Does Data Certification Make You Want to Buy Connected Cars? Examining an Established Approach to a New Product Category

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Abstract

The connected car is one of the major recent developments in the automotive industry. However, as it is strongly based on the generation, exchange, and usage of data, consumers are skeptical about adopting this new technology because they fear privacy invasions and data misuse. This paper explores whether certifying connected car data increases consumers' intentions to purchase such a vehicle. It is assumed that trust in and control over data privacy are the psychological drivers of this intention. The results of an online experiment confirm that the effect of certification on consumers' intention to purchase a connected car is mediated by trust in and control over data privacy. However, certification was only found to marginally influence the intention to buy this kind of vehicle. Based on these results, several implications for theory and practice are presented.

Keywords: certification, data privacy, connected car, purchase intention, trust, control

Introduction

The automotive industry is expected to change significantly in the coming years. One major development will be the introduction of connected vehicles (Nikitas et al., 2017). Not only will this strongly impact road traffic (Eckhoff & Sommer, 2014), but it will also mean an increasing amounts of software in vehicles (Reissing & Pohlmann, 2018). The expression "connected car" describes a vehicle that is "capable of accessing to the Internet, of communicating with smart devices as well as other cars and road infrastructures, and of collecting real-time data from multiple sources" (Coppola & Morisio, 2016, p. 1). Examples of data include location, the need for service, or the status of different vehicle parts (Dhall & Solanki, 2017). As this definition implies, the amount of data in the environment of a connected vehicle is enormous (Ferdous et al., 2020). Those data are highly valuable to companies, for example, for marketing activities or to predict consumer behavior patterns (Pinchot et al., 2018). A recent McKinsey report shows that the value of data from cars and shared mobility could exceed $1.5 trillion by 2030 (McKinsey & Company, 2016).

Regarding these data, privacy is a central concern for consumers (Coppola & Morisio, 2016). Data privacy describes "the concept that personally identifiable information (PII) and other data about an individual should only be accessible to authorized parties" (Pinchot et al., 2018, p. 92). McCreary et al. (2016, p. 67) even warned that privacy can be "a potential deterrent to user adoption of new services and experiences." In line with this, Mani and Chouk (2017) concluded that privacy concerns are one of the main reasons for consumers to resist smart product adoption. This is due to the fact that consumers fear that the smart product data could be used to harm them (Khan et al., 2019). These results are similar to the findings of Svangren et al. (2017) about consumers' attitudes toward connected cars. Their study participants saw their connected car as a part of their ecosystem of devices, with connectivity being the central reason for vehicle usage. Although the participants of the study by Svangren et al. (2017) were aware that the connected car manufacturer was collecting their data, it was unclear to them which data were collected, when this happened, and what the information was used for. This frustrated respondents and made them feel uncertain. One solution, suggested by Svangren et al. (2017), is to give consumers control over their data sharing behavior. This is in line with consumers' demands that they should be in control of their information and be able to decide how it is distributed (Liu et al., 2005; Phelps et al., 2000). Giving consumers power over their data and informing them about which information is generated, who uses it, where it is stored, etc., will increase their trust in

Internet-of-Things (IoT) devices (Khan et al., 2019). This is important as "the success and wide adoption of IoT devices will rely heavily on gaining the trust of consumers" (Khan et al., 2019, p. 35).

Against this background, this article examines whether or not certification of connected car data by an independent third-party serving as the certification authority might solve the challenges described above. The data certification process analyzed here includes various functionalities (e.g., enabling consumers to decide which and when data are transferred and shared, under which conditions, with whom, etc.). Third-party certification is supposed to increase consumers' intention to purchase a connected vehicle by increasing their trust in data privacy and their sense of control over their data privacy. As, at least to date, the research on connected car certification is scarce and mainly focuses on technical aspects (e.g., Herve, 2015), this paper marks a first step toward analyzing the effects of connected car data certification on consumer behavior. As such, it adds to the literature on signaling, data certification and its influence on consumer decision making. The results of the online experiment presented here show that although certification has a positive influence both on consumers' perceived control over as well as their trust in data privacy, it only marginally significantly increases their willingness to buy a connected vehicle. However, since connected cars are bound to become increasingly popular in the future, companies should consider data certification as a possible approach to gaining consumer acceptance. Additionally, this measure might also positively impact sales figures.

