long, 2012; Helveston et al., 2015). *REEVs* have a comparable battery to *BEVs*. However, they are equipped with an additional fuel tank to power an internal combustion engine, which can recharge the battery without an electrical outlet (Graham-Rowe et al., 2012).

EMPSP provide consumers access to a public charging network. From a consumer perspective, they manage the mandatory functionalities like user interactions, communication services, and financial services, including billing (Busse et al., 2014; Kley et al., 2011; Stryja et al., 2015). Comparable to other subscription-based services, *EMPSP* offer a wide range of different pricing plan configurations for their charging services. Common pricing plans are pay-per-use tariffs or two-part tariffs. Both tariffs include a usage-dependent component, i.e., the price for the amount of energy (kWh) or duration (minutes) charged at a charging station. In addition, two-part tariffs include a usage-independent pricing plan component in the form of a monthly base fee. Two-part tariffs are often characterized by lower per-unit prices compared to pricing plans without a monthly base fee (i.e., pay-per-use tariffs). For pay-per-use tariffs, bill amounts increase linearly with every unit consumed by the respective price per minute (Ascarza et al., 2012).

2.2 Related Work and Hypotheses

Hinz et al. (2015) showed that the recurring costs associated with *EVs* are even more important than the actual purchase prices. Consequently, it can be assumed that consumers form accurate beliefs about their future demand of the charging service in order to choose a tariff that maximizes their surplus, i.e., choose a tariff that results in the optimal (lowest) bill amount given the demanded usage (Della Vigna and Malmendier, 2006; Lambrecht et al., 2007; Lambrecht and Skiera, 2006). However, by analyzing

consumer behavior under the assumptions of the neoclassical standard economic theory, literature provides broad evidence that consumers often use heuristics instead of being rational, Bayesian information processing individuals. This can lead to systematic decision-making errors in the form of non-optimal (tariff) choices (DellaVigna, 2009; Fleischmann et al., 2014; Rabin, 2002; Simon, 1990; Thaler, 2016). Non-optimal tariff choices, i.e., tariff choice biases, occur if a consumer does not choose the tariff that minimizes their bill amount for the respective billing period, i.e., could have saved money with an alternative tariff option (e.g., Della Vigna and Malmendier, 2006; Lambrecht and Skiera, 2006). Individuals' overconfidence has been shown to have strong explanatory power for systematic choice errors (DellaVigna, 2009; Dowling et al., 2020a; Dowling et al., 2020b; Fleischmann et al., 2014). In the context of tariff choice decisions, it was shown that consumers are overconfident about their service usage prediction but are unable to predict their service usage accurately (Grubb, 2009; Nunes, 2000). Consumers' overestimation of demand can lead to the so-called flat-rate bias, i.e., consumers choose a usage-independent tariff, even though the usage-dependent pay-per-use tariff would have reduced the bill amount (Della Vigna and Malmendier, 2006; Lambrecht and Skiera, 2006; Nunes, 2000). In contrast, the underestimation of usage demand can lead to a pay-per bias, i.e., consumers could have minimized their bill amount with an alternative tariff like a usage-independent tariff (Dowling et al., 2021; Dowling et al., 2020b; Krämer and Wiewiorra, 2012; Lambrecht and Skiera, 2006; Miravete, 2003).

Similar overconfidence has been identified in the context of electric vehicle usage, e.g., that consumers expect the charging costs to be lower than refueling a combustion engine vehicle. However, consumers' cost predictions were inaccurate due to missing knowledge of prices and energy consumption (Bunce et al., 2014; Graham-Rowe et al., 2012). Additionally, the so-called "EV range paradox" (Franke and Krems, 2013b, p. 56) relates to consumers overestimating their electric vehicle range needs and consequently preferring much higher available ranges, even though the technical ranges of current plug-ins are capable of covering the average range needs of most consumers (e.g., Franke and Krems, 2013b; Franke et al., 2012; Kurani et al., 1994). The dissonance between the perceived limited technical range and perceived demand for the technical range as well as charging times of electric vehicles can lead to range stress, which captures a users' subjective range worries caused by perceived critical range situations in *EV* usage (Franke et al., 2016; Rauh et al., 2015). Based on the framework of adaptive control of range resources, it is assumed that *EV* users form different individual coping strategies and routines to avoid psychological range stress (Franke et al., 2015; Franke and Krems, 2013a). We argue that one coping strategy is the decision for a two-part tariff.

