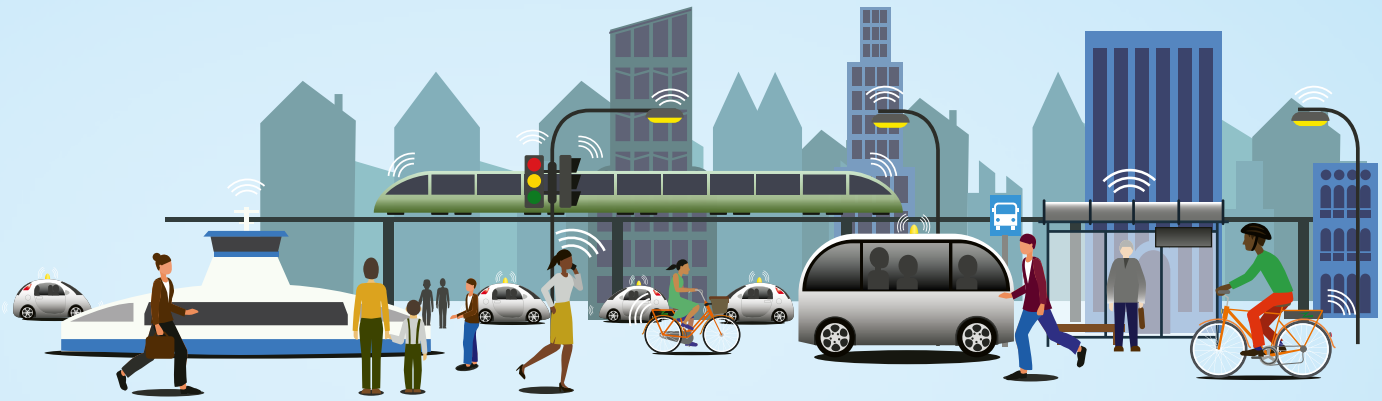
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Marketing Review St.Gallen

Smart Mobility Marketing



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Universität St.Gallen

Who Would Subscribe for a Car?

The Influence of Car Ownership, Environmental Consciousness, Age, and Place of Living

This paper investigates the perceived trustworthiness and convenience of car subscriptions in Switzerland. Evidence has been found that age, car ownership and environmental consciousness of the respondents have a statistically significant impact on trust and perceived convenience while the place of living shows no effect.

Marvin Greifenstein, Felix Schakols, David Finken, Prof. Dr. Reto Hofstetter

Especially younger consumers value traditional car ownership less and are seeking to solve their mobility needs through more flexible and convenient options (Chen et al., 2018; Koroth et al., 2019; Machado et al., 2018). A relatively novel service of the mobility sector is the concept of car subscriptions. It has gained popularity among consumers in the last couple of years as a convenient alternative to traditional car ownership (Bruhn & Hadwich, 2022; Schellong et al., 2021). Car subscription models may expand the sharing economy and might also be considered a part of shared mobility services (Szamatowicz & Paundra, 2019) while others argue that they belong to the subscription economy (Baek & Kim, 2022). Meanwhile, scientific literature on car subscriptions is still limited, with only a few recent studies focusing on the automotive manufacturer side of subscription models (Smania et al., 2023) or on key factors for consumer choices to shift from car ownership to subscriptions (Chaudhuri et al., 2022; Hörcher & Graham, 2020). Furthermore, Szamatowicz and Paundra (2019) focus on traditional and upcoming car features that moderate people's preferences for car subscription models.

