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Consumer acceptance, barriers and success factors of Peer-to-Peer carsharing in perspective of connected car services and autonomous vehicles

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ABBREVIATIONS

ACC	Awareness collaborative consumption (construct)
AGE	Age (construct)
AVE	Average variance extracted
B2B	Business-to-business
B2C	Business-to-consumer
BEMB	Embarrassment (construct)
BFOC	Fear of contamination (construct)
BFOD	Fear of damage (construct)
BFOS	Fear of sharing (construct)
BI	Behavioral intention to use (construct)
BLOC	Loss of convenience (construct)
BLOE	Lack of economic benefits (construct)
BoK	Body of Knowledge
BRP2P	Perceived risk in P2P carsharing (construct)
C2C	Consumer-to-consumer
CB-SEM	Covariant analytical approach (CB-SEM)
CTMS	Carsharing telematics solution
CUBT	Car usage business travel (construct)
CUCOM	Car usage commuting (construct)
CVT	Connected vehicle technology
ECC	Experience collaborative consumption (construct)
FABV01	Ownership of autonomous vehicles
FABV02	Sharing one's own autonomous vehicle
FABV03	Usage autonomous vehicles as a taxi service
FABV04	Usage of autonomous vehicle
FBKCE	Acceptance of keyless car exchange (construct)
HE	Higher education (construct)
HTMT	Heterotrait-monotrait ratio
ICUKM	Intensity car usage milage (construct)
IFCS	Intensity carsharing usage (construct)
IFCU	Intensity car usage frequency (construct)
IFPT	Intensity public transport usage (construct)
INC	Income (construct)
IS	Information System
MECOM	Community (construct)
MEECO	Economic benefits (construct)
MEUTI	Utility (construct)
MIENJ	Enjoyment (construct)

MIENV	Environmental benefits (construct)
MILIF	Lifestyle (construct)
MISOC	Social benefits (construct)
NHC	Number of cars household cars (construct)
NIPALS	nonlinear iterative partial least squares
OEM	Original equipment manufacturer
OLS	Ordinary least squares
P2P	Peer-to-peer
PEOU	Perceived ease of use (construct)
PEU	Perceived usefulness (construct)
PLS	Partial least squares (construct)
PLS-MGA	Partial-least squares approach - multigroup analysis
PLS-SEM	Partial-least squares approach
PNPA	Personal attachment to own's own car (construct)
PNPVQCO	Conformity (construct)
PNPVQPO	Power (construct)
PNPVQSE	Security (construct)
PNPVQTR	Tradition (construct)
PPGCV	Green consumer values (construct)
PPPI	Personal innovativeness (construct)
PPPQAC	Achievement (construct)
PPPQBE	Benevolence (construct)
PPPQHE	Hedonism (construct)
PPPQSD	Self-direction (construct)
PPPQST	Stimulation (construct)
PPPQUN	Universalism (construct)
PRIALT	Alternative pricing (construct)
PSS	Product-service system
PU	Planned usage (construct)
RBS	Request-based system (RBS)
RTS	Real-time system (RTS)
RUT	Random Utility Theory
SFRO	Fractional ownership (construct)
SIOVP	Integrated offer (construct)
SN	Subjective norm (construct)
SPSS	Statistical Package for Social Sciences
SPSS	Statistical Package for Social Sciences
STDTT	Disposition to trust (construct)

STP2P	Perceived trust in P2P carsharing (construct)
STTOP	Trust in online platforms (construct)
SVAAIR	Airport P2P carsharing (construct)
SVAINB	Instant booking (construct)
SVAPCS	Cleaning service (construct)
SVAPMI	Maintenance and inspection (construct)
SVAPP	Preferred parking (construct)
SVAPRC	Replacement car (construct)
SVAROU	Reduction user circle (construct)
SVINS	Insurance incentives (construct)
TAM	Technology Acceptance Model
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
UTAUT	Unified Theory of Acceptance and Use of Technology
VAGE	Vehicle age (construct)
VKT	Vehicle kilometres of travel
VP	Vehicle price (construct)

1 ABSTRACT

Until now, car ownership has been a symbol of wealth and personal freedom. The high value of the car in society has been enforced by the powerful automotive industry with their well-funded marketing budgets. Currently, there are one billion cars worldwide, possibly increasing to 2,8 billion by 2050. However, the awareness of the negative consequences of car ownership on the environment, cities, and individuals in terms of reduced personal and financial freedom is increasing. The trend towards collaborative consumption involving activities like sharing and trading is leading to a shift from ownership to the access of goods and services. In this context, carsharing is receiving more and more attention and the number of users for B2C carsharing models is increasing exponentially. The least-developed business model with the biggest opportunities in terms of environmental benefits is peer-to-peer carsharing (P2P carsharing). Providers face daunting problems in reaching critical mass, due to a lack of consumer acceptance. Academic contributions on the topic are rare.

The goal of this dissertation is to capture the acceptance factors, barriers and success factors for P2P carsharing. Additionally, the phenomenon is explored within the perspective of disruptive technologies, including the connected car and autonomous vehicles. A comprehensive literature review including collaborative consumption and carsharing, as well as P2P carsharing, has been conducted. A mixed-method approach has been used. Qualitative interviews with leading academic and industry experts in the field of collaborative consumption and shared mobility, as well as a focus group discussion, have been executed. In the quantitative survey, the identified factors have been integrated into the Technological Acceptance Model (TAM), the theoretical foundation of the work. A representative survey was conducted in Austria with 801 respondents. The results were generated by applying a partial least squares analysis.

Results show that the TAM model, including the extensions, appeared to be applicable. In particular, people with an innovative mindset are open to the usage of the business model. The main motivational factors for participating are economic, utility and enjoyment. The personal attachment towards one's own car remains one of the main barriers, next to fear of sharing and loss of convenience. Success factors in increasing acceptance are – among others – trust, value-added services and keyless car exchange. The preferred usage model for autonomous vehicles tends to be ownership. Even though the awareness of P2P carsharing is rather low among the Austrian population, 13,6% state that they would use the service. Sharing one's privately owned autonomous vehicle with others met with even higher levels of approval from the respondents.

The extension of the TAM, as well as its application to a new field outside information system (IS) research, can be viewed as the major academic contribution of this work. Practical implications for P2P carsharing providers and the automotive industry include strategic recommendations regarding the current disruptive trends within the automotive industry, as well as the need for concrete measures to scale the business model by addressing new customers and reducing the identified barriers by leveraging extensive knowledge of relevant success factors.