Risk-averse consumers prefer to insure against monetary risks in terms of high variations in bill amounts (Della Vigna and Malmendier, 2006; Miravete, 2002). This *insurance effect* is a well-known phenomenon in the tariff choice literature to explain the preference for a flat-rate tariff over a usage-dependent tariff (Krämer and Wiewiorra, 2012; Lambrecht and Skiera, 2006; Uhrich et al., 2013). Individuals' subjective utility is dependent on deviations from a reference point. Consequently, individuals think in terms of gains and losses compared to a neutral reference point, whereas gains are rated less than losses (Kahneman and Tversky, 1979; Tversky and Kahneman, 1991). Therefore, a two-part tariff might receive a higher perceived utility since it reduces the perceived risk of getting stranded due to an empty battery as well as the perceived monetary risk due to the lower usage-dependent prices. Therefore, we predict:

H1: Customers of a two-part tariff are more likely to conduct a non-optimal tariff choice.

Due to the technical proximity to combustion engine vehicles, range stress is not a prevalent phenomenon for *PHEV* users (Graham-Rowe et al., 2012; He et al., 2013). In a study by Graham-Rowe et al. (2012), two of 20 study participants with a *PHEV* have not even recharged their vehicles once during the study period. Furthermore, *PHEVs* are often limited in terms of charging speed compared to *BEVs* (Efahrer.com, 2021). Consequently, even though the battery capacity for *PHEVs* is lower than for *BEVs*, the slower charging speed might still lead to high charging durations. If the usage-dependent component of the tariff is duration-based (as it is in our case), this can lead to high usage amounts.

Hence, we assume that within the group of pay-per-use tariff subscribers, *PHEV* users are more likely to underestimate their usage than *BEV* users. This leads us to our second hypothesis:

H2: Within the group of pay-per-use tariff customers, PHEV users are more likely to conduct a non-optimal tariff choice than BEV users.

3 Method: Research Setting, Data, and Analysis Plan

3.1 Background and Description of the Dataset

We use panel data from a Western European *EMPS*, which runs various public charging service brands. Our analysis is based on one charging service brand operating in a large Western European country, which provides its customers access to a large network of public charging stations. The brand of the service is associated with a premium car manufacturer in Western Europe but runs under an independent company. Comparable to other market players, their service includes functionalities such as managing user interactions (e.g., facilitating the usage of a charging station), communication services (e.g., IT-based locating of charging stations), and financial services, including billing based on the chosen tariff. Our sample consists of charging records level data, including, inter alia, the charging location and time, charging speed, energy amount charged, charging duration, and bill amounts. The sample includes customer data containing customer-level information like the customer's tariff and the customer's vehicle identification number (VIN). The VIN allows the identification of the type of plug-in electric vehicle based on the world manufacturer identifier and the vehicle descriptor section of a VIN. Based on a unique customer identifier, we can attribute each charging record to a respective customer. The charging location contains information about the type of charging station, i.e., slower alternating-current (AC) charging vs. direct current (DC) charging.

The observation period spans over 343 days from January 2019 to December 2019.

3.2 Tariff Options

The service provider offers two distinct usage-based pricing plans, which are summarized in Table 1. Consumers can independently self-select into a pay-per-use tariff (*PPU*) or a two-part tariff (*TPT*). In both tariffs, the quantity consumed is charged per-minute. The usage-based price is lower for the *TPT* but charges an additional usage independent (monthly) access fee of € 9.50. In addition to the quantity-based price discrimination, the company differentiates prices by the charging speed. For both tariffs, slower alternating-current (AC) charging is cheaper than direct current (DC) charging. AC charging at night (24 pm – 6 am) is half the per-minute rate of AC charging at day times. The maximum fee per charge is € 60, independent of the usage amount and tariff.

		pay-per-use tariff (PPU)	two-part tariff (TPT)
access fee		€ 0	€ 9.50
price per minute	AC	daytime	€ 0.07
		nighttime	€ 0.035
	DC	€ 0.30	€ 0.28

Table 1. *EMPS Pricing Plan Options*

The monthly bill amount results from the monthly base fee and the quantity consumed (minutes charged) times the usage-dependent price (dependent on charging speed and time of the day). The contracts have an indefinite term. Therefore, customers can terminate their contracts on short notice with a notice period of one month to the end of each month. During the observation period, no price changes have been made. However, over a period of 13 days, a price promotion was carried out, and the usage-based per-minute prices were set to zero for both tariffs.