Theoretical background

Influence of certification on consumer behavior

To date, certification has been employed across many industries, such as cars (e.g., Pratt & Hoffer, 1986), cloud computing (e.g., Lins et al., 2016), and e-commerce (e.g., Houston & Taylor, 1999). It has been described as "the (voluntary) assessment and approval by a (accredited) party on a (accredited) standard" (Meuwissen et al., 2003, p. 172). Research on certification frequently draws on signaling and trust theory (Sturm et al., 2014). While trust theory is concerned with how certification is used to transfer trust from a well-known and trustworthy party to another, possibly unknown entity (Cook & Luo, 2003; Kim & Kim, 2011), signaling theory describes how signals can be used to indicate product quality to consumers (Kirmani & Rao, 2000). A signal is a "marketer-controlled, easy-to-acquire informational cue, extrinsic to the product itself" (Bloom &

Reve, 1990, p. 59). A certification seal is one of the numerous examples of using signals in marketing (Aiken & Boush, 2006). Theoretically, the certification process can be carried out by various entities, including a company, a government (Sporleder & Goldsmith, 2001), or an independent third-party (Anders et al., 2010). In this paper, a third-party is defined as an "Independent Organisation with expertise to provide an assessment and verification of the company's compliance with standards and/or legal requirements" (Tanner, 2000, p. 415).

Despite some contradictory results, previous research has primarily detected a positive influence of certification on people's decisions and behaviors. Examples of positive effects include an increase in perceived product quality (Houston & Taylor, 1999; Wu et al., 2014), brand image (Martínez Caro & Martínez García, 2009; Wu & Jang, 2013), satisfaction (Park et al., 2010), trust (Chang et al., 2013; Kaplan & Nieschwietz, 2003; Kim & Kim, 2011; West, 2015; Yang et al., 2006), trusting intentions (Sha, 2009) and perceived trustworthiness (Lee et al., 2004; Portz et al., 2001). However, some studies could not confirm that certification positively affects trust (Bahmanziari et al., 2009; Kim et al., 2008; Kimery & McCord, 2002; McKnight et al., 2004) and trusting beliefs (Yousafzai et al., 2005). Similarly, while certification has mainly been found to positively influence purchase intention (Kamins & Marks, 1991; Nöteberg et al., 2003; Özpolat et al., 2013; Zhang, 2005), some researchers have not confirmed this relationship (Bahmanziari et al., 2009).

A further factor supposedly affected by data certification is the sense of control people have over their connected car data. This is in line with the literature, where certification is described as a means of reducing consumers' concerns about "privacy, and the loss of control of personal information" (Aiken et al., 2004, p. 253). Control has been found to be an important topic with regard to data privacy (Van Dyke et al., 2007). Moreover, companies might gain a competitive advantage by giving consumers control over their data (Van Dyke et al., 2007). For example, the level of control that consumers have over their data privacy influences their purchase intentions—evidence shows that more control over their data makes consumers more willing to buy a product (Phelps et al., 2000). In sum, based on the results in the literature described above, data certification is not only assumed to increase consumers' trust in and their sense of control over data privacy in this paper, but data certification is also hypothesized to positively influence consumers' intention to purchase a connected vehicle.

However, consumers' demand for control over their information and the massive amount of data produced by connected cars suggest that current data handling practices need to change. This conclusion is in line with several approaches presented in the literature, which suggest different kinds of data platforms for connected cars and various related subjects. These range from the anonymous storage of vehicle data (Joy & Gerla, 2017) to platforms offering identity and access management as well as data analysis functionalities (Haberle et al., 2015). Along these lines, Ferdous et al. (2020, p. 1) proposed a platform that "enables a secure and privacy-preserving mechanism for sharing of smart car data among different parties." Others have suggested including third-parties ("service mediators," Aloqaily et al., 2019, p. 5) in the data transfer process; these parties would be responsible for cybersecurity (Aloqaily et al., 2019). Similarly, while Vanitha and Raju (2013) proposed installing a third-party data auditor between a data owner and a cloud service provider, Katopodis et al. (2014, p. 394) suggested a "hybrid approach for certifying security properties of cloud services that combines monitoring and testing data." Various related solutions have been proposed (e.g., Brandtzaeg et al., 2019; Cao et al., 2020, 2015, 2016; Truong et al., 2016; Xu et al., 2012).

