

Passengers as defenders: Unveiling the role of customer-company identification in the trust-customer citizenship behaviour relationship within ride-hailing context

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ARTICLE INFO

Keywords:

Ride-hailing
Trust
Signaling theory
Customer citizenship behaviour
Sharing economy

ABSTRACT

Ride-hailing platforms such as Didi, Uber, and Lyft have changed the travel industry. Promoting the passengers' trust in platform and customer citizenship behaviour (CCB) is both challenging and important. This study employed a mixed-methods design, consisting of 21 interviews and 351 online surveys, to develop and examine the trust-CCB model in the ride-hailing context. Our findings reveal that platforms can foster passengers' trust by sending service-related signals (i.e., service quality and structure assurance) and a firm-related signal (i.e., platform reputation). Customer-company identification (CCI) mediates the relationship between passengers' trust and CCB, where passengers engage in CCB by providing recommendations, exhibiting forgiving behaviour, providing feedback, and participating in research in ride-hailing. Additionally, firm-related signals, including platform size and reputation, enhance the positive relationship between trust and CCI. These findings contribute to the body of knowledge on trust, CCB, and signaling theory, providing potential practical implications for ride-hailing platforms.

1. Introduction

Alongside the adoption of emerging technologies in the tourism-related industry, there is a growing number of digital business models emerging (Perelygina et al., 2022). One prevalent model is the sharing economy (SE) (Canziani & Nemati, 2021; Leung et al., 2019), characterized by using a platform to match providers and receivers for goods or services (Belk, 2014; Perren & Kozinets, 2018). In the travel industry, ride-hailing is an innovative business model enabled by the SE; numerous platforms, such as Didi, Uber, Lyft, etc., provide ride-hailing services worldwide (Cheng et al., 2023). They collect information from passengers and drivers, striving to promptly and accurately match travel demands using sophisticated algorithms (Lee et al., 2019). Ride-hailing services, offering lower costs than traditional taxi services, have become a crucial option for daily commutes (Pfeffer-Gillett, 2016; Posen, 2015), trips, and vacation travel (Herjanto et al., 2024) by providing passengers with a convenient and flexible mode of transportation (Tan et al., 2022). Additionally, they hold the potential to improve travel sustainability (Naumov & Keith, 2023). However, the

ride-hailing environment, also characterized by information asymmetry, uncertainty, and risks, exposes passengers to potential unexpected incidents during services. A recent survey found that more than 80% of passengers reported negative experiences, such as cancellations or delayed pickups while using ride-hailing platforms (Last-minute cancellation, late pick-up among worst experiences with ride-hailing apps: Survey, 2022). Meanwhile, the ride-hailing industry is a fiercely competitive market, where passengers can easily switch between platforms (Cai et al., 2024). Therefore, platforms need to understand how to build trust and co-create value with passengers to maintain their relationships.

A durable relationship between passengers and platforms is grounded in trust in platforms (Park & Tussyadiah, 2020). Trust can facilitate smoother transactions by mitigating the negative aspects of the transaction environment (Gefen, 2000; McKnight et al., 2002; Möhlmann, 2015). The importance of trust in the SE is widely recognized (Ert et al., 2016; Köbis et al., 2021), particularly regarding users' trust in platforms (Alamoudi et al., 2023; Lu et al., 2021). Specifically, passengers' trust in platforms reflects their willingness to take risks, based on positive

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<https://doi.org/10.1016/j.tourman.2024.105086>

Received 3 February 2024; Received in revised form 1 November 2024; Accepted 6 November 2024

Available online 14 November 2024

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expectations that the platform will continue to perform well in the future (Mayer et al., 1995). Existing research has thoroughly discussed various antecedents of trust in platforms in ride-hailing (Cheng et al., 2020; Shao & Yin, 2019). We differentiate the specific roles of various types of signals sent by platforms, reflecting their attributes in influencing trust.

Ride-hailing platforms also aim to maintain relationships with passengers by creating value. Existing research has primarily examined how platforms use social accounts (e.g., verbal claims) and compensation to create value (Cohen et al., 2022; Halperin et al., 2022). Although these strategies are effective, they are often implemented on a one-time basis and reactive for passengers. To sustain relationship, value co-creation plays a crucial role throughout the travel process (Assiouras et al., 2019). There is a need to understand how to make passengers as defenders who may proactively co-create value with platforms (Kim et al., 2020). Previous research claimed that companies rely heavily on customer citizenship behaviour (CCB) to co-create value with customers (Assiouras et al., 2019), thereby ensuring and retaining relational values (Mitrega et al., 2022). CCB, as a sequence of voluntary behaviours beyond transaction demand, has been recognized as a key driver of sustainable development for service providers (Field et al., 2018; Gong & Yi, 2021). Examples of CCB include proactively helping other passengers and providing feedback to the platforms. Prior research has regarded CCB as a multi-dimensional construct that varies across different contexts (Groth, 2005; Mitrega et al., 2022), but further research is needed to specify the dimensions of CCB concerning the ride-hailing industry, where differs from online or offline shopping in its peer-to-peer transaction, service-oriented goods, and online-to-offline processes.

Initial attempts have been made to understand CCB in the SE, focusing on the value derived from platforms (Assiouras et al., 2019) and providers (Ma et al., 2023) to promote customers' CCB. Passengers' trust in platform and CCB are crucial to maintaining relationships between passengers and platforms; however, studies on the connection between trust and CCB have been limited, with inconclusive findings on whether trust is the cause or result of CCB (Mitrega et al., 2022). While Nadeem and Al-Imamy (2020) have verified trust as a relationship quality dimension can lead to CCB, the underlying mechanisms that connect passengers' trust in platforms to CCB require additional research.

This research, inspired by signaling theory and its recent advances, aims to investigate the formation of passengers' trust in ride-hailing platforms and explain its relationship with CCB. Signaling theory explains how signalers (e.g., ride-hailing platforms) can influence receivers (e.g., passengers) by sending signals in situations characterized by information asymmetry (Connelly et al., 2011). These signals comprise any information conveyed by signalers to reveal their qualities (Connelly et al., 2011). For instance, ride-hailing platforms can design and send signals to show the potential attributes of their activities and capabilities. Latest advances in signaling theory suggest that different types of signals can play specific roles in affecting receivers (Steigenberger & Wilhelm, 2018). Therefore, signaling theory and its recent advances not only provide a comprehensive theoretical framework for understanding the relationship between trust formation and CCB but also highlight the need for further empirical examination of this relationship. In this setting, this study addresses three research questions (RQs).

- RQ 1 What are the signals sent by the ride-hailing platforms that impact passengers' trust in platform?
- RQ 2 What are the dimensions of customer citizenship behaviour in the context of ride-hailing?
- RQ 3 How does passengers' trust in ride-hailing platforms influence their customer citizenship behaviour towards the platforms?

This study employs a mixed-methods design consisting of sequential qualitative and quantitative phases to address these RQs, shedding light on extant literature in three aspects. First, our findings identify and

examine the effects of service-related and firm-related signals from ride-hailing platforms on affecting both passengers' trust in platform and its relationship with CCB, improving the understanding of passengers' trust in platforms. Second, we expand the comprehension of CCB by identifying four context-specific dimensions and clarifying how trust affects CCB in ride-hailing. Finally, our research identifies customer-company identification (CCI), rooted in social identity theory, and refers to the positive and emotional attachment that passengers feel towards the values and concepts of a ride-hailing platform (Bhattacharya & Sen, 2003), as a critical factor in explaining the underlying mechanisms between passengers' trust in platform and CCB. This finding extends signaling theory by incorporating social identity theory to explain how platform signals impact passengers' trust and moderate its relationship with CCB.

2. Theoretical backgrounds

2.1. Trust in platform

Trust is a complicated concept that has been extensively studied across various disciplines and contexts (Rousseau et al., 1998), including the tourism and hospitality field (Cheng et al., 2019; Wu et al., 2018), especially in online environments (Bapna et al., 2017; Luo & Zhang, 2016). Ride-hailing platforms manage more complex trust relationships involving three key stakeholders: passengers, drivers, and platforms, giving rise to two types of trust: trust between passengers and drivers and trust between passengers/drivers and platforms (Mas-Machuca et al., 2021). Our study focuses on passengers' trust in platform. On one hand, compared to drivers, passengers can easily switch between platforms due to low transfer costs. On the other hand, increasing trust in the platform is crucial for sustaining relationships with passengers (Crosby et al., 1990). Passengers' trust in platforms is essential for the growth and development of platforms (Mittendorf et al., 2019), referring to "*the willingness of passengers to be vulnerable to the actions of the platform, based on the expectation that the platform will ensure smooth transactions, notwithstanding passengers' ability to monitor platforms' intentions and actions*" (Mayer et al., 1995). Therefore, passengers can't build trust in a ride-hailing platform without sufficient information about the platform.

