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How consumer traits and perceived value affect recommendation intention in ride-sharing? A mixed-method inquiry using PLS-SEM and fsQCA

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ABSTRACT

Consumer advocacy is central to the sustainable growth of sharing economy platforms, yet research has disproportionately emphasized initial participation while relying on symmetric and variable-centric frameworks. This study addresses this gap by examining how consumer traits and perceived value jointly configure recommendation intention in ride-sharing (RIRS). Using survey data from 730 ride-sharing users, we integrate partial least squares structural equation modeling (PLS-SEM) with fuzzy-set qualitative comparative analysis (fsQCA). PLS-SEM reveals that environmental consciousness, price consciousness, economic value, enjoyment, social value, and sustainability each exert statistically significant positive net effects on RIRS. Innovativeness and materialism, by contrast, yield non-significant path coefficients under the symmetric net-effects logic. Yet both emerge as core conditions across multiple sufficient configurations in fsQCA. fsQCA further identifies eleven sufficient configurations, consolidated into four consumer archetypes: Pragmatic Innovators, Hedonic Minimalists, Savvy Material Hedonists, and Eco-Material Pragmatists. Collectively, the findings demonstrate that high RIRS arises through equifinal, asymmetric pathways rather than through the dominance of any single predictor. Theoretically, the study advances configurational understanding of sharing-economy advocacy and cautions against equating statistical non-significance with causal irrelevance. Practically, the dual-method framework yields platform-wide strategic priorities and archetype-specific guidance for precision segmentation and targeted marketing.

1. Introduction

The peer-to-peer (P2P) business model has emerged as a cornerstone of a sustainable and affordable consumption paradigm (Dlugosch et al., 2022). By shifting from ownership-based transactions toward on-demand access, this model has fundamentally reconfigured how resources are produced, distributed, and consumed (Benjaafar et al., 2019; Lamberton and Rose, 2012; Cheng et al., 2021). This shift epitomizes the sharing economy, defined as the coordinated "access and distribution of resources for fees or other compensation" (Belk, 2014). Global sharing economy revenues are projected to grow from $150 billion in 2023 to $794 billion by 2031 (Statista, 2024), reflecting its accelerating economic significance and broadening consumer adoption.

Within this landscape, mobility-sharing has emerged as one of the most prominent sharing economy applications, attracting substantial regulatory attention, capital investment, and consumer participation. It encompasses diverse formats, including ride-hailing, car-sharing, bicycle-sharing, and ride-sharing, each addressing distinct travel needs under different vehicle utilization logics. The ride-sharing market alone was valued at USD 42.9 billion in 2024 and is projected to expand at a compound annual growth rate of 13.7%, reaching USD 96.9 billion by 2030 (Grand View Research, 2024). Among these formats, ride-sharing (i.e., carpooling, where multiple riders share a single vehicle along similar routes) is widely recognized as the most ecologically efficient mode. By raising per-vehicle occupancy and substituting solo trips, ride-sharing directly reduces vehicle kilometers traveled (VKT) and per-passenger carbon emissions. By contrast, single-passenger ride--hailing has been shown to induce additional travel demand and

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exacerbate urban congestion (Diao et al., 2021). This eco-efficiency positions ride-sharing as a strategically important context for studying consumer engagement with sustainable mobility.

Yet ride-sharing's defining characteristics, including strangers sharing a private vehicle, peer drivers operating outside conventional fleet supervision, and dynamic co-rider matching, amplify the perceived risk and trust uncertainty inherent in access-based services (Engin and Vetschera, 2022). These features render consumers particularly reliant on others' experiences as decisional cues (Tsai et al., 2017; Do and Pereira, 2023; Chen et al., 2021). Voluntary recommendations, through positive reviews, social media sharing, and offline referrals, thus constitute a low-cost, high-impact mechanism for expanding the user base, particularly given the limited marketing capacity of peer-based providers (Tsai et al., 2017; Zhu et al., 2021). Recommendation intention thus represents a critical channel for user acquisition and a foundational pillar for the sustainable growth of ride-sharing. Despite its significance, research on recommendation intention in ride-sharing remains sparse, particularly regarding its formation mechanisms shaped by the ecological, social, and economic attributes unique to this context.