Very much in line with the concept of a third-party certification authority (for details, see below), Moiso and Minerva (2012, p. 202) presented their "Bank of Individuals' Data." This enables consumers to collect and store their smart product data securely and to decide whom they want to share their information with. Further functionalities include "data certification, accountability on data usage, data usage policy enforcement" (Moiso & Minerva, 2012, p. 204). Based on these suggestions, this paper proposes and evaluates an independent third-party as a data certification authority for connected car data. This intermediary in the data transfer process—from the connected vehicle to the respective manufacturer—is responsible for and ensures the data privacy of connected car consumers. Once data have been transferred from the connected car to the certification authority, this trusted third-party anonymizes the data, checks the data for security, as well as stores and forwards the data to the manufacturer. Not all data, however, are passed on to the connected car producer, as data transfers are customized by the consumer. Thus, the consumer decides which data should be forwarded and in which form—assigning the role of a gatekeeper to the certification authority.

Effect of trust and control on purchase intention

Ample research has focused on the concept of purchase intention. In general terms, it describes a person's willingness to buy a certain product or service (Ajzen & Fishbein, 1980). To date, numerous variables have been found to influence the intention to buy a specific good, for example, perceived product value (Chang & Wildt, 1994), price (Dodds et al., 1991), self-image congruence (Oliver & Lee, 2010), perceived usefulness, perceived ease of use (Cho & Sagynov, 2015), and perceived risk (Mansour et al., 2014). Moreover, various researchers have concluded that trust positively affects purchase intention (Chang, 2014; Cho & Sagynov, 2015; Kim, 2012; Lin & Lu, 2010; Mansour et al., 2014; Yoon, 2002). This relationship is also postulated in this paper, with trust in its most general form being defined as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" (Rousseau et al. 1998, p. 395).

In the literature, trust has often been linked to control (e.g., Das & Teng, 1998). Moreover, control is frequently mentioned in connection with the theory of planned behavior (Ajzen, 1985, 1988, 1991). The theory of planned behavior describes how attitude, subjective norm, and perceived behavioral control influence behavioral intention, which in turn affects behavior (Ajzen, 1985, 1988, 1991). While attitude refers "to the degree a person has a favorable or unfavorable evaluation or appraisal of a behavior," subjective norm is the "perceived social pressure to undertake or not undertake a behaviour" (Johe & Bhullar, 2016, p. 100). Perceived behavioral control, in this context, "refers to the perceived ease or difficulty of performing the behavior and it is assumed to reflect past experiences as well as anticipated impediments and obstacles" (Ajzen, 1991, p. 188). While perceived behavioral control was originally conceptualized as one construct (Ajzen, 1985, 1988, 1991), some researchers have since split it into internal and external control (Conner & Armitage, 1998; Kidwell & Jewell, 2003; Manstead & Eekelen, 1998). According to this differentiation, internal control relates to factors inside an individual, e.g., motivation and ability, while external control concerns outside factors, e.g., access to resources and task difficulty (Manstead & Eekelen, 1998). However, whether perceived behavioral control should be separated into two components or not should be decided depending on the research objective (Ajzen, 2002). As this paper is among the first to link certification to perceived behavioral control and is not based on the theory of planned behavior, it views perceived behavioral control as a single construct.

The evidence for the influence of perceived behavioral control on purchase intention is mainly positive (Hsu et al., 2017; Maichum et al., 2016; Paul et al., 2016; Shin & Hancer, 2016; Tan et al., 2017; Yeon Kim & Chung, 2011). However, some researchers have not confirmed this relationship (Johe & Bhullar, 2016; Nam et al., 2017). These results are also reflected in Notani's (1998) meta-analysis, which found that out of 51 studies, 42 identified a significant effect of perceived behavioral control on behavioral intention.