Scholars focusing on passengers' trust in platforms (summarized in Table A1 of Appendix A) have explored its antecedents, including platform qualities (Lee et al., 2018), institutional structure (Lu et al., 2021) and mechanisms (e.g., Shao & Yin, 2019), justice perceptions (Amoako et al., 2021; Shao et al., 2022), and platform characteristics, such as responsiveness, tangibles (Mas-Machuca et al., 2021), innovativeness (Geng et al., 2022), trustworthiness (Venkateswaran et al., 2021). These studies have examined their effects on fostering trust in platforms. We contribute to the literature by differentiating the effects of platforms' activity (e.g., service-related) and capability (e.g., firm-related), which represent different types of signals according to recent research related to signal theory (Steigenberger & Wilhelm, 2018). Furthermore, we reveal their varying impacts on passengers' trust and behaviours.

Previous research has commonly explored outcomes related to passengers' *in-role behaviours*, which refer to the behaviours required for the transaction process to achieve successful service (Groth, 2005). These outcomes include intention to participate (Lee et al., 2018), continue and discontinue usage intention (Ma et al., 2019; Shao & Yin, 2019), and loyalty (Amoako et al., 2021). With the increasing emphasis on service-dominant logic (SDL), it has been noted that customers have a value co-creation role in the service exchange process (Vargo & Lusch, 2008). Customers' *extra-role behaviours*, which go beyond the expectations of the transaction process yet create additional value (Groth, 2005), have become crucial for business success (Yi & Gong, 2013). Although research has shown how trust fosters word-of-mouth (Shao et al., 2022), the underlying mechanism remains unexplored. Although trust is fundamental to transactional relationships, it does not always

lead to extra-role behaviours. For example, a passenger might trust a ride-hailing platform but still be unwilling to recommend it. Therefore, this study seeks to explore the mechanism of passengers' trust and extra-role behaviours and to identify the varying roles played by the activity and capability attributes of ride-hailing platforms.

2.2. Customer citizenship behaviour (CCB)

CCB, regarded as the typical portfolio of *extra-role behaviours*, has evolved from the construct of organizational citizenship behaviour (OCB) (Groth, 2005). It refers to "voluntary and discretionary behaviours that are not required for the successful production and/or delivery of the service but that, in the aggregate, help the service organization overall" (Groth, 2005, p. 11). In ride-hailing services, CCB is the voluntary behaviour of passengers, which is not necessary for the process of ride-hailing services (Groth, 2005; Mitrega et al., 2022). Given the significant impact of CCB on value co-creation and the relationship maintenance (Kim et al., 2020; Mitrega et al., 2022), its role is paramount in ensuring the sustainable growth of ride-hailing platforms. Studies have shown (summarized in Table A2 of Appendix A) that personal perceptions such as ethical perceptions (Nadeem & Al-Imamy, 2020) and involvement (Le et al., 2024), and social support (Nadeem et al., 2020), as well as some service attributes such as physical attractiveness (Ma et al., 2023) and perceived quality (Le et al., 2024), can influence users' CCB in the SE. However, most of them have given limited consideration to the contextual dimensions of CCB.

CCB is a multi-dimensional construct that continues to evolve and exhibit inconsistencies in its dimensions across different contexts (Mitrega et al., 2022). Initially, it was conceptualized as a one-dimensional construct of citizenship behaviour or extra-role behaviour (Gruen, 1995). Bettencourt (1997) expanded this to three dimensions including loyalty, cooperation, and participation. Gruen et al. (2000) replaced loyalty with retention and retained the other two dimensions. Groth (2005) provided that CCB comprises the dimensions of recommendations, helping customers, and providing feedback. Yi et al. (2011) modified the dimensions to recommendations, making constructive suggestions, and cooperation. Yi & Gong (2013) expanded to the four dimensions of feedback, advocacy, helping, and tolerance. Rosenbaum & Massiah (2007) posited the five dimensions of participation, cooperation, loyalty, empathy, and responsibility. Bove et al. (2009) as well as Johnson and Rapp (2010) extended the number of dimensions to eight and nine, respectively. Thus, conclusions regarding the dimensions of CCB differ. Furthermore, the dimensions of CCB are considered context-specific, meaning that not all dimensions will apply to every context (Johnson & Rapp, 2010). Due to travelers encountering different service experiences and usage frequencies in ride-hailing and accommodation sharing. This study aims to determine the CCB dimensions in ride-hailing services to enhance its measurement in our research.

Previous studies suggest a potential relationship between trust and CCB. From a holistic perspective, Gruen (1995) theoretically posited that trust positively affected citizenship behaviour. This idea has been supported in the field of organizational behaviour, where trust has been a critical precondition for OCB (Davis et al., 2000). Furthermore, prior research has explored and empirically verified the promotion of CCB through the lens of customer attitudes drawing on social exchange theory (Curth et al., 2014; Groth, 2005). However, the conclusions on whether these attitudes are the antecedents or outcomes of CCB have been inconsistent, including the influence of customer trust (Mitrega et al., 2022). As the current theoretical lens of social exchange theory has failed to fully explain how trust affects CCB, we integrate signaling theory and social identity theory to explain the mechanisms underlying passengers' trust in platforms and their CCB.

2.3. Social identity theory

Social identity theory provides another theoretical perspective to explain individual behaviour, suggesting that individuals are inclined to seek out groups with similar characteristics or values. In doing so, individuals categorize themselves and their groups within the same social identity category, and may subsequently be more likely to take actions that benefit the group (Ashforth & Mael, 1989).

Customer-company identification (CCI), grounded in social identity theory, has been conceptualized as "an active, selective, and volitional act motivated by the satisfaction of one or more self-definitional needs" (Bhattacharya & Sen, 2003, p. 77). Social identity theory suggests that an individual's behaviour is greatly influenced by their self-definition. Thus, if they identify with a company, they are more inclined to behaviours that help the company. Previous research has delved into the crucial role that CCI plays in customers' in-role and extra-role behaviours that contribute to company growth and development (Ahearne et al., 2005), suggesting that CCI may also play a critical role in shaping CCB.

Since ride-hailing is a SE-based business model within the travel industry, characterized by its environmental sustainability and convenience, it embodies the fundamental values of the SE by transforming use values into exchange values with a spirit of reciprocity and generosity (Schor & Vallas, 2021). Consequently, the SE is increasingly adopted as a lifestyle choice (Cheng, 2016); that is, individuals who identify with the SE tend to support the business models driven by the SE and contribute to their development. Against this backdrop, we argue that social identity theory offers a more suitable framework to comprehend passengers' behaviour in ride-hailing contexts compared to social exchange theory. This suggests that in the ride-hailing setting, passengers engage in CCB due to their identification with the concepts and values of the platforms rather than the equity or exchange value provided by the platforms.

2.4. Signaling theory

Signaling theory, which originated in the field of information economics, presents a framework for addressing the impacts of information asymmetry and is characterized by four key elements: the signaler, the signals sent to the receiver, the receiver, and the feedback sent to the signaler (Connelly et al., 2011). Connelly et al. (2011) have summarized that signalers have an informational advantage in contexts characterized by information asymmetry; in contrast, receivers have limited access to relevant information but may have alternative options to consider besides the signaler; the signals sent to the receiver refer to information that reflects the positive attributes of the signaler; the receiver's feedback serves as an essential element of signaling theory in management research, providing information about the receiver's reactions and decisions. In a context with information asymmetry, signalers seek to send signals expressing their positive attributes to the receiver with the expectation of receiving positive feedback (Spence, 1976). Thus, signaling theory can explain how signals affect receiver attitudes and behaviours (Gregg & Walczak, 2008; Wells, Valacich, & Hess, 2011). Compared to social exchange theory, which focuses on rewarding reactions in economic exchange relationships (Blau, 1964), signaling theory addresses information asymmetry through the use of signals that reflect the positive attributes of the signaler. Therefore, it provides a comprehensive theoretical foundation for our research.