Existing studies have predominantly examined individual-level antecedents of recommendation intention, identifying consumer traits and perceived value as the two most proximal and endogenous categories (Lee and Wong, 2021). Despite their joint salience, these two categories have rarely been examined simultaneously, particularly within the ride-sharing context. Moreover, RIRS is unlikely to follow a simple additive logic. Rather, it emerges from the conjunctive interplay of economic, hedonic, social, environmental, and dispositional antecedents that are interdependent and heterogeneous across consumer segments (Böcker and Meelen, 2017), with the same outcome achievable through multiple equifinal configurations. Prior research has relied predominantly on structural equation modeling (SEM). While SEM effectively tests symmetric net effects, it is less suited to capturing the asymmetric, configurational, and equifinal patterns through which heterogeneous consumer segments arrive at high RIRS via distinct antecedent combinations (Woodside, 2013; Pappas and Woodside, 2021). Fuzzy-set qualitative comparative analysis (fsQCA), conversely, excels at identifying configurational sufficiency and equifinality but cannot directly test the theory-driven symmetric effects on which hypothesis-driven research depends (Mikalef and Pateli, 2017; Ragin, 2009). The complex, multi-segment, and multi-pathway nature of RIRS formation therefore necessitates a dual-method approach. PLS-SEM tests theoretically hypothesized net effects, while fsQCA uncovers the asymmetric configurational pathways through which trait-value combinations jointly produce high RIRS.

To address these gaps, this study adopts a complementary PLS-SEM and fsQCA design. PLS-SEM verifies theoretically grounded symmetric relationships, while fsQCA reveals asymmetric configurations sufficient to produce high RIRS. Together, they afford a nuanced understanding of how multiple antecedents jointly configure recommendation intention (Duarte and Pinho, 2019; Leischnig et al., 2016). Theoretically, the findings contribute to the consumer citizenship behavior literature by elucidating how consumer traits and perceived value jointly shape RIRS. Methodologically, the study demonstrates the complementarity of PLS-SEM and fsQCA as a dual-method framework for mobility-sharing research. Practically, the results equip platform managers with configuration-based marketing strategies to leverage consumer advocacy as a low-cost engine for sustainable growth.

The remainder of this paper proceeds as follows. Section 2 presents the theoretical framework. Section 3 develops the hypotheses and research model. Section 4 describes the methodology. Section 5 reports the empirical results. Section 6 discusses the findings, implications, and limitations.

2. Theoretical background

2.1. Recommendation intention in the sharing economy

Recommendation intention is broadly conceptualized as consumers' propensity to positively evaluate a sharing platform and encourage others to use it (Do and Pereira, 2023). Encompassing traditional word-of-mouth (tWOM) and electronic word-of-mouth (eWOM), it is widely regarded as a key non-transactional indicator of consumer loyalty (Lin et al., 2026). As summarized in Appendix Table A1, research on recommendation intention in the sharing economy has focused on four antecedent categories: perceived value and risk, consumer traits, relationship quality, and interaction quality.

Perceived value is consistently identified as the most proximal and powerful driver of recommendation intention (Liang et al., 2021). Overall perceived value (Lee and Wong, 2021; Shao et al., 2022; Tsai et al., 2017; Ha et al., 2026) and its specific dimensions (Shao et al., 2022), including economic benefits (Ladeira et al., 2026; Do and Pereira, 2023), social benefits (Ladeira et al., 2026; Do and Pereira, 2023), enjoyment (Barnes and Mattsson, 2017; Do and Pereira, 2023; Alarcon-del-Amo et al., 2024), and sustainability (Ladeira et al., 2026; Do and Pereira, 2023), have been shown to stimulate recommendation intention. Perceived usefulness is similarly validated as a positive driver across multiple contexts (Lee and Wong, 2021; Barnes and Mattsson, 2017; Do and Pereira, 2023). In experience-centric settings such as Airbnb, experiential value proves particularly salient (Giglio et al., 2023; Akarsu et al., 2020). Educational, escapist, and entertainment experiences each independently foster recommendation intention (Zhu et al., 2023). Conversely, the inherent uncertainty of sharing services heightens perceived risk, rendering it a significant deterrent to recommendation. Both overall perceived risk (Shao et al., 2022) and specific safety risks (Lee and Wong, 2021) exert significant negative effects on recommendation intention. These findings underscore the dual imperative of maximizing value delivery and actively mitigating perceived risk.