However, the relationship between trust and control is not clear (Das & Teng, 1998). The two main and competing views in the literature describe trust and control either as inversely related to and substituting another (Bradach & Eccles, 1989; Dekker, 2004) or as complementary, mutually reinforcing constructs (Costa & Bijlsma-Frankema, 2007). Leaning toward the complementary view, Das and Teng (1998), for example, found trust and control to be two parallel factors that supplement each other in generating confidence in cooperation in strategic partnerships. This parallel structure between trust and control has been thought to describe the relationship between the two variables more realistically than the substituting view (Das & Teng, 1998). On this basis, this paper hypothesizes that the two psychological processes exert a parallel influence on purchase intention.

Even though certification has not been explicitly linked to behavioral control in the literature, data certification, as proposed here, is assumed to increase consumers' sense of control over their data privacy as it enables them to decide which data they wish to share and with whom. In turn, this increased feeling of control thus ought to increase their purchase intention of a connected car. Analogously, as the findings in the literature described above suggest, the increased trust in data privacy resulting from certification should also increase the consumer's purchase intention of a connected car.

Summary and hypotheses

This paper proposes that connected car data should be certified by an independent third-party to counteract both consumers' fears about their data privacy and their possible reluctance to purchase a connected car. It is suggested that data certification increases consumers' intention to purchase a connected car through two parallel processes. Based on findings in the literature, the effect of certification on purchase intention is hypothesized to be mediated by (a) consumers' trust in data privacy and (b) their sense

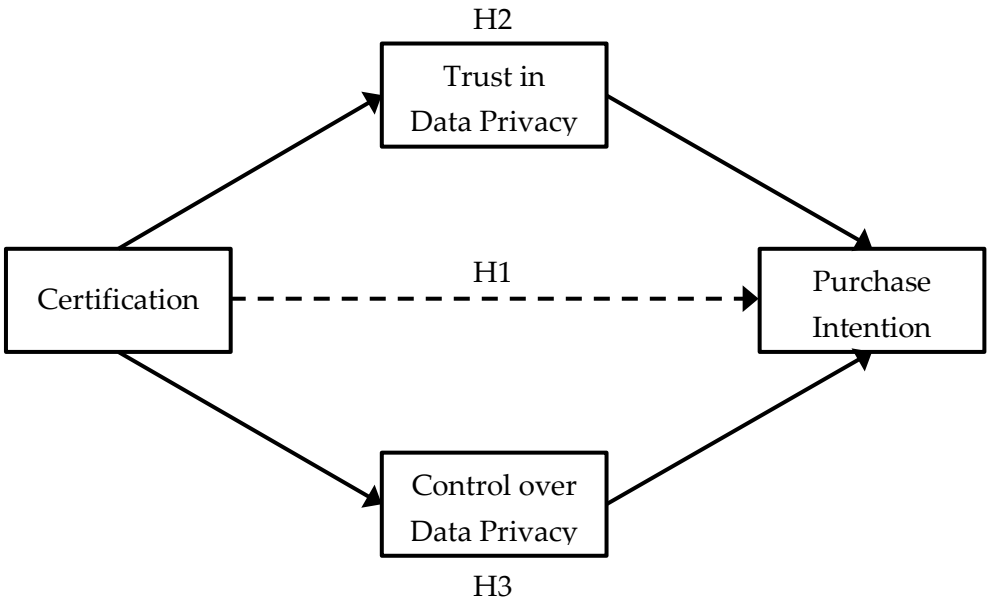
of control over data privacy. These pathways are shown in Figure 1. Formally, the three hypotheses H1-H3 advanced here are:

H1: The certification of connected car data by an independent third-party as the certification authority increases the purchase intention of a connected car.

H2: The effect of certification of connected car data by an independent third-party on the purchase intention of such a vehicle is mediated by trust in data privacy.