3.3 Sample Description

The sample consists of 23,918 unique charging observations by 3,184 customers. We excluded the price-promotion month and customers who have only charged within the promotion period or for whom we could not identify the vehicle type. December 2019 was filtered out since we do not observe the entire month. We further excluded *REEV* users as they account only for ~6% of the customers (~5% of the charging observations) in our data set. Additionally, *REEVs* are no longer offered by the manufacturer. We further assume that consumers had only used the vehicle indicated in the customer database. Consequently, we neglected 33 customers who had several tariffs or plug-in vehicles within the observation period.

For each combination of individual user and month, we aggregate the bill amounts of the charging observations to make the usage behavior/charging behavior and (non-optimal) pricing plan decisions comparable among the consumers (Della Vigna and Malmendier, 2006; Dowling et al., 2021). We assume that a customer has terminated his/her contract with the service provider if the customer has not been active (i.e., has not charged using the service) after the last active month within the observation period. On the other hand, we assume that a customer has not canceled the contract in inactive months if an active month follows within the observation period.

Our final dataset comprises 17,408 charging observations by 2,614 customers. They account for 9,200 distinct monthly bills over ten months. On average, we observe each customer 3.52 months ($SD = 3.03$, $MD = 2$). The majority of the customers are subscribed to a *PPU* (94.91%), which accounts for 92.38% of the 9,200 monthly bills. 21.69 % (78.31%) of the 2,614 subscribers have a *PHEV* (*BEV*).

3.4 Analysis Plan

Based on the sample, we define a non-optimal tariff choice in case customers did not choose the tariff that minimizes their bill amount for the current month, i.e., could have saved money with the alternative tariff option (e.g., Della Vigna and Malmendier, 2006; Dowling et al., 2021; Lambrecht and Skiera, 2006). We calculated the hypothetical bill amount of the alternative tariff option for each customer-month combination based on the charging behavior for the respective month. If the alternative tariff option is the cost-minimizing dominant tariff, we define that the customer made a non-optimal tariff choice. To receive model-free evidence, we follow Dowling et al. (2021), i.e., calculated the non-optimal choice rate as the ratio of months a customer made a non-optimal tariff choice decision relative to the month the customer was observed (based on the assumptions stated in chapter 3.3). We further estimate simple fixed-effects logistic panel regressions to test our hypothesis and explain non-optimal pricing plan choice for each customer-month combination. Finally, we evaluate the economic impact of non-optimal tariff choices by analyzing the potential savings customers could have realized by choosing the alternative (cost-minimizing) tariff option.

4 Results: Analysis of Non-optimal Tariff Choices

4.1 Descriptive Statistics and Model Free Evidence

TPT customers are the more heavy users in terms of monthly charging duration ($M = 521.21$, $SD = 913.11$) and monthly bill amounts ($M = 33.18$, $SD = 33.39$). They significantly charge more minutes ($t(9198) = 15.455$, $p < .000$) and have on average significantly higher monthly bill amounts than the pay-per-use tariff user ($t(9198) = 19.635$, $p < .000$). Figure 1 depicts the average monthly bill amounts and charging durations by tariff and vehicle type. For both vehicle types, the *TPT* customers are the more heavy users in terms of charging duration and monthly bill amount. Within the *TPT* customers, *PHEV* users have similar monthly charging durations like *BEV* users. However, since the battery capacity of *PHEV* is smaller and an additional combustion engine is available to cover the needed distance, less electrical energy should be needed. Indeed, the mean monthly electric energy amount charged by *PHEV* is significantly lower than that of *BEVs*. However, *PHEVs* are technically often

limited to lower charging speeds. Consequently, even though the battery capacity is lower, it is plausible that the usage amount in minutes might be high in order to recharge the battery.