Signaling theory focuses on substantive signals that enable receivers to distinguish between low-quality and high-quality signalers since this type of signal entails higher costs for low-quality signalers compared to high-quality signalers (Connelly et al., 2011; Steigenberger & Wilhelm, 2018). Organizational substantive signals can be categorized into two types: *activity-related signals* and *capability-related signals*; the former type reflects the positive attributes of firms' activities, such as their business operations, while the latter type reflects the positive attributes of firms'

capability for these activities, such as their scale (Steigenberger & Wilhelm, 2018). Our study focuses on contextualization (Hong et al., 2014) of the two types of signals sent by ride-hailing platforms and examines their divergent impacts on passengers' trust in platform, which, in turn, influences passengers' CCB, providing empirical evidence to support recent advancements in signaling theory.

3. Methodology

A mixed-methods design was used in this study to incorporate both qualitative and quantitative approaches (Tashakkori & Teddlie, 1998). Adhering to the mixed-methods design criteria, we design the study step by step (see Appendix B for details). The research questions initially helped to determine the method choice, which aimed to explore and examine context-related phenomena such as the specific signals used by ride-hailing platforms, the context-specific dimensions of CCB, and the mechanisms between passengers' trust in platforms and CCB. These align with the expansion and developmental purposes of using the mixed-methods design (Venkatesh et al., 2013). In this vein, we employed a multistranded mixed-methods approach with a sequential design (Venkatesh et al., 2016, p. 443). This design involved an initial qualitative phase to explore context-specific constructs and develop hypotheses, followed by a quantitative phase to confirm the developed hypotheses. These two phases were a dominant-less dominant mixed-methods design, where the qualitative phase serves as the less dominant part and the quantitative phase is the dominant part (Venkatesh et al., 2016, p. 444). For the epistemological perspective, we adopted a multiple paradigm stance, followed by previous research (Califf et al., 2020; Cheng et al., 2022; Sarker et al., 2018). The qualitative study followed the interpretive paradigm, while the quantitative study adhered to the positivist paradigm (Venkatesh et al., 2013, 2016). Although the samples in the qualitative and quantitative studies differed, they were randomly selected from a population with comparable experiential backgrounds. The qualitative study is suitable for research questions that have limited understanding in the existing literature (Yin, 2009), while the quantitative study aims to explore the quantitative research question and complement the findings from the qualitative study. Appendix C elaborates on the mixed-methods design criteria adapted from Venkatesh et al. (2013).

3.1. Reasons for adopting a mixed-methods design

The decision to use this approach was motivated by three reasons. First, this approach is a good fit for addressing the research questions, which include both exploratory (i.e., RQ1 and RQ2) and confirmatory (i.e., RQ1 and RQ3) purposes (Venkatesh et al., 2013). The exploratory questions are addressed by the qualitative study, while the confirmatory question is addressed by the quantitative study. Second, this study aims to identify the context-specific signals sent by ride-hailing platforms and CCB dimensions in ride-hailing. Influenced by the context-specific theorizing process suggested by Hong et al. (2014), which supports the incorporation of context-specific factors into models using qualitative methods, and following existing research carried out for context-specific theorizing and examination (Califf et al., 2020; Shi et al., 2024). Third, the integrative inference of our conclusions requires that the hypotheses and measurements in the quantitative study are provided by the qualitative study results; in turn, the quantitative study enables to validate and generalize these insights (Shi et al., 2019; So et al., 2018).

3.2. The process for implementing the design

We first developed the priori theoretical framework by drawing on signaling theory. Then, to contextualize the theoretical model, we conducted a qualitative study and carefully analyzed qualitative data, identifying context-specific constructs. Specifically, we explored the

types of signals ride-hailing platforms send, as the signalers in this research, to provide information about their potential positive attributes to passengers. After that, we examined our research model using quantitative methods with survey data. Finally, we combined the findings of the two phases of research to offer insights into passengers' trust in platform and their CCB, while explaining the underlying influencing mechanisms. Fig. 1 illustrates the process.

4. Phase 1: the qualitative study

In our qualitative study, we conducted all interviews in China using the semi-structured interview approach. We designed semi-structured interviews with *three main purposes*: first, to identify and recontextualize the service-related and firm-related signals sent by ride-hailing platforms that influence passengers' trust in platform. Drawing on existing research relevant to signaling theory (Steigenberger & Wilhelm, 2018), we regarded signals as two types: service-related signals and firm-related signals, within the ride-hailing context. The former served as the proxy for activity-related signals, as ride-hailing platforms primarily engaged in service-oriented operations. The latter was the proxy for capability-related signals, as our research focused on identifying the characteristics of these platforms that reflect their capabilities. Second, we aimed to investigate how passengers' trust in platform influences CCB, and third, to determine the context-specific dimensions of CCB within the ride-hailing.

The interview protocol was collaboratively designed by two authors, with several iterations after pilot interviews, resulting in a well-revised protocol consisting of three parts. The first part involved inquiring about the points of view of passengers on ride-hailing, followed by questions about trust in the platform and CCB. Finally, we made an open inquiry to gather additional information on passengers' views on ride-hailing.

4.1. Data collection

Our study included 21 interviewees, selected following two rigorous criteria. First, the interviewees were required to be familiar with ride-hailing, which means that they had prior experience as passengers using ride-hailing services. Additionally, we ensured that all interviewees had sufficient ride-hailing knowledge for the interview in two ways. On one hand, we confirmed that they had used ride-hailing services recently. On the other hand, we asked them to recall when they began using ride-hailing and which platforms they had tried. Table D1 in Appendix D shows the ride-hailing usage status of the interview sample, indicating their eligibility for the interview.¹ Second, to ensure diverse perspectives, we purposefully selected interviewees with different work experiences and a wide age range, aiming to capture a broad range of viewpoints. Therefore, 9 participants were students, including undergraduate, graduate, and doctoral students, while the remaining 11 interviewees were employed in full-time jobs. To ensure privacy and confidentiality, we did not record any personal information from the interviewees. All interviews were recorded using electronic devices and promptly transcribed for subsequent data analysis. During the interview process, we conducted preliminary data analysis to obtain initial insights and observations after each interview, which further guided the subsequent interviews. Considering the limited new information obtained from the last few interviews, we determined that our interview reached saturation in terms of the questions covered in our interview protocol.

¹ While most interviewees found it difficult to remember the exact date, they started using ride-hailing, which was understandable, the majority indicated that they began using these services between 2015 and 2017.

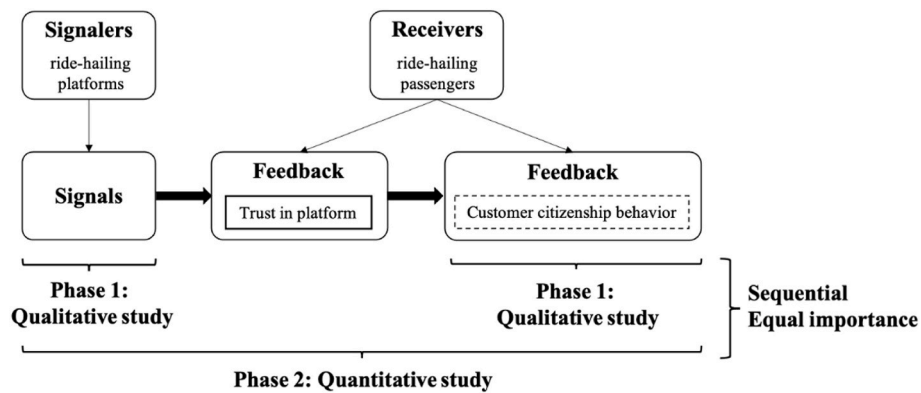


Fig. 1. Design of the mixed-methods approach.

4.2. Data analysis

We utilized a data analysis approach that bridges a priori and inductive methods (Miles & Huberman, 1994). Prior to conducting the formal data analysis, we developed a theoretical framework (Fig. 2) by drawing on established general theories. Specifically, signaling theory, as the overarching framework for understanding the relationship between signals from a signaler and receivers’ feedback, offered valuable insights for our data analysis (Connelly et al., 2011). Aligning with recent advances in signaling theory, our framework categorizes signals into activity-related signals and capability-related signals, which reflect firms’ activities related to their products and firms’ capabilities to effectively implement these activities, respectively (Steigenberger & Wilhelm, 2018). This approach also enabled us to synthesize the data analysis results with the theoretical framework to uncover novel contextual findings.