H3: The effect of certification of connected car data by an independent third-party on the purchase intention of such a vehicle is mediated by control over data privacy.

Figure 1: Conceptual model of the effect of certification on purchase intention



Method

The purpose of the study was to explore the relationship between certification, trust in data privacy, control over data privacy, and purchase intention as well as to test the above hypotheses. Three hundred and thirty-four participants from Germany took part in the online experiment, which used a two-condition between-subjects design. However, six persons had to be excluded from the analysis: Four participants had

selected the same answer on every item throughout the questionnaire, one person had an answer time of about one and a half minutes for the whole survey (which is too short to have taken the study seriously), and one person indicated that he was 17 years old, hence too young to be allowed to drive a car in Germany. The final sample consisted of 328 persons (49.09% female, M_{age} = 42.84 years). They were randomly assigned to one of two experimental conditions: data certification of the connected car data by an independent third-party certification authority (N = 162) or no data certification and a direct data transfer from the connected car to the respective vehicle manufacturer (N = 166). Participants had to be 18 years old, have a valid driver's license, and own a car to be eligible to take part in the study.

For the online study, a connected vehicle was defined in accordance with Coppola and Morisio (2016) as well as Dhall and Solanki (2017), both cited above. After some introductory questions about the respondents' car usage behavior, especially of connected vehicles, participants read different scenario descriptions, depending on which of the two study conditions they were randomly assigned to (for a full description of the two study conditions, see Appendix A). In both conditions, a connected car was described as producing data that can be used to obtain information about the car, but also about the driver. In the control condition, it was then explained that these data were transferred directly to the respective car manufacturer. It was unclear which data were stored and used by the manufacturer and which types of data were transmitted in which situations (i.e., offering consumers no opportunity to personalize data usage and data transfer). Nor was it clear whether the data were anonymized, used commercially, or only stored as a backup, whether any security measures were employed, and whether data were transferred onward to partner companies. In the experimental condition, a different data transfer process was described. There, the connected car data were first transferred to an independent third-party certification authority (in this study, a German testing, inspection, and certification company). Next, only those data were forwarded to the vehicle manufacturer for which data owners (i.e., consumers) had provided their consent in personalized settings. Moreover, the third-party certification authority anonymized the data and stored them for safety and security reasons (e.g., as data backup). The certification authority also promised that no data would be used for commercial purposes and that data would only be forwarded to other entities (e.g., the manufacturer's partnering companies) with the consumer's agreement. Additionally, the third-party certification authority checked the transferred data for security (e.g., hacking or data manipulation).

Having read the respective scenarios, respondents were asked to give their opinion about these in an open text box. The purpose was to make participants thoroughly reflect on the scenario so that they internalized it for the ensuing questions. The dependent variable (i.e., participants' purchase intention of the connected car) was assessed with a four-item scale adapted from Chandran and Morwitz (2005, questions asked on 7-point scales: "1. How likely are you to buy the connected car described earlier?" – 1 = "highly unlikely" to 7 = "highly likely"; 2. How probable is it that you will purchase the connected car described earlier?" – 1 = "highly improbable" to 7 = "highly probable"; "3. How certain is it that you will purchase the connected car described earlier?" – 1 = "highly uncertain" to 7 = "highly certain"; "4. What chance is there that you will buy the connected car described earlier?" – 1 = "no chance at all" to 7 = "very good chance"; Cronbach's $\alpha = .97$). Participants' trust in data privacy was measured based on a three-item scale (adjusted from Thomson, 2006, 7-point scale from 1 = "not at all" to 7 = "very much": "1. How much can you count on the fact that in the described scenario your data will only be used for the specified purpose, will not be passed on unauthorized, misused, or similar?"; "2. How much can you trust that in the described scenario your data will only be used for the specified purpose, will not be passed on unauthorized, misused, or similar?"; "3. How dependable do you consider it to be that in the described scenario your data will only be used for the specified purpose, will not be passed on unauthorized, misused, or similar?"; Cronbach's $\alpha = .95$). The second mediator, perceived behavioral control, was assessed with a three-item scale (Zhu et al., 2007, Cronbach's $\alpha = .85$). In each of the two study conditions, participants had to indicate how much they felt "1. In control," "2. Decisive," and "3. Dominant" with regard to their connected car data (on a 7-point scale from 1 = "strongly disagree" to 7 = "strongly agree").