However, there is as yet little knowledge about potential car subscription customers and factors (e.g., socio-demographics) fostering the adoption of such innovative services. One of the most important factors of subscription models in general is the perceived convenience due to the ease of booking, flexible cancellation conditions etc., which represents a core element of the value proposition (Andonova et al., 2021; Chen et al., 2018). Analogically, convenience is also one of the most important – and concurrently under-researched – factors of car subscription models (Chaudhuri et al., 2022; Flötotto et al., 2023; Machado et al., 2018). Additionally, the novelty of car subscriptions makes trust in such a service crucial when establishing a consumer base (Rudolph et al., 2017; Zhang & Wang, 2008). Only when consumers feel they can trust the new car subscription models and the providers, they will be willing to adopt them (Flötotto et al., 2023; Koufaris & Hampton-Sosa, 2004). Beyond that, factors such as age, environmental consciousness, place of living or car ownership (as demonstrated by Lang et al., 2023) may influence the perceived trustworthiness and convenience of car subscriptions (Chen et al., 2018; Flötotto et al., 2023) and consequently might have an influence on the consumers' purchase intentions.

This paper contributes by shedding light on the two under-researched concepts of convenience and trust in relation to car subscriptions. Furthermore, this research contributes by providing first insights for automakers, mobility platforms, startups, dealerships, leasing and renting companies on improving their offerings and addressing potentially interested consumers.

The main aim of this paper is to examine the above-mentioned factors regarding the perceived trustworthiness and convenience of car subscription models by investigating the following research question:

> "How do consumer characteristics (e.g., socio-demographics, environmental consciousness, car ownership) affect the perceived trustworthiness and convenience of car subscription models?"

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A representative survey with Swiss citizens (n = 1,052) was conducted to answer this research question. It indicates that age, car ownership and environmental consciousness of people have an important impact on the level of trust in, and the perceived convenience of car subscriptions. Counterintuitively, the factor place of living does not present evidence for an impact.

Car Subscriptions on the Fast Lane?

Comparable to the business models of Netflix and Spotify, with a car subscription model a consumer can subscribe to a car on a monthly basis, with the possibility of cancelling the service at any time (Chaudhuri et al., 2022). The duration of the subscription usually varies between one and twelve months (but sometimes lasts up to 48 months), with the 12-month period appearing to be a duration preferred by most customers (Clyde, 2023; Lang et al., 2023). Car subscription providers offer a wide range of services that typically include, depending on the subscribed model, many features except fuel: costs for insurance, maintenance and taxes, main inspections, tire changes, door-to-door service, switching cars during the subscription duration, and so on (Chaudhuri et al., 2022; FINN, 2023; Szamatowicz & Paundra, 2019). Car subscription models are designed to maximize convenience for the consumer and differentiate from other car-based mobility solutions such as leasing and rental. While rental cars are mainly utilised for shorter periods like a single day or week, leasing requires a long-term commitment of usually 24 to 48 months, with severe penalties for cancellations, and services like insurance or maintenance are often excluded. Thus, subscription models form a new segment right in between rental and leasing (Schellong et al., 2021; Smania et al., 2023; Szamatowicz & Paundra, 2019).

While automakers were among the first ones to offer car subscriptions (e.g., Audi, Volvo), the subscription landscape now encompasses dealerships, rental and leasing companies (e.g., Sixt, Hertz), mobility platform providers (e.g., AutoScout24, MeinAuto.de) and startups (e.g., FINN, Onto, Clyde) (Schellong et al., 2021; Szamatowicz & Paundra, 2019). Despite optimistic market growth predictions of up to $40 billion by 2030 in Europe and the US (Schellong et al., 2021) or 2–4 million vehicle contracts by 2030 in the EU-5 market (Ley et al., 2021), it remains unclear how consumer uncertainty can be overcome. The market predictions mention the arising interest and enormous potential for those market players. However, in an online survey, Chen et al. (2018) discovered that 85% of all respondents had not subscribed to any service during the past 12 months. Thus, understanding consumer trust in this new service is crucial.

Management Summary

Car subscriptions are a new shared mobility service still awaiting its big breakthrough. Yet, literature on car subscription models is scarce and empirical findings are required to improve the offerings and address the most interested consumer groups. Therefore, this empirical paper investigates the two under-researched concepts of perceived trustworthiness and convenience of car subscription models and outlines the relevant effects of various consumer characteristics (e.g., socio-demographics).