All data were carefully organized and rearranged for clarity. Each interview was labelled with a unique identifier, such as P1 for the first passenger interviewed, to facilitate easy reference. Following the theoretical framework, we iteratively coded the interview transcriptions. In the first step of the analysis, we performed iterative data analysis to identify relevant sentences guided by research questions and the established theoretical framework. For instance, when we analyze the dimensions of CCB in ride-hailing, we initially identify all sentences related to CCB as the definition we adopted in this research. Subsequently, we carefully read these sentences and categorized them to reveal first-order concepts. This iterative process continued until theoretical saturation was achieved, signifying no further emergence of new first-order concepts. We then delved into the exploration of second-order themes that could integrate some of the first-order concepts. Finally, we rigorously compared the themes with existing theories to derive aggregate dimensions.

The qualitative study revealed three significant findings that corresponded to our three specific aims of the qualitative study. First, we found contextual signals sent by ride-hailing platforms that influence passengers’ trust in platform, including two service-related signals (i.e., structural assurance and service quality) and two firm-related signals (i.e., reputation and platform size). Second, the findings show that

passengers’ trust in platform positively influences CCB, mediated by CCI. Third, the study identified and discussed the four main dimensions of CCB in the context of ride-hailing, including recommendation, forgiving behaviours, participating in research, and providing feedback. Fig. 3 illustrates examples of the data structure, showing the process of data analysis from raw data to the aggregate dimensions (Gioia et al., 2013). Table D2 in Appendix D shows the analysis results of the qualitative study, presenting a comprehensive overview of the qualitative findings.

4.3. Hypotheses development

The research hypotheses and model were based on three key sources of evidence: (1) the theoretical foundation of signaling theory; (2) the qualitative study findings; (3) the integration of social identity theory and relevant findings from prior research. Below, we discuss the qualitative study results, complementing their recontextualized definitions with contextual examples from interviewees in our study, and hypothesize their relationships.

4.3.1. Service-related signals

Our study identified service quality and structural assurance as the key service-related signals in the context of ride-hailing platforms. These signals are directly related to the business activities (i.e., the service) of the ride-hailing platform.

Service quality refers to the degree to which the services provided by ride-hailing platforms satisfy the passengers’ expectations in terms of service performance, and it reflects the general subjective attitudes formed by passengers towards the platforms after experiencing a ride-hailing service (Parasuraman et al., 1988). Many participants mentioned service quality, evaluating it from a more holistic perspective that includes both the performance of drivers and the operational services of the ride-hailing platform. Since passengers interact primarily with the platform rather than individual drivers, they often attribute experiences related to drivers to the platform’s service quality. For instance, a participant stated: “Cleanliness (in cars) is important, followed by a good attitude toward customer service. In my personal experience, some drivers are more familiar with road conditions and do not refuse passengers

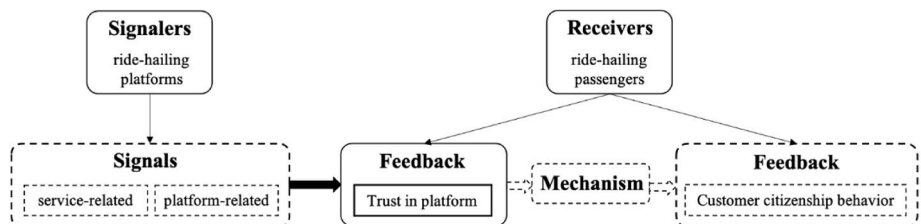


Fig. 2. The priori theoretical framework.

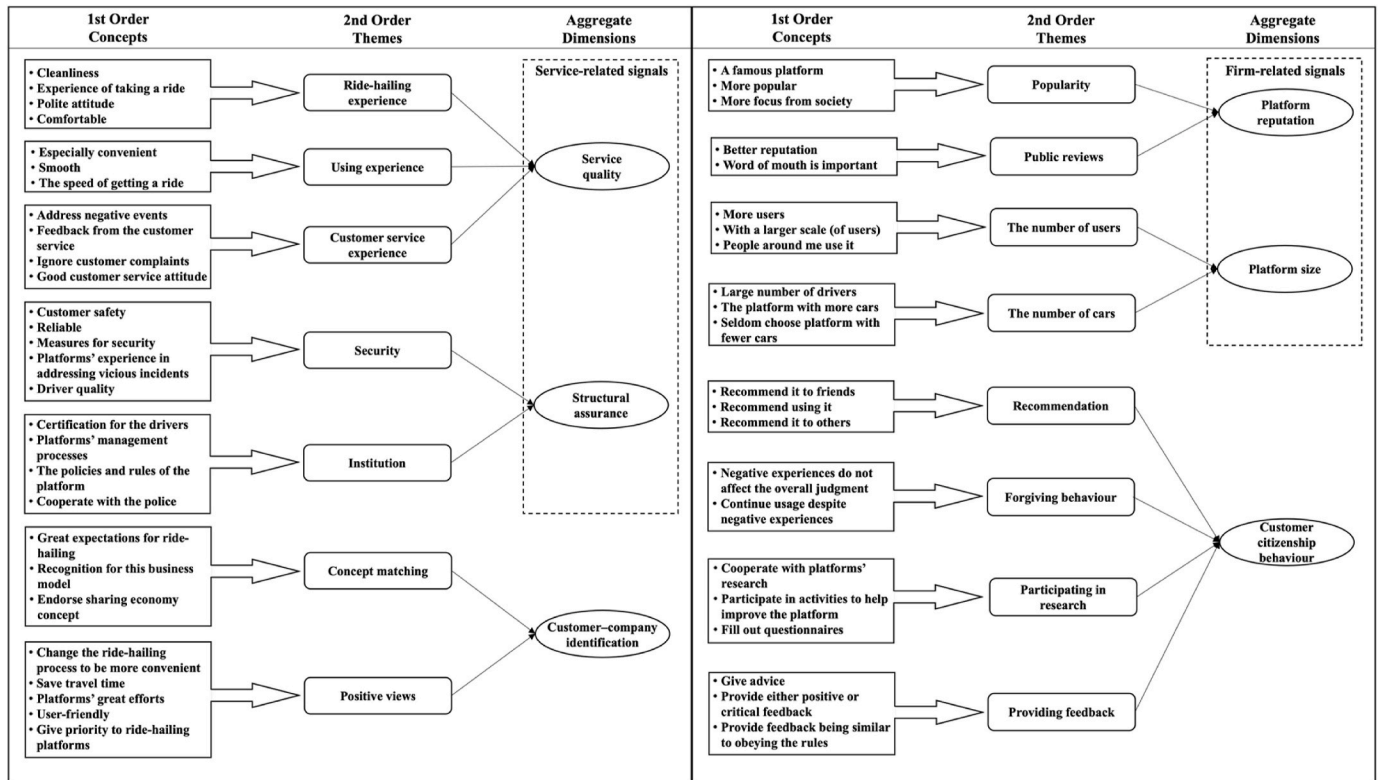


Fig. 3. The data structure.

Note: The direction of the lines and arrows represents the data analysis flow, starting from the derivation of first-order concepts based on the raw data and progressing toward the aggregation of these into higher-order dimensions.

or impose sudden price increases” (P15). Additionally, they mentioned the usage experience, including the convenience of calling a ride and the app usage experience, as well as the customer service provided by the platforms, indicating that service quality is more complex for ride-hailing platforms to manage.

Signaling theory indicates that positive signals are associated with individuals’ positive attitudes (Chen et al., 2017). Therefore, high service quality can serve as a positive signal of a favourable transaction process (Xiao et al., 2020), effectively mitigating perceived risks and uncertainties, and thereby facilitating trust building (Cheng et al., 2020). Furthermore, as the interviewee said in the qualitative study: “In general, whether to trust or not depends on my experience. If I feel that my ride-hailing experiences are good in terms of quality, I will trust it” (P16). Thus, within the ride-hailing context, we hypothesize that.

H1. Service quality of a ride-hailing platform will positively influence the passengers’ trust in platform.

Structural assurance refers to the guarantees, regulations, and promises implemented by ride-hailing platforms to ensure a secure and favourable process during the ride-hailing service (McKnight et al., 2002). It differs from service quality in that it specifically represents platform-based institutional structures, rather than the overall performance of the service experienced by users. Structural assurance is regarded as the service-related signal because it represents the commitment of the platforms to passenger safety and the willingness to manage associated risks, which strongly supports the overall success of the platform’s service (Lu et al., 2021). We categorized the comments of the participants on the substantial measures that platforms take to ensure security and reliable service as structural assurance in ride-hailing. For example, a participant expressed concerns about the platforms’ rules and regulations, stating: “How they deal with some cases of vicious incidents. This includes the release of some policies or some of the rules and regulations. Whether or not the regulations are comprehensive, they

reflect the platform’s focus on customer safety and well-being, which are the most important aspects” (P9).