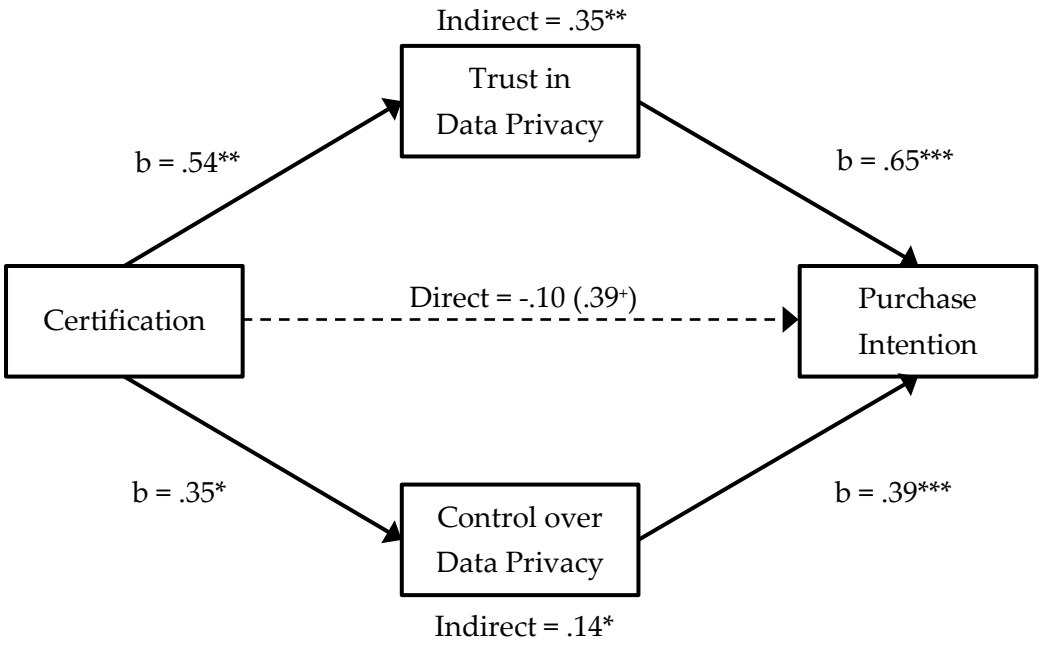
Results

The results show that participants whose data were certified by an independent third-party have significantly higher trust in data privacy ($t(326) = 2.87$, $p = .004$, $d = .32$, $M_{control} = 3.71$, $M_{thirdparty} = 4.26$) as well as significantly higher perceived behavioral control over their data privacy compared to the control condition ($t(326) = 2.00$, $p = .05$, $d = .22$, $M_{control} = 4.01$, $M_{thirdparty} = 4.36$). However, contrary to H1, respondents in the experimental condition only had a marginally significantly higher purchase intention of

the connected car compared to those in the control condition ($t(326) = 1.73$, $p = .08$, $d = .19$, $M_{control} = 3.63$, $M_{thirdparty} = 4.03$).

Additionally, a mediation analysis with data certification by an independent third-party (vs. no certification) as the independent variable, trust in data privacy and perceived behavioral control over data privacy as the two parallel mediators, and purchase intention as the dependent variable was conducted (Hayes, 2018; PROCESS Model 4; $N_{bootstrapping} = 5{,}000$). The analysis revealed that in line with H2 and H3, the effect of certification on purchase intention was mediated by trust in data privacy as well as by control over data privacy ($b_{trustindirect} = .35$, SE = .13, 95% CI = [.11, .64]; $b_{controlindirect} = .14$, SE = .08, 95% CI = [.01, .30]; $b_{direct} = -.10$, SE = .14, 95% CI = [-.37, .17]; $b_{total} = .39$, SE = .23, 95% CI = [-.05, .84], see Figure 2).