Main Propositions

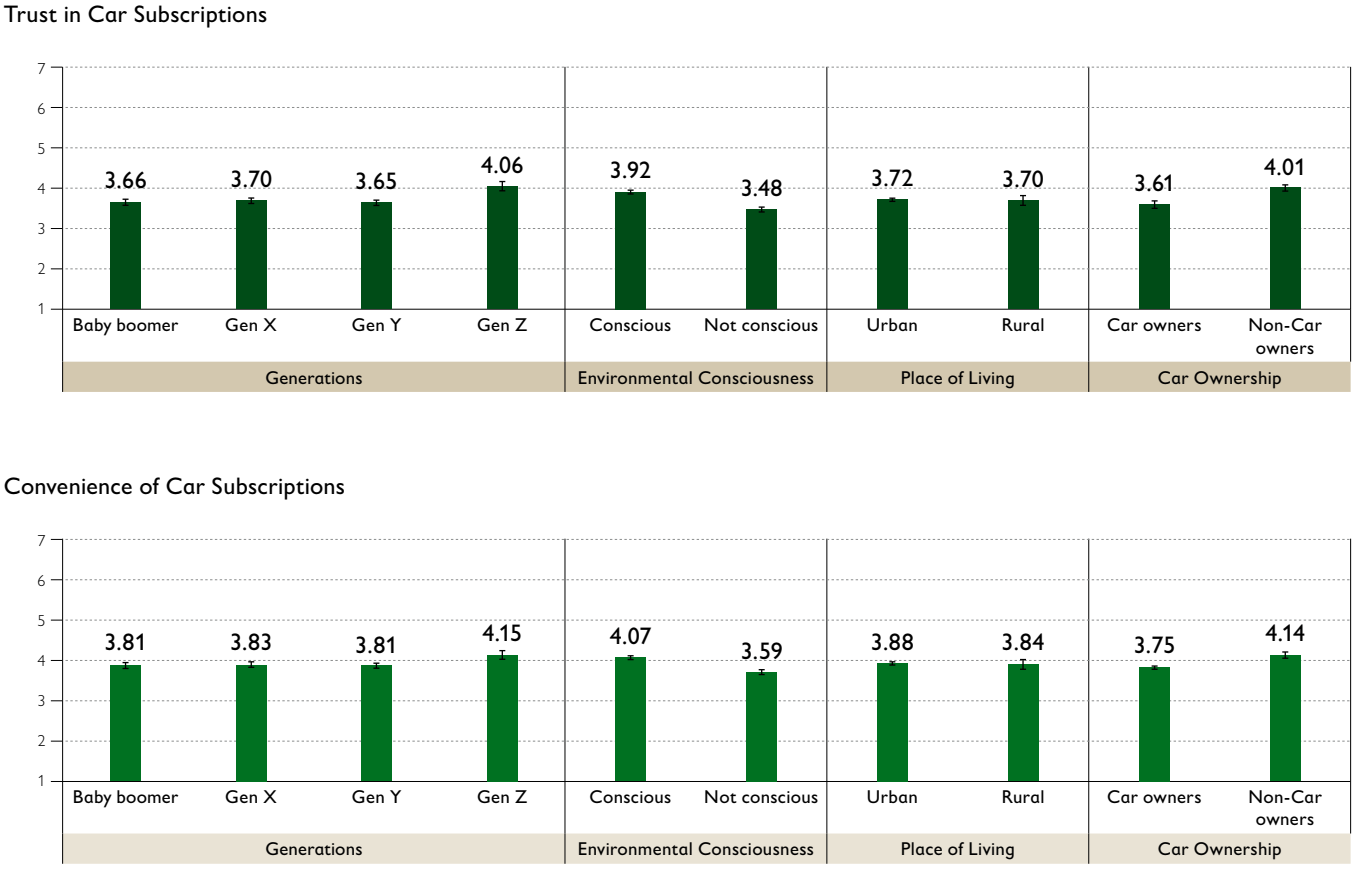
1. Enhancing car subscription adoption depends on the perceived trustworthiness and convenience of these novel shared mobility services.
2. Non-car owners and environmentally conscious persons perceive car subscription models as more trustworthy and convenient than their counterparts.
3. Younger generations have a significantly higher trust in car subscription services compared to older generations.