Previous research has explored how institution-based mechanisms contribute to the development of trust by mitigating perceived risks in online shopping environments (McKnight et al., 2002; Sarkar et al., 2020). Our qualitative study further revealed that passengers’ trust in ride-hailing platforms is significantly influenced by structural assurance measures, including safety guarantees and management practices. These measures help passengers believe that they will encounter fewer irregular or undesirable incidents, thereby fostering confidence and trust in the service. As one participant noted: “Excluding bad drivers is crucial, which may necessitate certifying drivers. Additionally, real-time monitoring is a beneficial measure. I believe implementing these practices will make the service better” (P1). Accordingly, we have the following hypothesis.

H2. Platform’s structural assurance will positively influence passengers’ trust in platform.

4.3.2. Firm-related signals

Platform size refers to their overall size and market share position (Doney & Cannon, 1997), representing a characteristic of ride-hailing platforms. Several participants expressed concerns about the size of ride-hailing platforms, noting that the number of users and cars are crucial factors for a platform. For example, when referring to the characteristics of preferred platforms, one participant said: “A large number of drivers on the platform and the fact that many people around me also use it are important” (P18).

A larger platform size indicates a substantial user base of passengers and drivers, signaling robust capital and resources (Cumming et al., 2019). Such platforms are better at maintaining operations and offering a secure trading environment, thereby ensuring reliable service delivery. Larger platforms can sustain their operations and provide a secure trading environment, thereby ensuring continued service delivery to

users. Thus, platform size signals the platform's competence and trustworthiness (Mayer et al., 1995). Moreover, our qualitative study observed that some passengers expressed a higher level of trust towards a well-established platform with a larger user base consisting of more passengers and drivers. As one participant noted: "I think that I trust the more famous platforms, which have more users" (P18). Thus, we pose the hypothesis.

H3. Platform size will positively influence passengers' trust in platform.

Recent research has identified organizational reputation as comprising two distinct dimensions: capability reputation and character reputation (Mishina et al., 2012). Building on the findings from our qualitative study, this paper specifically focuses on reputation as a dimension of platforms' capability. *Platform reputation*, as a characteristic of ride-hailing platforms, refers to the overall social evaluation of the platform's historical performance in terms of competence and qualification in the market (Park & Rogan, 2019). In the ride-hailing market, passengers commonly evaluate the platform reputation based on overall popularity and public reviews. For example, an interviewee explained: "When selecting a ride-hailing platform, I tend to choose those with a larger scale or a better reputation, considering how they handle negative news, and the word of mouth is also important" (P6).

When passengers have limited information and face uncertainty during the decision-making process of choosing platforms, a positive reputation signals the platform's competence in terms of performance within the ride-hailing market (Basili & Rossi, 2020). This signal indicates the platform's ability to effectively manage its drivers and deliver satisfactory service. Drawing on signaling theory, this reputation signal has the potential to mitigate information asymmetry and promote trust among passengers (Connelly et al., 2011). Our qualitative study results revealed that several interviewees emphasized the importance of reputation in their decision-making process of choosing a ride-hailing platform, demonstrating that they trust platforms that had been highly acclaimed for their popularity and capability. Thus, we propose the following hypothesis.

H4. Platform reputation will positively influence passengers' trust in platform.

4.3.3. The relationship between trust and CCB

Previous research found the inconsistency of the dimensions of CCB across various contexts (Groth, 2005; Newman et al., 2014). The results of our qualitative study revealed four different CCB dimensions that are particularly relevant to ride-hailing passengers. We will first discuss these dimensions in detail and then elaborate on the relationship between trust and CCB.

Recommendation. Platforms greatly benefit from passengers recommending them to others. This behaviour involves passengers recommending the platform to others without receiving any rewards (Groth, 2005). When it comes to voluntary behaviours that benefit the development of ride-hailing platforms, several interviewees mentioned making recommendations. As one participant stated: "If I have a positive experience of using it, I would definitely recommend it to others" (P21).

Forgiving behaviour. Our qualitative study revealed responses indicating that some participants do not blame the platforms after negative service experiences. For example, one interviewee mentioned negative experiences encountered by herself or others and said: "I don't think these kinds of things (negative experiences) will affect my overall judgment of a ride-hailing platform, and I will continue to use the app afterwards" (P12). This suggests another crucial dimension of CCB: forgiving behaviour, which involves passengers displaying a tendency to forgive negative experiences they have encountered or heard of (Johnson & Rapp, 2010).

Providing feedback. As expressed by the interviewees in their inquiries related to CCB, providing feedback was another key dimension. Providing feedback can be defined as passengers proactively sharing

their positive or negative experiences and suggestions with the platform (Gong & Yi, 2021). This behaviour is often initiated by users and occurs after a service has ended or when users encounter negative or unresolved issues that should be addressed by the platform. Users' feedback allows platforms to understand what occurred during a service, helping to enhance positive aspects and address negative ones to improve the overall service. As one participant noted: "Sometimes I just write something and give them feedback after the trip is done ... If I experience a good ride, I will make a good comment to encourage others. If I feel bad about the ride, I will severely criticize them" (P10).

Participating in research. Platforms often require users to participate in research activities they initiate.² Participating in research refers to passengers willingly participating in platform-sponsored research activities, typically outside the service process, such as marketing survey when invited (Bove et al., 2009). Therefore, the primary difference between *providing feedback* and *participating in research* is whether the information is proactively provided by users or requested by the platform in activities initiated and sponsored by the platform. Users' participation in research, such as responding to marketing surveys aimed at gathering information on operational activities, service evaluations, and expectations, is of great importance and benefits the service improvement. Our qualitative analysis identified participation in research as a dimension of CCB. When discussing CCB-related questions, some participants shared their experiences with cooperating in platforms' research activities. One participant stated, "I am willing to participate in research activities to improve the platform, as I believe it can benefit everyone involved" (P17).

The results of the qualitative study uncovered the mechanisms through which passengers' trust in platform impacts their CCB. The attitudes expressed by the passengers interviewed toward CCB varied significantly, with some displaying a positive attitude toward CCB, while others exhibited a sense of indifference towards activities that could potentially benefit the ride-hailing platform, despite their inherent trust in the platform. After conducting a thorough iterative analysis of the qualitative data obtained from these two distinct types of participants, we observed that they had divergent points of view on the fundamental concepts and values of the platform. The former group identified with the concepts and values of the platform. For example, one participant noted: "I think that ride-hailing should align with the principles of the SE ... I have high expectations for ride-hailing and recognize its alignment with this model" (P5). In contrast, the latter group showed less concern or alignment with these concepts and values.

Integrating the findings from the qualitative study with social identity theory, we incorporate customer-company identification (CCI) and argue that passengers with CCI tend to exhibit a more positive interest in engaging in CCB. Accordingly, we have refined the priori theoretical framework (Fig. 4).

In line with the conceptualization of CCI, passengers with CCI tend to perceive the platform as a component of their social identity (Bhattacharya & Sen, 2003). Passengers' favourable attitudes are a prerequisite for their identification with the platform (Ahearne et al., 2005), as this sense of identification is established through a cognitive comparison between passenger self-concept and the attributes of the platform (Homburg et al., 2013). Given that passengers' trust in platform indicates their positive perceptions about platform attributes, it is plausible to propose that trust in platform serves as an antecedent to their CCI. Additionally, considering that CCI is often viewed as synonymous with a sustainable relationship between passengers and the platform, it is inconceivable that CCI exists without the prerequisite of trust (Martínez & Rodríguez del Bosque, 2013). Following this, we hypothesize that.

² For instance, Didi frequently gathers users' experiences and attitudes through online surveys, offering reward vouchers to those who complete them. The following link provides an example: https://page.xiaojukeji.com/active/ddPage_0sLA1zsu.html.

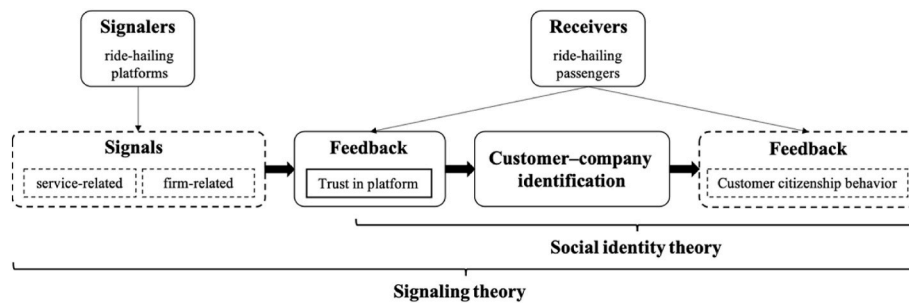


Fig. 4. The comprehensive theoretical framework.