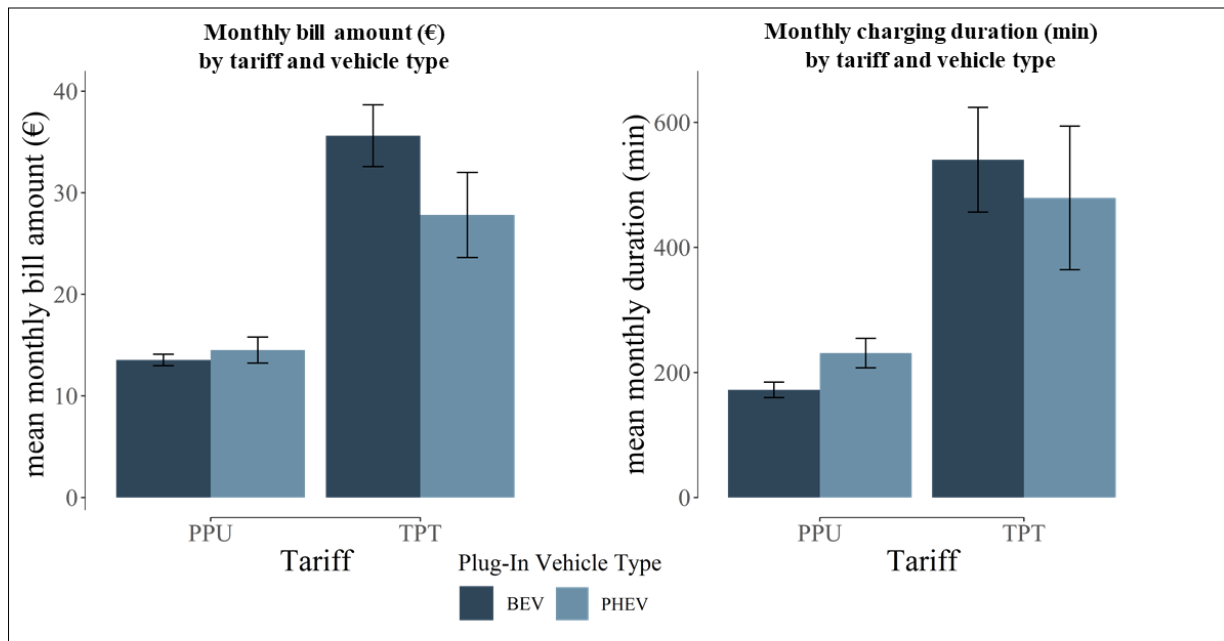


Figure 1. Bill amount and charging duration by customer groups

Table 2 and Figure 2 summarize the overall average non-optimal choice rate (*total*) and the non-optimal choice rate by tariff (*TPT* and *PPU*), vehicle type (*BEV* and *PHEV*), and the interaction of tariff and vehicle type. In 15.52% of the observed months, consumers did not choose the cost-minimizing tariff option. On average, consumers conducted a non-optimal tariff choice in 13.70% of their billing months. 26.86% of the customers conducted at least one non-optimal tariff choice. 6.66% chose the wrong tariff every month. However, dependent on tariff and vehicle type, the average non-optimal tariff choices range between 9.71% and 62.14%.