Consumer traits constitute the most endogenous antecedent category of recommendation intention. Price consciousness enhances recommendation likelihood in cost-sensitive services such as ride-hailing (Lee and Wong, 2021), plausibly because users perceive greater value-for-money and are motivated to share their experiences. Prior platform experience similarly exerts a positive effect (Giglio et al., 2023). Notably, prosumer status, whereby individuals simultaneously act as consumer and provider, significantly strengthens recommendation intention (Giglio et al., 2023). Evidence on personal innovativeness and environmental consciousness, however, remains mixed. Drawing on a Vietnamese sample, Ha et al. (2026) find that both constructs significantly and positively predict word-of-mouth (WOM). Lee and Wong (2021), by contrast, find that innovativeness exerts no significant effect among Singaporean users, while environmental consciousness exhibits a significant negative effect. This inconsistency suggests that the influence of consumer traits on recommendation intention is contingent on cultural or market context. Individuals with different value orientations vary systematically in their propensity to advocate for sharing platforms.

The quality of user-platform relationships constitutes a consistently robust antecedent of recommendation intention. Trust is widely recognized as a key driver (Huang et al., 2024; Barnes and Mattsson, 2017; Kong et al., 2020; Alamoudi et al., 2023), as it reduces uncertainty and establishes the relational foundation for platform endorsement (Lu et al., 2021). Satisfaction emerges as the most empirically consistent predictor. Evidence across diverse sharing economy contexts converges on a strong positive association between satisfaction and recommendation intention (Oliveira et al., 2022; Alarcon-del-Amo et al., 2024; Do and Pereira, 2023), an effect amplified when the platforms are perceived as highly trustworthy (Barbhuiya and Bansal, 2026). Beyond trust and satisfaction, deeper relational bonds, such as platform likability (Akarsu et al.,

2020), attachment (Xu and Gursoy, 2020), and engagement (Alarcon-del-Amo et al., 2024), further strengthen recommendation intention. These findings suggest that cultivating the user-platform relationship is a viable pathway to fostering recommendation intention.

Interaction quality, whether online or offline, constitutes a critical determinant of recommendation decisions. In online contexts, perceived ease of use underpins user experience and has been shown to facilitate positive WOM (Lee and Wong, 2021). In service encounters involving physical space sharing, such as P2P accommodation, host behavior assumes particular salience. Territorial displays and unequal review effort exchange by hosts suppress guests' propensity to recommend (Harrison-Walker and Mead, 2025; Wang and Li, 2022). Moreover, guests' affective evaluations of hosts and the amenities can override even locational convenience as a driver of recommendation intention (Zhu et al., 2021). Collectively, these findings underscore the decisive role of interpersonal interaction and experiential quality in recommendation generation.

As summarized in Appendix Table A1, the extant literature has predominantly relied on SEM and regression-based approaches to isolate the effects of individual antecedent categories. Studies simultaneously examining multiple predictor categories or employing configurational methods remain scarce. To address this gap, the present study integrates perceived value (the most proximal driver) with consumer traits (the most endogenous antecedent category) and examines their joint influence through a complementary PLS-SEM-fsQCA framework.