H5. Passengers' trust in platform will positively influence their CCI.

Social identity theory provides an explanatory framework for understanding why passengers' CCI leads to a positive attitude toward CCB (Bhattacharya & Sen, 2003; Homburg et al., 2009). Specifically, passengers who identify with the platform are more likely to exhibit positive, selective, and volitional emotions that engage them in behaviours that are beneficial to the platforms. Prior research has verified the positive impact of CCI on OCB (Lavelle et al., 2007), supporting the potential association between CCI and CCB, given that CCB is conceptually derived from OCB. Furthermore, in line with the findings of our qualitative study, passengers who conveyed favourable perceptions about the benefits of ride-hailing services, and their alignment with the fundamental concepts and values of the SE, were more inclined to CCB. Thus, we propose the following hypothesis.

H6. CCI will positively influence Passengers' CCB.

The qualitative study findings indicate that CCI may serve as a mediator between trust and CCB. Specifically, the results reveal that passengers who expressed trust in the platform but did not exhibit CCI demonstrated a sense of indifference towards CCB. This implies that although these passengers trust the platform and may use it, they may not be inclined to voluntarily contribute to the platform's development. Moreover, existing research has examined how CCI mediates the relationship between customer trust and loyalty (Martínez & Rodríguez del Bosque, 2013), suggesting that trust can affect customers' preference for a company by influencing their CCI. These findings also align with social identity theory, which posits that customers' CCI can shape their voluntary attitudes and behaviours, including CCB. Therefore, we present the hypothesis.

H7. Passengers' trust in platform will positively and indirectly influence their CCB, mediated by their CCI.

4.3.4. The moderating roles of firm-related signals

We posit that the influence of service-related and firm-related signals on the trust-CCI relationship may be nuanced. Following the definition of platform size and platform reputation in our paper, a larger platform indicates a substantial market share (Doney & Cannon, 1997), while a platform with a better reputation reflects a higher level of competence and qualification in the market (Mishina et al., 2012). These firm-related signals are inherent characteristics that reflect the platform's capabilities to implement service-related signals. It also implies that changing these characteristics requires substantial resources and high-level ability. Thus, they can effectively differentiate the capabilities of ride-hailing platforms in the market. Existing studies have demonstrated that firms' capabilities significantly impact customers' perceptions and behaviours (Ali et al., 2020; Li et al., 2019). Specifically, firms with better capabilities are perceived as excellent in implementing operational activities and tend to receive more positive attitudes from customers. Therefore, for firms with varying capabilities, the degree of perceptions and behaviours of customers can differ under the same preconditions. In current research, CCI is the representation of passengers who identify with the concepts and values of the platform.

Passengers may trust smaller and lower-reputation platforms based on service-related signals; however, the impact of trust on their CCI may vary between larger and higher-reputation platforms compared to smaller and lower-reputation platforms. This is due to the significant capabilities required to convey and realize the concepts and values of firms in a highly competitive market. Additionally, the motivation for CCI is rooted in the fulfillment of self-definitional needs (Bhattacharya & Sen, 2003); that is, individuals tend to identify with higher-capability platforms. Therefore, we propose the following hypotheses.

H8. Platform size will strengthen the positive relationship between passengers' trust and their CCI; that is, for a larger platform, passengers' trust will have a stronger influence on their CCI than smaller platforms.

H9. Platform reputation will strengthen the positive relationship between passengers' trust and their CCI; that is, for a platform with a better reputation, passengers' trust will have a stronger influence on their CCI than lower-reputation platforms.

Fig. 5 illustrates the nine hypotheses and the research model.

5. Phase 2: the quantitative study

Following the qualitative study, we used an online survey using widely used social media platforms in China, such as WeChat and Weibo, for the quantitative study. This approach enabled efficient access to a diverse sample with ride-hailing experiences and varied demographic characteristics (Che et al., 2021; Mittendorf et al., 2019), while also leveraging the advantages of the online platform, such as the ability to monitor survey duration and discern invalid responses.

5.1. Measures and samples

To ensure content validity, we adapted and contextualized measures from prior research, employing a 7-point Likert scale where 1 represents "strongly disagree". Based on four decision rules to identify a formative or reflective construct (Jarvis et al., 2003; Petter et al., 2007), we measured CCB as a second-order formative construct with four reflective sub-dimensions derived from the qualitative study. In terms of the rules, first, our qualitative results indicate that the characteristics of CCB are determined by recommendation, forgiving behaviour, participation in research, and providing feedback within the ride-hailing context. Second, the four dimensions represent distinct themes with different contents rather than a common theme. Previous research commonly treated CCB as a multidimensional construct when measuring it (Groth, 2005; Yi & Gong, 2013). The qualitative study also revealed that passengers perceived these dimensions as distinct and exhibited varying attitudes toward them. Third, changes in any of the four dimensions are independent of each other. For instance, a high degree of customer recommendations does not necessarily result in increased involvement in providing feedback. Fourth, due to their distinct definitions and characteristics, the four dimensions may have different antecedents and consequences. The remaining constructs were assessed with at least

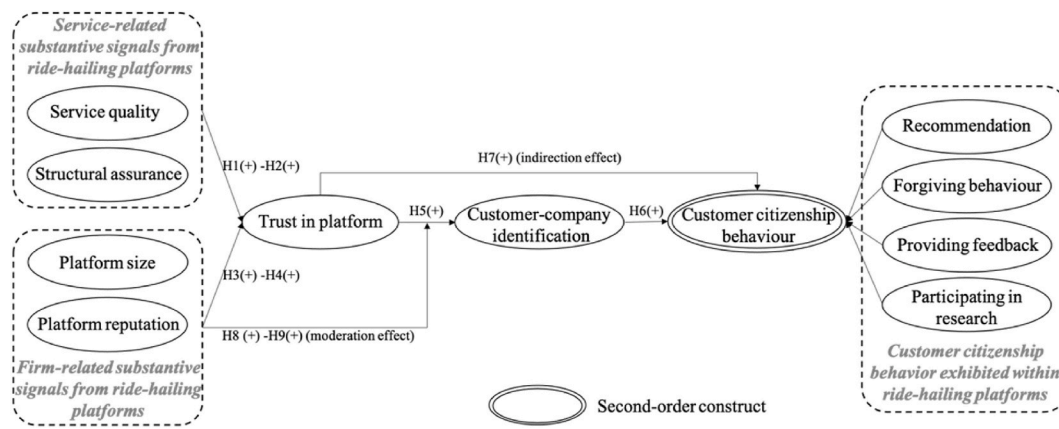


Fig. 5. Model of trust-customer citizenship behaviour in the ride-hailing context.

Note: The reflective items for all constructs are omitted in the figure. The arrows from recommendation, forgiving behaviour, providing feedback, and participating in research to customer citizenship behaviour (CCB) indicate that CCB is a formative construct composed of these four dimensions.

three reflective items.

We controlled variables, including gender, age, education, wage, and frequency of using a ride-hailing platform in the last six months, to mitigate their potential effects on the findings. Given that the data was collected in China, we conducted back-translation and cross-checked translations by two authors for accuracy. A pilot study involving 41 participants was conducted to assess the reliability and validity of the scales. Appendix E includes the final measurement scales. There were 395 Chinese respondents with ride-hailing experiences who completed our online survey over eight days. To ensure data validity, we carefully screened respondents based on two criteria: a limit of one survey response per respondent, and deletion of respondents with identical answers for all questions. After removing invalid responses, we obtained 351 valid responses. Table 1 provides detailed demographic information.

Most participants were younger than 30, and 51.9% had monthly wages or disposable income above 5000. The majority of participants frequently used ride-hailing services over the past half year. The distributions of our sample were consistent with previous research conducted in China (Jing et al., 2021; Ma et al., 2019). Meanwhile, statistical analysis results of ride-hailing passenger data in China confirm that our sample distribution was similar to the actual market

Table 1
Demographic information of the respondents (N = 351).