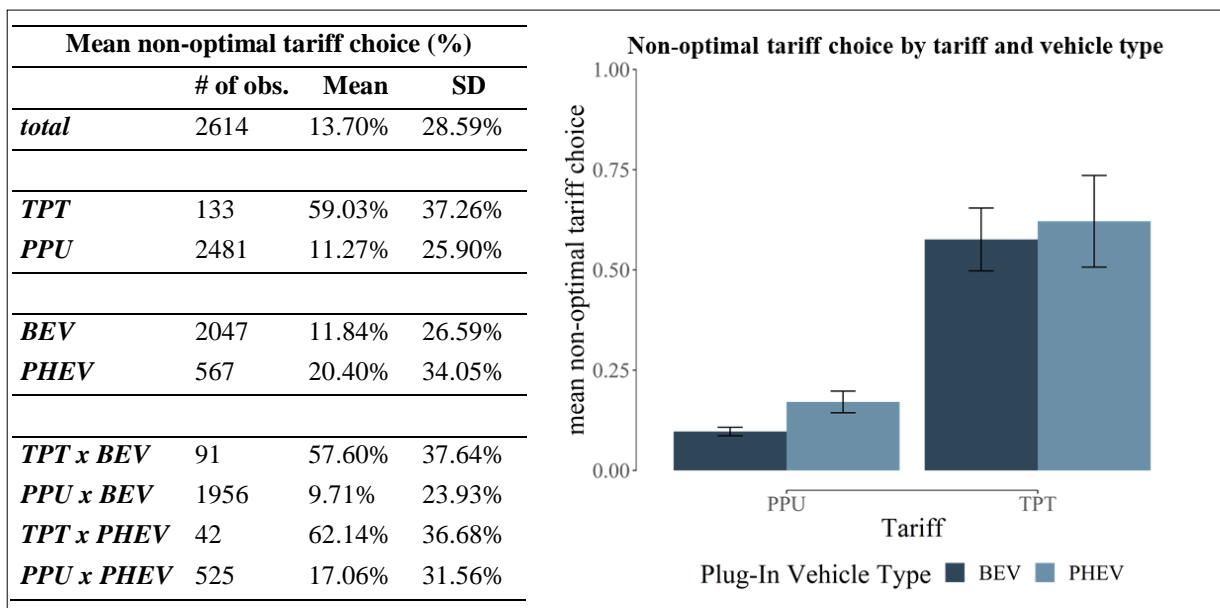


Table 2 and Figure 2. Non-optimal tariff choice by customer groups

In line with our hypothesis 1, for both vehicle types, the average non-optimal choice rate is much higher for consumers with a *TPT* (59.03%) than for subscribers of a *PPU* (11.27%). It may be concluded that *PHEV* users are more likely to conduct a non-optimal tariff choice than *BEV* users (*PHEV* = 20.40%, *BEV* = 11.84%). However, as assumed in hypothesis 2, this may mainly hold for customers within the group of *PPU*-customers, as the differences in non-optimal tariff choices between the two groups in the *TPT* are relatively small (*TPT* x *BEV* = 57.60%; *TPT* x *PHEV* = 62.14%). *PHEV* users in the *PPU* tariff could have saved money if they chose a *TPT* in 17.06% compared to only 9.71% of the *BEV* users in that group. In line with our previous findings, which indicated that *PHEV* have, on average, higher charging durations than *BEV* users, it can be assumed that *PHEV* users are more likely to underestimate their usage than *BEV* users within the group of *PPU* customers. This is tested in the next section using a simple fixed-effects logistic panel regression.

4.2 Regression Results

The results of the fixed-effects logistic panel regressions are presented in Table 3. The dependent variable “non-optimal tariff choice” is a binary dummy variable and coded 1 (0) if a consumer (not) conducted a non-optimal tariff-choice in that month. In the first model (1), we only added the main effects of the type of tariff (*PPU*; *TPT*) and the type of plug-in vehicle (*BEV*; *PHEV*) as independent variables. In the second model (2), we included the interaction effect of the two independent variables (*PPU:PHEV*).

The results support hypothesis 1 and hypothesis 2. Both models show that users subscribed to a *TPT* are more likely to conduct a non-optimal tariff choice than *PPU* customers (*H1*). While model 1 suggests that users of *PHEV* are, compared to *BEV*, more likely to be in the cost-inefficient tariff, this effect gets insignificant in model 2, as we add the interaction effect of vehicle and tariff type (*PPU:PHEV*). As suggested in *H2* and in line with our model-free evidence, the results of model 2 strengthen our assumptions that users of *PHEVs*, which are subscribed to a *PPU*, are more likely to conduct a non-optimal pricing plan choice compared to *BEV* users in that group.

Effect of tariff and plug-in vehicle type on non-optimal tariff choice		
	FE Logit (1)	FE Logit (2)
(Intercept)	0.10 (0.08)	0.23 (0.09)*
<i>PPU</i>	-2.19 (0.08)***	-2.33 (0.10)***
<i>PHEV</i>	0.46 (0.07)***	0.06 (0.16)
<i>PPU:PHEV</i>		0.48 (0.18)**
Pseudo.r.squared	0.09	0.09
Observations	9200	9200
AIC	7222.50	7217.59
BIC	7243.89	7246.10
Log Likelihood	-3608.25	-3604.79

***p < 0.001; **p < 0.01; *p < 0.05

Table 3. Fixed Effects Logistic Regression Results

4.3 Economic Impact of Non-optimal Tariff Choice

In months where a non-optimal choice was conducted, customers could have saved on average 10.78 € (SD = 14.53), which accounts for a 27.11% (SD = 26.38%) decrease in the bill amount. The possible savings are higher for *PPU* (M=12.17, SD = 16.66) than for *TPT* (M = 7.12, SD = 4.23) ($t(1426) = 5.933, p < .000$). The relative savings however, are higher for both vehicles types within *TPT* (*PHEV*: M = 0.59, SD = 0.35; *BEV*: 0.51, SD = 0.36) compared to *PPU* (*PHEV*: M = 0.18, SD = 0.1; *BEV*: 0.17, SD = 0.11).