2.2. Consumer traits as antecedents of mobility sharing

Consumer traits are stable dispositional tendencies manifesting in consistent patterns of cognition, affect, and behavior (Steenkamp and Maydeu-Olivares, 2015). Within the mobility-sharing context, such traits serve as foundational antecedents shaping users' cognitions, attitudes, and behavioral intentions toward ride-sharing, ride-hailing, and car-sharing. Appendix Table A2 summarizes the consumer trait dimensions most frequently examined across these domains.

Among individual-level characteristics, innovativeness has received the most sustained scholarly attention in mobility-sharing research. Agarwal and Prasad (1998) conceptualized innovativeness as an individual's tendency to adopt information technology earlier than others. Goldsmith and Hofacker (1991) introduced domain-specific innovativeness, defined as the propensity to seek out and adopt novel solutions within a specific consumption domain. In this study, innovativeness captures users' disposition to experiment with and embrace new technology-enabled solutions, encompassing not only initial platform adoption but also ongoing engagement with the continuously evolving features of ride-sharing applications (e.g., AI-based co-rider matching, new vehicle categories, dynamic pricing interfaces). Empirical evidence consistently positions innovativeness as a critical antecedent of mobility-sharing participation. Innovativeness has been shown to enhance perceived ease of use (Shah and Hisashi, 2025; Wang et al., 2020), perceived usefulness (Wang et al., 2020; Małecka et al., 2022), trust (Shah and Hisashi, 2025), and favorable attitudes (Shah and Hisashi, 2025; Ni, 2021). It also attenuates perceived risk (Wang et al., 2020). Regarding behavioral outcomes, innovativeness directly predicts adoption intention (Wang et al., 2020). Its effect on continuance intention, however, appears fully mediated by perceived hedonic and utilitarian value rather than through a direct pathway (Fauzi and Sheng, 2021). Its role in diffusion-related behaviors, however, remains context-dependent and warrants further empirical scrutiny (Lee and Wong, 2021; Ha et al., 2026).

Environmental consciousness has attracted considerable scholarly attention in mobility-sharing research. Defined as the inclination to modify habitual behaviors to minimize ecological impact (Huang and Kuo, 2020), it aligns with the sustainability proposition underpinning mobility-sharing services. Environmental consciousness positively shapes user attitudes toward ride-sharing (Shah and Hisashi, 2025; Wang et al., 2020). Its relationship with sharing intention, however, remains empirically inconsistent. Jang et al. (2026) report a significant positive effect on ride-sharing usage intention, whereas Roos (2026) finds only a limited effect in car-sharing. Where positive effects emerge, they appear to operate through attitude formation, subjective norm alignment, and heightened environmental awareness (Zhang and Li, 2020). Notably, Ha et al. (2026) provide direct evidence linking environmental consciousness to RIRS. Collectively, these findings suggest that environmental consciousness primarily shapes attitudinal and normative antecedents to participation, with behavioral adoption contingent on enabling contextual conditions. Nevertheless, consumers with stronger environmental consciousness remain more inclined to embrace sustainable, sharing-based mobility alternatives.

Materialism, defined as consumers' emphasis on material possessions and their centrality to self-identity and well-being (Richins and Dawson, 1992), is frequently positioned as conceptually antithetical to the sharing economy's ethos of access over ownership. In the mobility-sharing context, however, empirical findings reveal a more complex picture. Davidson et al. (2018) find that among U.S. consumers, materialism positively influences participation intention primarily through transformation expectations. In contrast, among Indian consumers, it operates primarily through perceived utility. This cross-cultural divergence suggests that materialism is not inherently incompatible with sharing behavior and that its effects are culturally contingent. In public bicycle-sharing, Yin et al. (2018) find that materialism negatively influences adoption intention by undermining consumers' teleological evaluations. Notably, Ni (2021) identifies a positive relationship between instrumental materialism, treating possessions as means rather than ends, and attitudes toward collaborative consumption. The finding hints that the valence of materialism's effect is contingent on its specific conceptualization. Collectively, materialism's influence on mobility-sharing participation is neither uniformly negative nor positive, but contingent on cultural context, construct conceptualization, and service type.