Methodological Approach

An empirical, representative survey was carried out in Switzerland from the 30th of January to the 9th of February 2023 with a total of 1,052 responses (50.48% male, 49.14% female, average age = 45.1 years; see online Appendix A for further demographics of the sample).

This article uses the data of several subchapters, namely those on car subscription-related items, of the Swiss Mobility Monitor 2023 survey (Schakols et al., 2023). The car subscription-related items were defined and operationalised within the constructs trust and convenience as outlined in online Appendix B and C and measured via a seven-point Likert scale (from 1 = "strongly disagree" to 7 = "strongly agree"). Due to the novelty of the research area, the constructs of trust and convenience were operationalised by using existing validated measurement scales from other research fields. The trust measure consisted of two modified items, following a shortened version of the original measure by Carnevale et al. (2018) and Wang and Benbasat (2007). Similarly, the convenience measure consisted of three

Figure 1: Differences in the Mean Values of the Dependent Variables Trust and Perceived Convenience



(Note: The error indicator shows the standard error of the means.) Source: Own illustration.

modified items, following a shortened version of the original measure by Yale and Venkatesh (1986), Zhang et al. (2016) and Bi and Kim (2020). All items were phrased in German, French and Italian and later translated to English due to the context of the study.

Following the trend of the sharing economy, in many areas younger people value traditional ownership less and are in many areas shifting towards sharing (Hellwig et al., 2015; Schor & Fitzmaurice, 2015). Applying this general trend on shared mobility services would mean that younger generations also show a higher interest in carsharing and micro-mobility services due to their high flexibility and convenience (Burghard & Dütschke, 2019; Huynh et al., 2020; Prieto et al., 2022; Shaheen et al., 2020). Therefore, it may be assumed that younger generations find car subscriptions more convenient and trustworthy compared to older generations. Consequently, a difference between the four age groups of baby boomers, generation Y (Gen Y), generation X (Gen X) and generation Z (Gen Z) is presumed, and the following hypotheses are proposed:

(H1a) Gen Z has higher trust in car subscription models compared to baby boomers, Gen Y and Gen X.

(H1b) Gen Z perceives car subscription models as more convenient compared to baby boomers, Gen Y and Gen X.

Besides generational differences, the sharing economy and especially shared mobility have been strongly driven by the environmental consciousness of consumers (Van Veldhoven et al., 2022). A majority of studies demonstrate that environmentally conscious consumers show a higher intention of using shared mobility services such as carsharing or micro-mobility compared to consumers without environmental awareness (Acheampong & Siiba, 2020; Dias et al.,

2017; Van Veldhoven et al., 2022). But, to the best of our knowledge, there is as yet no study investigating this effect for car subscription models. Hence, in our study the subsequent hypotheses have been deduced:

(H2a) Environmentally conscious people have higher trust in car subscription models compared to non-environmentally conscious people.

(H2b) Environmentally conscious people perceive car subscription models as more convenient compared to non-environmentally conscious people.

The short subscription duration of several months to a year as well as the "all-inclusive package" (insurance, taxes, maintenance, etc.) might be assimilable to traditional rental or sharing services. Since traditional rental and sharing services are predominantly offered in urban areas, it is assumed that car subscriptions will also be predominantly offered to, and used by, people living in urban areas. Thus, the following two hypotheses are derived:

(H3a) People living in urban areas have higher trust in car subscription models compared to people living in rural areas.

(H3b) People living in urban areas perceive car subscription models as more convenient compared to people living in rural areas.