Variables	Category	Frequency	Percentage (%)
Gender	Male	150	42.7%
	Female	201	57.3%
Age	<20	24	6.8%
	20–25	104	29.6%
	26–30	121	34.5%
	31–35	53	15.1%
	>35	49	14.0%
Monthly wages or disposable money (RMB)	<2000	66	18.8%
	2000–5000	103	29.3%
	5001–10000	132	37.6%
	10001–20000	40	11.4%
	>20000	10	2.9%
The frequency used for the ride-hailing platform in the past half year	1–5	145	41.3%
	6–15	109	31.0%
	>15	97	27.7%

distribution, with young white-collar workers being the primary users of ride-hailing services.³ Additionally, to ensure data normality, we calculated the skewness and kurtosis for each item, finding that the absolute values were within acceptable ranges (i.e., below 2; see Appendix E) (Hair et al., 2022). Therefore, we can conclude that the random sampling method resulted in a sample that can represent the larger population of ride-hailing passengers in China.

5.2. Reliability and validity

We utilized the partial least squares (PLS) technique to estimate the structural equation model (SEM) because previous research has indicated that PLS is more suitable for estimating models with formative constructs (Hair et al., 2012). Recent studies in the hospitality and tourism field also have widely applied this approach. (González-De-la-Rosa et al., 2023; Muharam et al., 2024). Before the analysis, the reverse-coded items on the questionnaire were appropriately reversed (e.g., the item coded PS3). Confirmatory analysis suggested satisfactory results on reliability and both convergent validity and discriminant validity. All Cronbach’s alpha and composite reliability (CR) exceeded 0.70, and all leaving item loadings were above 0.70 and significantly related to their respective variables (p < 0.001). The average variance extracted (AVE) for each variable was greater than 0.50, and the square roots of AVE exceeded the correlation coefficients, indicating good convergent and discriminant validity (Fornell & Larcker, 1981). The results of cross-loadings further supported the discriminant validity of the measurement model. Multicollinearity was not a concern as all variance inflation factors (VIF) were below 5 (Benitez et al., 2017, pp. 1–15). Appendices E, F, and G present detailed statistical information.

5.3. Common method variance (CMV)

To mitigate the CMV that arises from data collected from the same source for dependent and independent variables, we conducted a pilot study to ensure the quality of the measures design. Additionally, we included inverse items in our measures and randomly arranged all questions (Podsakoff et al., 2003). Harman’s single-factor test was also conducted to check the potential issue of CMV. The results, at 45.285%, was below the 50% threshold (Fuller et al., 2016; Nguyen & Llosa, 2023), suggesting CMV may unlikely be a significant issue.

³ Data source: <https://36kr.com/p/1722342096897>.

5.4. Structural model and hypotheses testing

The overall fit testing confirmed the structural model fit (SRMR = 0.055 < 0.080), the PLS bootstrapping procedure with 4999 subsamples were used to test the hypotheses. We constructed three models to examine the direct effect (Table 2), mediation effects⁴ (Table 3), and moderation effects (Table 4), respectively. The results of the hypothesis testing support all hypotheses except for H3. CCI partially mediates the relationship between passengers’ trust in platform and CCB, as evidenced by both direct and indirect effects between trust in platform and CCB (Baron & Kenny, 1986; Zhao et al., 2010). Fig. 6 illustrates the overall results of structural model and hypotheses testing. Detailed results of the control variable testing can be found in Appendix H. The findings derived from these results are elaborated in the subsequent section.

6. Discussion

6.1. Discussion of the findings

Although ride-hailing platforms, fueled by the SE concept, have brought significant convenience and other benefits to passengers, they face challenges related to information asymmetry, uncertainty, and risks, which can result in passenger churn following negative events. Passengers’ trust in the platform and their CCB can be beneficial for platforms to maintain relationships with passengers, enable value co-creation, and enhance the ability to thrive in the fiercely competitive market. This paper employs a mixed-methods design to comprehensively address three RQs. First, an exploratory qualitative study with 21 interviewees identifies service-related and firm-related signals from ride-hailing platforms that influence passengers’ trust in platform. second, integrating the qualitative study and theories, we also examined how CCI mediates trust in platform and CCB and identified the specific dimensions of CCB in ride-hailing. Subsequently, the quantitative study using a survey examines the hypotheses developed from the qualitative study and existing theories. We summarize and discuss the key findings of this study below.

RQ 1 What are the signals sent by the ride-hailing platforms that impact passengers’ trust in platform?

This study identifies service quality and structure assurance as

Table 2
Results of the direct effects.

Hypotheses	Path	Path coefficient (Beta)	P-Value	Support
H1	Service quality→Trust in platform	0.494*** ^a	0.000	Yes
H2	Structure assurance→Trust in platform	0.237***	0.000	Yes
H3	Platform size→Trust in platform	0.000 ^{n.s.,b.}	0.991	No
H4	Platform reputation→Trust in platform	0.210***	0.000	Yes
H5	Trust in platform→CCI	0.839***	0.000	Yes
H6	CCI→CCB	0.776***	0.000	Yes

^a ***p < 0.001.

^b n.s. = non-significant.

⁴ We did not include the direct effect between trust in platform and CCB as there was no corresponding hypothesis in this research. This link is necessary for examining mediation effects, which explains why the path coefficient of CCI → CCB differs between Tables 2 and 3.

service-related signals, and platform reputation as a firm-related signal that positively influences passengers’ trust in ride-hailing platforms. Although our qualitative study suggested that platform size might influence passengers’ trust in platform, contrary to the hypothesis, our quantitative analysis reveals no significant effect of platform size on passengers’ trust. To understand this discrepancy, we conducted a comprehensive review of previous research, thoroughly re-visited our qualitative and quantitative data, and reflected on our research process to derive possible explanations for this conclusion. First, although platform size is often considered an indicator of a platform’s capability to provide continued service to passengers, previous research has also highlighted that large firm size may be associated with higher complexity and bureaucracy (Paparoidamis et al., 2019). Hence, passengers may view firm size as a reliable indicator of a larger user base, but rather other capabilities that may affect trust, such as flexible service management and operation. Second, considering that our data were mainly collected in China where one dominant ride-hailing platform had a significant market share, it is possible that passengers in our study expressed a preference for larger platform size during interviews but might not have been able to perceive differences in platform size in the market. This may explain the non-significant result observed in the survey data, where passengers reported varying levels of trust but similar perceptions of platform size, leading to the lack of statistical significance.

RQ 2 What are the dimensions of customer citizenship behaviour in the context of ride-hailing?

Our study has identified four distinct dimensions of CCB in the ride-hailing setting, including recommendation, forgiving behaviour, providing feedback, and participating in research. Prior research on CCB has shown inconsistent perspectives on its dimensions in different settings (Gong & Yi, 2021). Therefore, drawing on existing research viewpoints, we determine the main dimensions of CCB in the ride-hailing setting by conducting an exploratory qualitative study and treat CCB as a second-order formative construct in our quantitative study.

RQ 3 How does passengers’ trust in ride-hailing platforms influence their customer citizenship behaviour towards the platforms?

Our findings demonstrate that CCI serves as a mediator between passengers’ trust in platform and their CCB. The qualitative study reveals that passengers with similar levels of trust had varying attitudes towards CCB, with passengers exhibiting CCI expressing more positive attitudes. The quantitative mediation analysis, verifying that CCI partially mediates the relationship between trust and CCB, further confirmed the mediating role of CCI.

Meanwhile, our study verifies the moderating roles of firm-related signals, comprising of platform size and platform reputation, in the relationship between passengers’ trust in platform and their CCI. We found that passengers’ trust in the platform has a stronger influence on their CCI for larger platforms and platforms with better reputations, compared to smaller platforms and those with lower reputations. This suggests that when passengers have similar levels of trust in two platforms, they are more likely to identify with the one that has a higher capability.

6.2. Theoretical contributions

Our research enhances the understanding of passengers’ trust in platform. Although studies have underscored the importance of trust in this context (Ert et al., 2016; Köbis et al., 2021) and explored its antecedents in ride-hailing (Geng et al., 2022; Shao & Yin, 2019), they have inadequately explained how different types of signal sent by platforms may affect passengers’ trust in ride-hailing platforms, and how trust, in

Table 3
Results of the mediation effect.

Hypotheses	Path	Direct effect	Indirect effect	2.5% lower bound	97.5% lower bound	Results	Support
H7	Trust in platform→CCI	0.839***	–	–	–	Partial mediation	Yes
	CCI→CCB	0.467***	–	–	–		
	Trust in platform→CCB	0.373***	–	–	–		
	Trust in platform→CCB	–	0.392***	0.273	0.478		

Table 4
Results of the moderation effects.

