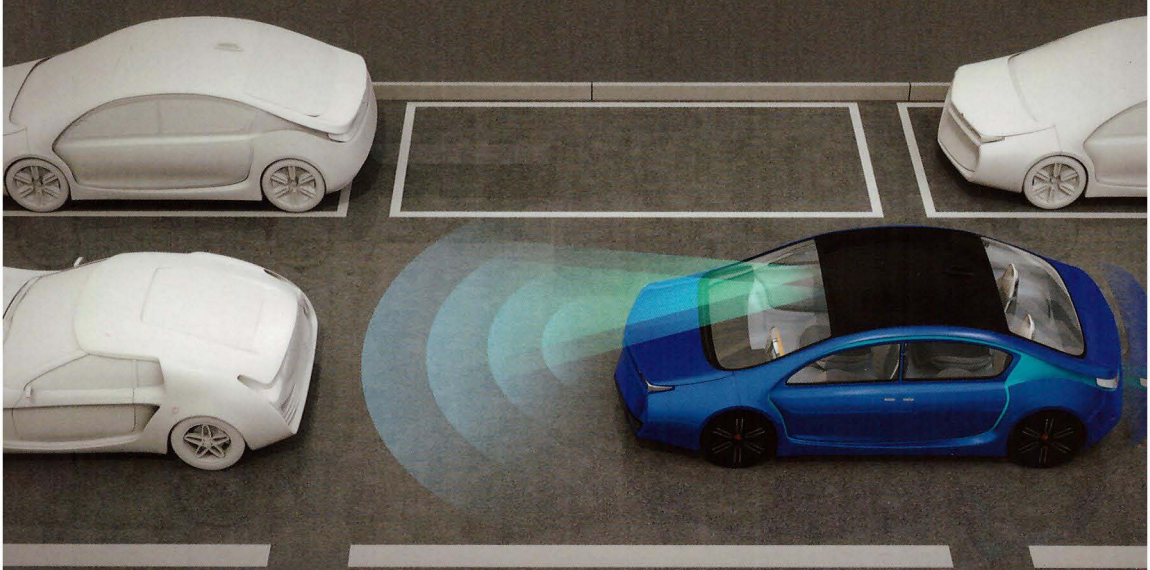
Oppermann · Stender-Vorwachs

Autonomes Fahren

Technische Grundlagen
Rechtsprobleme
Rechtsfolgen

2. Auflage



C.H.BECK

Der technische Fortschritt in der Mobilitätswende bringt auch juristische Probleme mit sich. Die bereits fest etablierten Fahrassistenzsysteme, das teleoperierte und das autonome Fahren tangieren sowohl mehrere Rechtsgebiete als auch eine Vielzahl anderer Wissenschaften. Dieses Handbuch widmet sich den technischen Grundlagen, juristischen Implikationen und interdisziplinären Zukunftsvisionen mit Beiträgen aus folgenden Themenbereichen:

- Technische Grundlagen des autonomen Fahrens
- Mobilität und Verkehr
- Stadt- und Siedlungsentwicklung
- Wirtschaftliche Auswirkungen
- Juristische Fragen aus dem Zivilrecht, Marktrecht, Immaterialgüterrecht, Arbeitsrecht, Datenschutzrecht, Öffentlichen Recht, Strafrecht, Völker- und Europarecht

Zielgruppe dieses Handbuchs sind Versicherungen, Rechtsabteilungen der Automobilhersteller, Mitarbeiter der Ministerialverwaltung und Gesetzgebung, Verbände, Rechtsanwälte, Juristen aus Justiz und Wissenschaft.

Die Autoren sind Experten aus allen mit dem autonomen Fahren befassten Disziplinen.

ISBN 978-3-406-73285-0
9 783406 732850 € 89,–

www.beck.de

2.3 Wirtschaftliche Auswirkungen/Autonomous Driving: Framework Development for a Successful Transition and Adoption

Übersicht

There are enormous expectations for the transition to autonomous driving (AD) on public roads. According to research, autonomous vehicles (AV) have the potential to reduce accidents, lower greenhouse emissions, provide individual mobility to the elderly and disabled, increase efficiency in terms of energy and road capacity usage, and thereby to reduce travel times. Nevertheless, barriers to mass-market penetration remain so that a widespread adoption of AV seems to be years away. Previous work focused on specific issues such as the technical feasibility or the legalization of AD. This study presents a comprehensive framework for a successful transition to and an adoption of AD in public road traffic. A transition to and an adoption of AD is successful if potential benefits, as previously described, and risks are balanced in terms of economic, social, and environmental sustainability. Research in this study includes in-depth interviews with 16 experts from leading companies of the automotive and technology sector, consulting agencies, an insurance company, and a government-related organization in Germany, the United States, Malaysia, and Singapore. The interviews are qualitatively analysed and integrated into a theoretical framework, following a grounded theory oriented research method.