As previously mentioned, car subscriptions fall in between rental and leasing models, with leasing closer to car ownership and rental closer to sharing. Consequently, owning a car versus not owning a car might be a crucial driver and differentiating factor for or against car subscriptions. Additionally, first indications are given that 78% of consumers who use car subscriptions did not drive a new car before (Lang et al., 2023). Pursuing those tendencies, non-car owners are assumed to show more trust in car subscription models and perceive them as more convenient. Accordingly, the following two hypotheses are proposed:

(H4a) Non-car owners have more trust in car subscription models compared to car owners.

(H4b) Non-car owners perceive car subscription models as more convenient compared to car owners.

Results

Before testing the hypotheses, the quality of the measurement constructs trust and convenience was evaluated. The construct validity was measured by Cronbach's Alpha and was greater than 0.7 for both constructs ($\alpha_{trust} = .854$; $\alpha_{convenience} = .853$), confirming internal consistency. Furthermore, the differences in the mean values of all examined groups are illustrated in figure 1.

To test hypotheses H1a and H1b, a single factor analysis of variance (ANOVA) was conducted, showing a statistically significant difference in trust ($F(4, 1047) = 2.78$, $p = .026$) and perceived convenience ($F(4, 1047) = 2.45$, $p = .045$) between the four examined generations. Furthermore, a Bonferroni post-hoc test was applied to compare the four generations pairwise and determine significant differences among each generation. The results of the Bonferroni post-hoc test for trust revealed a significant difference between the pairs Gen Y and Z ($p = .025$, $M_{diff} = -.82$) and baby boomers and Gen Z ($p = .046$, $M_{diff} = -.80$) at the level of $p < .05$. Despite the significant difference in the analysis of variance between the generations regarding the perceived convenience, the Bonferroni post-hoc test did not find any significant pairwise groups for the factor convenience (cf. online Appendix D). Consequently, there was evidence for H1a, but not for H1b. Overall, the findings demonstrate statistically significant differences in the trust in, and the perceived convenience of, car subscription models among the generations. However, it could only be verified that Gen Z has significantly more trust in car subscription services compared to older generations, whereas no effect could be derived for the perceived convenience.

The remaining hypotheses can all be answered by conducting directed t-tests including Levene tests for equality of variances (see Table 1). Environmental consciousness was measured with an environmental trait adapted from Hunecke et al. (1999), and respondents were subsequently split into two groups, namely environmentally conscious and non-environmentally conscious, via a median split. When comparing the mean values for trust, it is apparent that environmentally conscious respondents trust car subscriptions more compared to non-environmentally conscious respondents. The directed t-test for independent samples further discovered a statistically significant difference between environmentally conscious and non-environmentally conscious respondents ($t(1007.69) = -5.52$, $p < .001$). Similar results were discovered for the factor convenience as perceived by environmentally conscious respondents ($t(1006.64) = -6.06$, $p < .001$). Consequently, there is evidence to accept H2a and H2b. It can be concluded that environmentally conscious Swiss find car subscriptions significantly more trustworthy and convenient compared to non-environmentally conscious Swiss.

Conversely, the mean values of Swiss living in urban areas and Swiss living in rural areas are very similar for the factors perceived convenience as well as trust. The directed t-test reveals no significant differences between those two groups for trust ($t(871) = .16$, $p = .438$) nor for perceived convenience ($t(871) = .29$, $p = .385$). Hence, there is no evidence to accept H3a and

Table 1: Directed T-Tests for Hypothesis Testing

					Directed t-Test		
Hypotheses (Dependent Variables)	Independent Variables		Mean	SEM	T	df	Significance (one-sided)
H2a (trust)*	Environmental Consciousness	Conscious	3.92	.052	-5.52	1007.69	< .001
		Not conscious	3.48	.060			
H3a (trust)	Place of Living	Urban	3.72	.047	.16	871.00	.438
		Rural	3.70	.125			
H4a (trust)	Car Ownership	Car Owner	3.61	.092	-4.25	1050.00	< .001
		Non-Car Owner	4.01	.080			
H2b (convenience)*	Environmental Consciousness	Conscious	4.07	.052	-6.06	1006.64	< .001
		Not conscious	3.59	.060			
H3b (convenience)	Place of Living	Urban	3.88	.046	.29	871.00	.385
		Rural	3.84	.125			
H4b (convenience)	Car Ownership	Car Owner	3.75	.046	-4.20	1050.00	< .001
		Non-Car Owner	4.14	.080			