Hypotheses	Path	Path coefficient (Beta)	P-Value	Support
H8	Platform size*Trust in platform→CCI	0.084** ^a	0.002	Yes
H9	Platform reputation*Trust in platform→CCI	0.041** ^b	0.039	Yes

^a **p < 0.01.

^b * p < 0.05.

turn, influences passengers’ CCB. Drawing on signaling theory, our study reveals that both service-related signals and firm-related signals positively influence passengers’ trust in ride-hailing platforms. Specifically, we identify service quality and structure assurance as service-related signals, and platform reputation as a firm-related signal in the specific ride-hailing setting. Our study also contributes to understanding the positive indirect impacts of trust in ride-hailing platforms on passengers’ CCB through CCI by integrating signaling theory and social identity theory, as well as the positive moderating influence of firm-related signals in this mechanism.

Second, our findings contribute to the research on CCB by identifying its dimensions within the ride-hailing context and revealing its relationship with passengers’ trust in platforms. Although previous studies have identified CCB as a construct with multiple dimensions and recognized various dimensions in different settings (Groth, 2005; Yi et al., 2011), research on CCB dimensions within the ride-hailing context remains scarce. This study identifies four contextual dimensions of CCB in the ride-hailing setting. Moreover, there were inconsistencies in whether trust is an antecedent or an outcome of CCB, likely stemming from the predominant use of social exchange theory in previous research (Mitrega et al., 2022). This study, drawing on social identity theory, is among the first to explore the influencing mechanism between passengers’ trust in the ride-hailing platform and CCB. We demonstrate that passengers’ CCI partially mediates this relationship, highlighting the importance of fostering CCI after trust establishment. Additionally, our findings reveal that firm-related signals positively moderate the effect of passengers’ trust in platforms on CCI, extending its impact.

Finally, this study makes contributions to signaling theory. Although prior research has distinguished organizational signals as activity-

related signals and capability-related signals (Steigenberger & Wilhelm, 2018), limited attempts have been made to explore contextually specific signals and their impacts. This research expands the knowledge of signal types by identifying and examining both service-related signals and firm-related signals in the ride-hailing, shedding light on how different types of signals are employed in this setting. Furthermore, by integrating social identity theory with signaling theory, our study uncovers the relationships between trust and CCB, which can be conceptualized as different forms of feedback in the context of signaling theory. This deepens our understanding of how passengers interpret signals from the ride-hailing platform and how this transformation process further influences their CCB.

6.3. Practical implications

This study clarifies the distinct value of the signals sent by ride-hailing platforms and the crucial role of passenger identification with platforms, offering several practical implications for ride-hailing platforms in promoting passengers’ trust and CCB. First, ride-hailing platforms can improve passenger trust by focusing on two key aspects: activity and capability. Our findings suggest that providing passengers with information on these aspects is crucial for building trust. Therefore, platforms should send signals that highlight both superior service and firm characteristics. Platforms should consider ways to convey signals related to their structural assurance, service quality, and reputation in the market. For example, they can enhance structural assurance by promoting transparent pricing, effective policies, and robust safety measures. Additionally, they can transmit their competence, qualifications, and performance.

Second, our findings enhance confidence for small platforms in fostering trust and CCB, as platform size does not directly influence passenger trust. Both small and large platforms have the opportunity to implement strategies to promote trust and CCB. Although small platforms lack the advantages of larger platforms in terms of size, they can still promote passengers’ CCI by strengthening their reputation. Large-size platforms, on the other hand, can leverage their size to enhance CCB on the premise of existing trust. To further improve passenger trust, large-sized platforms should also focus on aspects such as service and firm characteristics.

Finally, the relationship and underlying mechanisms between trust and CCB are crucial to managing CCB on ride-hailing platforms. The

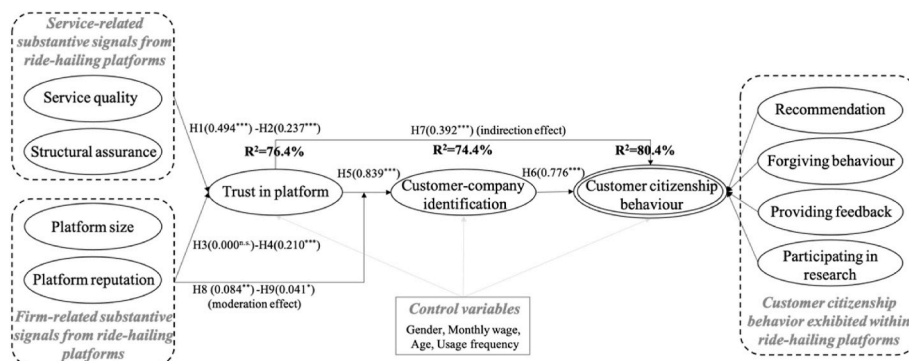


Fig. 6. Research model with results.

success in occupying market share and promoting passenger value co-creation relies heavily on CCB. Our findings highlight how CCI mediates the positive relationship between passengers' trust in platforms and CCB. Therefore, ride-hailing platforms are encouraged to adopt strategies that focus on improving passenger trust and especially enhancing CCI. By doing so, platforms can effectively enhance users' likelihood to recommend, forgive, provide feedback, and participate in research. This helps platforms indirectly acquire and retain users, gather more information on users' direct experiences to improve services, and find new ways to encourage participation in research, such as completing marketing surveys. Ultimately, this fosters sustainable relationships with passengers.

6.4. Limitations and future research

It is important to note that this study has several limitations that may merit investigation in future research. First, the samples in our study were limited to China, which may limit the applicability of our conclusions to other regions. Future research could incorporate diverse data types, such as second-hand data and interviews from different countries, to further support and extend our proposed model and findings. Second, although this paper considered the impact of varying levels of experience with ride-hailing services, differences in the depth of experience among participants may result in nuanced variations in their attitudes and behaviours. Future research could explore how differences in experience influence passengers' attitudes and behaviors. Additionally, longitudinal research is recommended to address the individual variations more effectively. Third, although this study found that CCI partially mediates the relationship between passengers' trust in platform and CCB, Zhao et al. (2010) have argued that this represents complementary mediation effects, suggesting that other potential mediators may exist. Since we only considered incorporating social identity theory into signaling theory, future research could explore other theories to identify additional potential mediators beyond CCI. Fourth, this research primarily focused on the positive aspects of platform size in terms of resource capability to provide service, without considering potential negative aspects such as increased complexity and bureaucracy that could arise with larger platforms. Future studies could explore the dark side of platform size and explore its potential impacts. Finally, to ensure clarity, this study focuses only on the interactions between passengers and platforms when exploring the relationship between trust and CCB. Given that ride-hailing has evolved into an ecosystem involving various stakeholders, such as drivers, who may affect each other, future studies could further incorporate insights from these additional perspectives.

CRedit authorship contribution statement

Linlin Su: Writing – original draft, Methodology, Conceptualization. **Xusen Cheng:** Writing – review & editing, Supervision, Funding acquisition, Data curation. **Alex Zarifis:** Writing – review & editing, Validation, Formal analysis.

Impact statement

Ride-hailing platforms have significantly changed the travel industry, offering benefits such as reduced costs, increased convenience, and enhanced sustainability. Despite these bright sides, they continue to face challenges such as information asymmetry and fierce market competition. This research provides practical strategies for platforms to maintain passenger relationships and improve market performance from the perspective of information asymmetry reduction and value co-creation. Drawing on our trust-customer citizenship behaviour (CCB) model, from a trust-building perspective, platforms should effectively design and convey both service-related and firm-related signals to mitigate information asymmetry and build passengers' trust. From the

value co-creation perspective, it is crucial for platforms to effectively communicate their capabilities to enhance the influence of trust on customer-company identification (CCI) and, consequently, to promote CCB. These insights provide valuable strategies for thriving in competitive markets and achieving long-term success.

Funding

We thank the National Natural Science Foundation of China (Grant No. 72434006; 71871061; 72271236), the Key Projects of Philosophy and Social Sciences Research of Chinese Ministry of Education (Grant No. 23JZD022), Metaverse Research Center at Renmin University of China, the Blockchain Lab at the School of Information at Renmin University of China, and Public Computing Cloud in Renmin University of China for providing support for part of this research. for providing funding for part of this research.

Declaration of interest

none.

Supplementary data

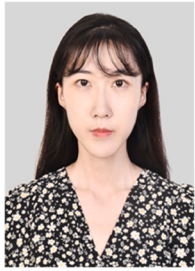
Supplementary data to this article can be found online at <https://doi.org/10.1016/j.tourman.2024.105086>.

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