Keywords: Autonomous driving, road transport, grounded theory analysis.

1

A. Introduction

2 Similar to the transition from the horse to the automobile in the last century, humanity is again facing a radical rethinking of mobility. As research and practice indicate, it is no longer a question of whether autonomous driving (AD) prevails, but of when it reaches the everyday life of the general public.[1] As the product of the ongoing computerization of vehicles, AD is attracting attention from a wide range of researchers, industries, and governments.[2] It is likely, that transportation is undergoing major disruptive influence regarding technology, players, and concepts.[3] Autonomous vehicles (AV) have the potential to reduce accidents, lower greenhouse gas emissions, provide individual mobility to the elderly and disabled, increase the efficiency in terms of energy and road capacity usage, and thereby reduce the travel time.[4]

3 Nevertheless, barriers to mass-market penetration remain[5] and the widespread adoption of AV technology seems to be years away[6]. Previous research that investigated these barriers focused mostly on examining the technical aspects and feasibility of AV.[7] Several researchers as Beiker[8] and Glancy[9] evaluate legal challenges of AD. Also, the customer's adoption is discussed in several papers.[10] Bagloee et al. summarize potential advantages and disadvantages of AV.[11] Yun et al. focus on the interplay between business models, technology, and market based on interviews with Korean firms.[12] Many other studies discuss the adoption and effect of new business models such as shared mobility as a service[13], ridesharing applications[14] and implications of connected AV (CAV)[15]. Fagnant and Kockelman, however, state that "one of the most pressing needs is a comprehensive market penetration evaluation."[16]

4 The present study aims to contribute to research by conducting a comprehensive analysis of the underlying mechanisms, obstacles, and stakeholders that influence the market penetration of AV. The overall objective is to develop a framework for a successful transition towards fully AD in public road traffic. Thereby, a transition to AD is considered as successful if benefits and risks are balanced in terms of economic, social and environmental sustainability. Such a framework can demonstrate relationships between the relevant determinants and indicate further need for research and actions. The guiding research question of this chapter is: *What are the determinants of a successful transition to AD in the public road traffic and how are they related?*

---

[1] *Mahmassani* Transportation Science, 50 2016, 1140–1162.
[2] *Gordon and Lidberg* 53 2015, 958–994.
[3] *Mahmassani* Transportation Science, 50 2016, 1140–1162.
[4] *HCSHFW* IEEE Signal Processing Magazine, 33 2016, 74–84; *Fagnant/Kockelman* Emerging Technologies, 40 2014, 1–13; *Sparrow/Howard* Emerging Technologies, 80 2017, 206–215; *SRML* IEEE Internet of Things Journal, 4 2017, 611–618.
[5] *Fagnant/Kockelman* Transportation Research Part A: Policy and Practice, 77 2015, 167–181.
[6] *CHYD* Transportation Research Part B: Methodological, 99 2017, 44–61; *Gartner*, Top Trends in the Gartner Hype Cycle for Emerging Technologies, 2017, https://www.gartner.com/smarterwithgartner/top-trends-in-the-gartner-hype-cycle-for-emerging-technologies-2017/ (Accessed: 25.1.2018).
[7] *Haboucha/Ishaq/Shiftan* Transportation Research Part C: Emerging Technologies, 78 2017, 37–49.
[8] *Beiker* Santa Clara L. Rev., 52 2012, 1145.
[9] *Glancy* Minn. JL Sci. & Tech., 16 2015, 619.
[10] *Bansal/Kockelman* Transportation Research Part A: Policy and Practice, 95 2017, 49–63; *Daziano/Sarrias/Leard* Transportation Research Part C: Emerging Technologies, 78 2017, 150–164; *Haboucha/Ishaq/Shiftan* Transportation Research Part C: Emerging Technologies, 78 2017, 37–49.
[11] *BTAO* Journal of Modern Transportation, 24 2016, 284–303.
[12] *YWJPYP* Technological Forecasting and Social Change, 103 2016, 142–155.
[13] *Chen/Kockelman/Hanna* Transportation Research Part A: Policy and Practice, 94 2016, 243–254; *Fagnant/Kockelman* Emerging Technologies, 40 2014, 1–13; , *Krueger/Rashidi/Rose* Transportation Research Part C: Emerging Technologies, 69 2016, 343–355; *Levin* Transportation Research Part C: Emerging Technologies, 82 2017, 229–247.
[14] *Fagnant/Kockelman* Transportation 2016; *LKBL* Environment and Urban Systems, 64 2017, 373–383.
[15] *HFLAVK* IEEE Communications Magazine, 53 2015, 64–70; ; *HCSHFW*IEEE Signal Processing Magazine, 33 2016, 74–84.
[16] *Fagnant/Kockelman* Transportation Research Part A: Policy and Practice, 77 2015, 167–181.