*The Levene test revealed unequal variances for H2a and H2b (at $\alpha = 0.05$). Consequently, the t-test for unequal variances was executed. Source: Own illustration.

H3b. It can be statistically inferred that the factors trustworthiness and perceived convenience are not regarded differently by Swiss living in urban and rural areas.

Lastly, the mean values of non-car owners are higher for both trust and perceived convenience when comparing them to car owners. The directed t-test for independent samples discovered a statistically significant difference between those two groups for trust ($t(1059) = -4.25$, $p < .001$) and perceived convenience ($t(1050) = -4.20$, $p < .001$). Thus, there is evidence to accept H4a as well as H4b. In conclusion, Swiss non-car owners find car subscriptions significantly more convenient and trustworthy than Swiss who already own a car.

Discussion and Limitations of the Study

This paper presents findings about car subscriptions from a representative survey in Switzer-land. Hereby, the results lack of generalizability as they are only valid for Switzerland and cannot be readily transferred to other countries. Furthermore, this study solely focuses on perceived trustworthiness and convenience of car subscription services in general, so the results might not be valid for specific cases (e.g., subscription for a sports car) or other variables (e.g., willingness to pay). While the two factors trust and convenience are substantially influencing the acceptance and adoption of car subscriptions, there are various other influencing factors which need to be evaluated in future research.

Nevertheless, the present findings prove that age, environmental consciousness, and car ownership significantly affect the perceptions of Swiss towards car subscriptions regarding the factors trust and convenience. Although these variables are not under the control of the providers themselves, they may help to identify customer segments which might yield the most promising results. In particular, the study shows that younger generations find car subscriptions more convenient and trustworthy. The latest study of Lang et al. (2023) presented slightly different re-sults, stating that about 50% of the car subscription customers at FINN Auto in Germany are below 40 and families with their head of household in their 30s to 40s are the prime customer group. The results of the present study are not completely contrary but indicate that Gen Z finds car subscriptions the most trustworthy and convenient in Switzerland. Thus, marketers should specifically target Gen Z in future marketing endeavours. Further, the present study shows that environmentally conscious Swiss consider car subscriptions more trustworthy and convenient. These results, however, must be considered with special caution as empirical research on the environmental and social effects of the shift towards sharing and specifically car subscriptions is lacking. For example, it is still controversial whether car subscription models

are indeed more sustainable than traditional car ownership. Also, to the best of the authors' knowledge, there is still no sufficient data on the question whether people use subscriptions to complement their mobility needs, for example during the winter months, using subscription models as a mid-term sharing solution, or to have a new car every year, using subscriptions as a short-term leasing solution. First insights indicate the former case as some companies state the average car subscription duration to be one year (Joas & Deinlein, 2019; Lang et al., 2023). Additionally, there is no evidence yet whether consumers use car subscription models to try out new technological advancements, e.g., electric vehicles (EVs), as mentioned by Lang et al. (2023), which could potentially lead to a sustainability boost. Consequently, the assumption that environmentally conscious Swiss might be an interesting user group to be targeted by marketers has to be viewed with caution as the factual sustainability of car subscriptions is still controversial and needs further investigation.

Additionally, the present study shows no significant differences in the perceived trustworthiness and convenience of car subscription services for Swiss living in urban areas compared to Swiss living in rural areas. Similar results are also reported by Lang et al. (2023) for Germany. Foster-ing those findings by applying future research in additional countries might confirm or disconfirm this trend.