Price consciousness refers to the degree to which consumers prioritize price when evaluating purchase decisions (Lichtenstein et al., 1988). It is widely recognized as a salient driver of sharing participation. In car-sharing, Hahn et al. (2020) find that while price consciousness exerts no significant direct effect on usage intention, it significantly moderates the relationship between pricing model and usage intention. Price-conscious consumers exhibit a strong preference for monthly fee structures over usage-based pricing, indicating that their economic rationality extends beyond unit-level cost sensitivity to how cost commitments are structured over time. Lee and Wong (2021) confirm that price consciousness stimulates WOM in ride-hailing, suggesting that economically motivated users who perceive strong value-for-money are more inclined to endorse the service. Price consciousness thus functions as a consequential determinant of both preference formation and post-usage advocacy in mobility-sharing.

Beyond these four traits, additional characteristics, including self-efficacy (Sofi et al., 2021; Zhu et al., 2017), privacy concern (Jang et al., 2026; Akel and Bayir, 2025), non-ownership and frugality orientations (Ni, 2021), and sociability (Małecka et al., 2022), have been investigated in mobility-sharing research. Nevertheless, innovativeness, environmental consciousness, materialism, and price consciousness remain the most consistently examined traits in this literature. Crucially, their influence on RIRS has received limited scholarly attention. The configurational interplay among these traits remains largely unexplored.

2.3. Perceived value as antecedent of mobility sharing

Perceived value is a foundational concept in consumer behavior research. In the mobility-sharing context, it represents the consumers' overall assessment of the utility derived from platform-mediated transportation services (Zhu et al., 2017; Zeithaml, 1988). As shown in

Appendix Table A3, perceived value exhibits a multidimensional structure in this domain. Across dimensions, commonalities emerge in their effects on consumer attitudes, intentions, and behaviors; yet meaningful variation persists depending on the specific service type and cultural context under examination.

Economic value is among the most frequently cited drivers of mobility-sharing participation. Li et al. (2025a) noted that economic value positively influences attitudes. The preponderance of evidence supports its positive effects on usage, participation, continuance, and re-engagement intentions (Arteaga-Sanchez et al., 2020; Lee et al., 2018; Li et al., 2025a; Oliveira et al., 2022), though non-significant results emerge in certain contexts (Jang et al., 2026; Mattia et al., 2022; Möhlmann, 2015). Beyond behavioral intentions, economic value enhances satisfaction (Möhlmann, 2015), fosters trust (Hou et al., 2020), promotes consumer well-being (Ben Arfi et al., 2026), and predicts WOM (Lee and Wong, 2021). Economic value also stimulates re-engagement intention through consumer reflexivity (Li et al., 2024). Conversely, a deterioration in long-term economic value perceptions can activate anticipated regret and status quo bias, generating resistance toward car-sharing (Abu Khalek and Chakraborty, 2025). Overall, despite null findings in certain contexts, economic value remains a consistently salient driver across multiple outcomes in mobility-sharing research.

Enjoyment refers to the emotional pleasure, hedonic stimulation, and positive affect derived from the mobility-sharing experience. Enjoyment cultivates favorable attitudes toward mobility-sharing and enhances overall perceived service value (Zhu et al., 2017; Wang et al., 2019). Enjoyment consistently exerts a significant positive influence on usage, participation, continuance, and re-engagement intentions (Lee et al., 2018; Fauzi and Sheng, 2021; Oliveira et al., 2022). It further promotes satisfaction and continuance intention by strengthening cognitive and emotional fit (Chen and Zhou, 2025). At the post-consumption stage, enjoyment is positively associated with recommendation intention, indicating that hedonic experiences can effectively translate into WOM (Lee and Wong, 2021; Barnes and Mattsson, 2017). Collectively, enjoyment emerges as a robust, cross-contextual driver of mobility-sharing, with consistent influence on attitudes, behavioral intentions, satisfaction, and recommendation behavior across car-sharing, ride-sharing, and ride-hailing.