5 Conclusion and Next Steps

We analyze non-optimal pricing plan decisions in the new services market of electric vehicles. Using a novel data set from a large Western European *EMPSP*, we show that dependent on tariff and vehicle type, the average non-optimal tariff choices range between 9.71% and 62.14%. While we found biased tariff choices within both pricing plans, users of a two-part tariff are more likely to conduct a non-optimal tariff choice than customers of a pay-per-use tariff. Additionally, we found a significant interaction effect between the type of plug-in vehicle and the pricing plan. *PHEV* users subscribed to a *PPU* are more likely to conduct a non-optimal tariff choice compared to *BEV* users in that group. Dependent on the tariff and vehicle type, consumers could have saved between 16.84% and 58.51% on their monthly bill amounts. Our results are in line with previous findings from tariff choice literature in which the false prediction of usage in the form of overestimation of demand was the predominant finding, and consequently, choosing a linear pay-per-use tariff would have been the cost-minimizing option (Della Vigna and Malmendier, 2006; Lambrecht and Skiera, 2006). Further, it was shown that physical context variables influence non-optimal decision-making (Dowling et al., 2021), which are, as outlined, given by the numerous new (technological and services) aspects of *EVs*. *EV* users were shown to have inaccurate usage-based costs predictions (Bunce et al., 2014; Graham-Rowe et al., 2012) and different perceptions dependent on *EV* type (Graham-Rowe et al., 2012).

To better understand (non-optimal) tariff choice behavior in the new services market of electric vehicles, we first plan to extend our model with additional physical context variables. Dowling et al. (2021) suggested that the real-world environment can influence non-optimal tariff choice decisions. *EV* adoption research shows the importance of the supply of public charging stations (e.g., Egbue and Long, 2012; Sierzchula et al., 2014). We assume that the supply of charging points will be an important contextual factor driving tariff choice decisions. It is assumed that a higher density of charging stations might lead to perceived insurance (Bunce et al., 2014), which consequently might decrease the tariff choice error by reducing choice uncertainty. Therefore, we intend to get third-party data on the availability of charging stations on zip code level for each observed month. Second, we only analyze tariff choice behavior for customers of one public charging service brand in one country. We hope to extend our analysis to a wider variety of regions and brands, as the *EMPSP* operates different public charging service brands in various countries. This would also facilitate analyzing the impact of the structures of the usage-dependent component (i.e., per-minute rate vs. per-kilowatt-hour rate) on non-optimal tariff choice behavior.

We acknowledge limitations that provide avenues for future research in the important and ever-increasing service-oriented mobility sector. Future research might analyze the effect of change in pricing plan structure, as various countries have already adopted the directive that the unit of measurement in pricing plans should be the kilowatt-hour instead of the duration (e.g., Federal Ministry for Economic Affairs and Energy, 2018). Additionally, we do not have information about individuals charging behavior independent of the *EMPSP*. Therefore, integrating private and public charging behavior will help to explain tariff choice decisions.

By showing how biased beliefs and preferences can lead to non-optimal, systematic product choice errors, our findings contribute to the bias-related research in the e-commerce cluster of IS usage (Fleischmann et al., 2014). We further add to the literature on consumers' tariff choice decisions in a new, (to our knowledge) previously unexplored context. Additionally, by analyzing the usage behavior of actual *EV* users and their interaction with the often neglected public charging infrastructure, we further shift the research focus from acceptance to the analysis of usage behavior of electric vehicle users. Finally, our findings also have implications for *EMPSP* and policymakers. It was shown that non-optimal tariff choice decisions by customers do not always have a positive effect on the customer lifetime value and the company's profit. E.g., customers with a pay-per-use bias are more likely to churn than customers with the cost-minimizing tariff option (Lambrecht and Skiera, 2006). Consequently, comprehensible pricing plans paired with decision aids and tariff suggestions based on the usage behavior may help reduce uncertainty and the complexity of the services and increase the long-term profit by decreasing churn rates.

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