Lastly, this study found that non-car owners find car subscriptions significantly more trustworthy and convenient, in accordance with the user trends reported by Lang et al. (2023).

Although car subscriptions might not solve all mobility- and vehicle-related issues (e.g., overcrowded roads at peak times), they may have positive impacts on urban, suburban, and rural areas.

Ultimately, the combination of some of these findings might expand the opportunities for increasing sales figures, e.g., by specifically targeting Gen Z non-car owners or environmentally conscious Swiss living in rural areas.

The present study answers the research question that car subscription adoption is strongly heterogenic and depends on various factors, namely age, environmental consciousness, and car ownership. Improving the utilisation rate of sparsely used traditional cars by changing towards the still unfamiliar car subscription services might ultimately have the power to reduce the demand for new cars while also reducing the burden of lacking space capacity or congested road infra-structure (Chaudhuri et al., 2022). Although car subscriptions might not solve all mobility- and vehicle-related issues (e.g., overcrowded roads at peak times), they may have positive impacts on urban, suburban, and rural areas. The transformation towards an electrified mobility ecosystem has already been decreed by politicians, governments, and the industry in many countries (Pavlínek, 2023; Peiseler & Serrenho, 2022) while car subscription services are still in their infancy.

The contribution of the present article is twofold: Firstly, the study provides guidance to existing (e.g., automakers, dealerships, leasing and renting companies) and new players (mobility platforms, startups) by pointing out customer segments that find car subscription services trustworthy and convenient and might be effectively targeted by marketing measures and promotions. Secondly, the article contributes to academia by enlarging the currently rather small quantitative research data base and exploring the importance of trust and convenience for the adoption of car subscription services.

Lessons Learned

1. Based on the disparities observed regarding trust and perceived convenience, marketing strategies should take the factors age, environmental consciousness and car ownership into account when targeting consumer segments.
2. Marketers should specifically target environmentally conscious non-car owners or young generations to increase the adoption of car subscription services.
3. Automakers, mobility platforms, startups, dealerships, leasing and renting companies should focus on the examined factors to improve their offerings and address the most relevant consumer groups.

For further supplementary tables to the article, visit:
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Online Appendix

Who Would Subscribe for a Car?

The Influence of Car Ownership, Environmental Consciousness, Age, and Place of Living

Appendix A: Demographics of the Sample (n = 1,052)

Characteristics	Options	Sample (%)	Swiss (%)
Gender	Male	50.48%	49.64%[1]
	Female	49.14%	50.36%[1]
Generations (Age)[2]	Baby Boomers (born 1946 – 1964)	25.76%	24.43%[3]
	Generation X (born 1965 – 1980)	28.52%	27.29%[3]
	Generation Y (born 1981 – 1996)	31.84%	26.68%[3]
	Generation Z (born 1997 – 2012)	12.26%	12.48%[3]
	Rest	1.62%	9.12%[3]
Household Size	1	17.59%	36.82%[4]
	2	38.12%	32.70%[4]
	3+	44.3%	30.48%[4]
Marital Status	Single	31.46%	45.40%[5]
	Married	46.39%	41.00%[5]
	Divorced	7.60%	8.80%[5]
	Widowed	1.90%	4.60%[5]
	Listed civil partnership	1.14%	0.20%[5]
	Life together	11.50%	–
Educational Level	Primary school / middle school / (obligatory school)	3.52%	–
	Vocational school / apprenticeship	28.61%	–
	Secondary school / high school	18.16%	–
	Higher schools like universities, technical universities, university of applied sciences and higher vocational schools	48.38%	–
Profession	Employed	64.92%	51.40%[6]
	Self-employed	7.51%	8.50%[6]
	Students	8.08%	–
	Unemployed / seeking work	1.33%	3.40%[6]
	Others	18.16%	–
Household Income	4000 CHF or less	12.55%	–
	4001 – 8000 CHF	30.32%	–
	8001 – 12000 CHF	24.90%	–
	12001 – 16000 CHF	9.51%	–
	More than 16000 CHF	4.28%	–
	n/a	18.44%	–