Figure 2: Certification influences the purchase intention of connected cars via trust in and control over data privacy



Notes:
+ p < .10, * p < .05, ** p < .01, *** p < .001.
Total effect in parentheses.

Discussion and conclusion

The results of the regression analysis show that the effect of certification on purchase intention is mediated in parallel by trust in data privacy as well as by control over data privacy. Thus, H2 and H3 are accepted. As the direct effect is not significant, the mediation is indirect-only and no additional mediators except those taken into account here likely exist (Zhao et al., 2010). However, as data certification by an independent third-party only led to a marginally significant increase in the intention to purchase a connected car, H1 has to be rejected (assuming a significance level of $\alpha = .05$ for the study). This near-significant effect, however, may be said to indicate that consumers are aware that connected car data potentially affect their lives. Although several other factors presumably influence the decision to purchase such a vehicle as well (e.g., technical details, price, or brand), data seem to have become an important factor for consumers in the buying decision of a connected car. In the future, with more and more people adopting connected cars, data collection might become an even more important topic for consumers than today. In the above-described study, only 35.06% of participants owned a car that they described as a connected vehicle. However, as the share of connected car owners increases, awareness of the threats to data privacy might rise and thus also the demand for data certification.

This study extends the literature on the future of mobility as well as on the influence of certification on consumers' behaviors and choices in the digital age. Moreover, it provides insights into the topics of control, trust, and the relationship of those two variables. While various diverging views about the association between trust and control exist in the literature (Costa & Bijlsma-Frankema, 2007), the findings of this study add weight to the view that trust and control are parallel, complementary concepts. With regard to the research on connected products and data privacy, the results show that giving consumers the possibility to obtain or at least to increase their data privacy positively influences their behavioral intention. Data certification, as shown in this study, is thus a first, viable step toward lessening consumers' uncertainty toward connected technologies and to assure them of proper data handling practices.

Moreover, certification seems to be a quality signal that cannot only be employed with traditional products such as food or nutrition (e.g., Wu et al., 2014) but also with digital technologies. In sum, companies should work on ways to provide consumers with control over their data privacy and to reassure consumers that they are trustworthy as regards data privacy protection topics. Khan et al. (2019) even warned that consumers

might ignore IoT businesses that do not properly heed data privacy topics. Furthermore, the results of the experiment reported here are positive news for the testing, inspection, and certification industry, as they indicate that certification, if employed in the connected car market, will create value for both consumers and producers. While consumers can rely on the privacy of their data, certification might present a viable solution to overcome the adoption barriers of connected cars and to increase sales.

This research marks a first step toward analyzing the role of certification and its influence on consumer behavior in a connected world. However, it has some limitations and opens up several avenues for future research. Some of the main restrictions are its regional focus on Germany and the missing cross-country comparisons. As such, numerous examples of differences exist between countries, among others, the varying effects of perceived behavioral control on purchase intentions between Turkey, Pakistan, and Iran (Asif et al., 2018), or between Taiwan and Singapore (Chiu & Leng, 2016), and differences between Americans and South Koreans regarding trust and the perception of third-party certification (Kim, 2008). Further, it might also be viable to take other variables into account regarding the effect of certification on consumer behavior, such as perceived risk (e.g., Lee et al., 2004) or consumers' willingness to share data (e.g., Milne & Boza, 1999; Schoenbachler & Gordon, 2002). Other topics that warrant further attention are the relationship between trust and control, the interaction between these two mediators (Vosselman & Van der Meer-Kooistra, 2009), or potentially splitting control and trust into several sub-components, e.g., output control, behavior control, and social control, or goodwill trust and competence trust (Das & Teng, 2001). Trust and control, however, are not static (Costa & Bijlsma-Frankema, 2007). As the same also applies to technological developments and consumers' views on data privacy (Milne et al., 2012), the relationships studied here need to be frequently reassessed.

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Appendix A: Scenario descriptions

1. Control condition

Screenshot of the scenario description

Bei der **Verwendung eines Connected Car (vernetztes Fahrzeug)** entstehen viele **Daten**, durch welche weitreichende **Informationen über Sie gewonnen werden** können, beispielsweise über die Verwendung Ihres Connected Car (vernetztes Fahrzeug), aber auch über Sie als Nutzer.