1: https://www.bfs.admin.ch/bfs/de/home/statistiken/bevoelkerung/stand-entwicklung.assetdetail.23064702.html
2: The sample was classified according to the definition of the "Bundesamt für Statistik". https://www.bfs.admin.ch/bfs/de/home/statistiken/arbeit-erwerb/erwerbstaetigkeit-arbeitszeit/alter-generationen-pensionierung-gesundheit/generationen-arbeitsmarkt.html
3: The generation distribution of Swiss inhabitants >16 years old is shown. https://www.bfs.admin.ch/bfs/de/home/statistiken/arbeit-erwerb/erwerbstaetigkeit-arbeitszeit/alter-generationen-pensionierung-gesundheit.html
4: https://www.bfs.admin.ch/bfs/de/home/statistiken/bevoelkerung/stand-entwicklung.html
5: https://www.bfs.admin.ch/bfs/de/home/statistiken/bevoelkerung/stand-entwicklung/alter-zivilstand-staatsangehoerigkeit.html
6: https://www.bfs.admin.ch/bfs/de/home/statistiken/arbeit-erwerb.html

Source: Own illustration.

Appendix B: Explanation of the Car Subscription Concept in the Survey

Explanation of Car Subscription Models
Car subscription models (e.g., Clyde) offer ownership of a car for a fixed monthly fee for a period of less than two years but more than one month. Included in this model are maintenance services, insurance costs, and in some cases an option to switch between several different vehicles.
Original version (Kalka & Leven, 2020): «Auto Abonnement Modelle (z.B. Clyde) bieten den Besitz eines Autos gegen eine feste monatliche Gebühr für einen Zeitraum von weniger als zwei Jahren, aber mehr als einem Monat an. In diesem Modell sind Wartungsdienste, Versicherungskosten und in einigen Fällen eine Option zum Wechsel zwischen mehreren verschiedenen Fahrzeugen enthalten.»

Source: Own illustration.

Appendix C: Operationalisation of the Measured Constructs

Construct	Items for Measurement	Source
Trust	• I have trust in the offer of subscription suppliers / «Ich habe Vertrauen in das Angebot von Abo Anbietern.»	• Carnevale et al. (2018)
	• The availability and quality of information on subscription models are good. / „Die Verfügbarkeit und Qualität von Informationen über Abo Modelle sind gut.»	• Wang & Benbasat (2007)
Convenience	• The possibility of cancelling the subscription model at short notice gives me flexibility. / «Die kurzfristige Kündigungsmöglichkeit des Abo Modells bietet mir Flexibilität.»	• Bi & Kim (2020)
	• Subscription models make driving easy for me. / «Abo Modelle machen mir das Autofahren einfach.»	• Yale & Venkatesh (1986)
	• With the subscription model, I don't have to worry about anything anymore. / «Mit dem Abo Modell muss ich mich um nichts mehr kümmern.»	• Zhang et al. (2016)

Source: Own illustration.

Appendix D: Bonferroni Post-hoc Tests for a Pairwise Group Comparison of Baby Boomers, Gen X, Gen Y and Gen Z Regarding Trust and Convenience

Variable	Bonferroni Post-hoc Tests			
	Pair	Mean Difference	Standard Error	p-value
Trust	X – Y	.10	.203	1
	X – Z	-.72	.271	.08
	X – B	-.08	.220	1
	Y – Z	-.82	.270	.025*
	Y – B	.01	.218	1
	Z – B	-.80	.283	.046*
Convenience	X – Y	.02	.101	1
	X – Z	-.32	.135	.178
	X – B	.01	.109	1
	Y – Z	-.34	.134	.114
	Y – B	-.01	.109	1
	Z – B	.34	.141	.174

* Significant at $\alpha = 0.05$. Source: Own illustration.