Diese Daten werden **direkt an den Automobilhersteller übertragen** und dort gespeichert.

Hierbei ist **unklar**,

- welche Daten der Automobilhersteller **speichert und verwendet** und in welcher Situation welche Arten von Daten übertragen werden (keine personalisierten Einstellungen),
- ob die Daten **anonymisiert** sind (also nicht zu einer bestimmten Person zuordenbar),
- ob die Daten **kommerziell verwendet** werden, oder nur aus Sicherheitsgründen gespeichert werden (z.B. Datenbackup),
- ob die Daten **auf Sicherheit geprüft** werden (beispielsweise Hacking-Angriffe oder Datenmanipulation),
- ob die Daten **an dritte Parteien**, z.B. Partnerunternehmen des Automobilherstellers, **weitergegeben** werden etc.

English translation

When **using a connected car,** a lot of **data** are generated that can be used to obtain extensive **information about you**, for example, about the use of your connected car, but also about you as a user.

These data are **transmitted directly to the car manufacturer** and stored there.

It is **unclear**,

- which data the car manufacturer **stores and uses** and in which situation which types of data are transmitted (i.e., no personalized settings),
- whether the data are **anonymized** (i.e., cannot be assigned to a specific person),
- whether the data are **used commercially** or only stored for safety and security reasons (e.g., data backup),
- whether the data are **checked for security** (e.g., hacking attacks or data manipulation),

- whether the data are **passed on to further entities**, e.g., partner companies of the car manufacturer, etc.

2. Experimental condition

Screenshot of the scenario description

Bei der **Verwendung eines Connected Car (vernetztes Fahrzeug)** entstehen viele **Daten**, durch welche weitreichende **Informationen über Sie gewonnen werden** können, beispielsweise über die Verwendung Ihres Connected Car (vernetztes Fahrzeug), aber auch über Sie als Nutzer.

Diese **Daten** werden **zuerst an [xxx] als Datentreuhänder übertragen, bevor von Ihnen ausgewählte Daten an den Automobilhersteller übertragen** werden. Somit können Sie **bestimmen, zu welchen Daten und unter welchen Bedingungen Sie dem Automobilhersteller Zugriff** gewähren.

Als Datentreuhänder garantiert [xxx] dafür, dass

- nur die Arten von Daten an den Automobilhersteller **übertragen und verwendet** werden, die Sie in Ihren **personalisierten Einstellungen** zur Weitergabe **freigegeben** haben,
- die Daten **anonymisiert** werden (also keiner bestimmten Person zuordenbar sind),
- die Daten von [xxx] **nicht kommerziell verwendet** werden, sondern nur aus Sicherheitsgründen gespeichert werden (z.B. Datenbackup),
- die Daten **auf Sicherheit geprüft** werden (beispielsweise Hacking-Angriffe oder Datenmanipulation),
- nur **autorisierte Daten an dritte Parteien**, z.B. Partnerunternehmen des Automobilherstellers, **weitergegeben** werden etc.

English translation

When **using a connected car**, a lot of **data** are generated that can be used to obtain extensive **information about you**, for example, about the use of your connected car, but also about you as a user.

These **data will first be transferred to [xxx][1] as the certification authority before the data you have selected are transferred to the car manufacturer**. This allows you to **decide to which data and under which conditions you grant the car manufacturer access**.

As the certification authority, **[xxx] guarantees** that

[1] Name of a German testing, inspection, and certification company.

- only those types of data are **transferred** to the car manufacturer and **used** that you have **authorized** for transfer **in your personalized settings**,
- the data are **anonymized** (i.e., cannot be assigned to a specific person),
- the data are **not used commercially** by [xxx], but only stored for safety and security reasons (e.g., data backup),
- the data are **checked for security** (e.g., hacking attacks or data manipulation),
- only **authorized data are passed on to further entities**, e.g., partner companies of the car manufacturer, etc.