Social value refers to perceived utility derived from a service's association with social interaction, community belonging, and interpersonal connection (Sheth et al., 1991). Evidence on social value is notably heterogeneous. On one hand, social value positively enhances consumer attitudes (Akel and Bayir, 2025), overall perceived value and usefulness (Wang et al., 2019; Zhu et al., 2017; Barnes and Mattsson, 2017), and cognitive and emotional fit (Chen and Zhou, 2025), thereby fostering satisfaction and continuance intention (Arteaga-Sanchez et al., 2020; Mattia et al., 2022; Barnes and Mattsson, 2017; Möhlmann, 2015). Social value also stimulates re-engagement intention through consumer reflexivity (Li et al., 2024). On the other hand, several studies report null or inconsistent findings. The effect of social value on WOM is non-significant (Lee and Wong, 2021), social connection exerts no significant effect on usage behavior (Boateng et al., 2019), and the effect of sense of community on usage similarly fails to reach significance (Oliveira et al., 2022). Overall, social value constitutes a meaningful driver in mobility-sharing; however, its effects are boundary-conditional rather than universal.

Sustainability encapsulates perceived positive contribution of sharing economy participation to environmental and societal outcomes. Scholarly consensus largely supports sustainability as a motivator for mobility-sharing participation, with documented positive effects on attitudes (Akel and Bayir, 2025), satisfaction (Arteaga-Sanchez et al., 2020; Chen and Zhou, 2025), perceived usefulness (Barnes and Mattsson, 2017), consumer well-being (Ben Arfi et al., 2026), and usage intention (Mattia et al., 2022). Its direct effect on behavioral intention, however, is inconsistent across studies. Several studies report weak or null direct effects (Li et al., 2025a; Oliveira et al., 2022; Möhlmann, 2015). Its influence is thus more reliably manifested through indirect pathways. These pathways include promoting satisfaction via cognitive and emotional fit (Chen and Zhou, 2025) and enhancing re-engagement intention through consumer reflexivity (Li et al., 2024). Collectively, sustainability value operates primarily through attitude enhancement and cognitive alignment in mobility-sharing. Its translation into direct behavioral outcomes appears contingent on synergistic interactions with complementary value dimensions.

While convenience (Ben Arfi et al., 2026; Lee and Wong, 2021; Boateng et al., 2019), innovative value (Ben Arfi et al., 2026; Möhlmann, 2015), functional value (Akel and Bayir, 2025; Chen and Zhou, 2025; Fauzi and Sheng, 2021; Zhu et al., 2017), and novel experiential value (Li et al., 2025a) receive intermittent attention, economic value, enjoyment, social value, and sustainability remain the most consistently examined dimensions in mobility-sharing research. Perceived value in this domain is inherently multidimensional, dynamic, and context-dependent. Evidence further indicates that consumers weigh multiple value dimensions simultaneously when evaluating mobility-sharing services. The relative salience of each dimension varies by service type, with social value more pronounced in ride-sharing than ride-hailing. Understanding the independent, combined, and configurational effects of these dimensions on RIRS therefore constitutes both a theoretical and a practical imperative.

3. Research hypotheses

3.1. Innovativeness

Consumers high in innovativeness are consistently more proactive in adopting emerging technologies and novel service solutions (Lee and Lee, 2018). Lee et al. (2021) find that innovativeness directly and positively predicts recommendation intention for the artificial intelligence-based voice assistant systems. This suggests that innovativeness not only cultivates favorable attitudes toward novel services but also motivates consumers to recommend. More directly, Ha et al. (2026) confirm a positive effect of innovativeness on WOM in ride-hailing. Platform-mediated ride-sharing constitutes a novel paradigm in urban transportation. Relative to personal vehicle use, taxis, and public transit, it introduces mechanisms that depart substantially from conventional transportation logic. These include real-time peer matching, dynamic routing, and mobile-mediated cost-sharing. Such novelty is precisely what innovative consumers are disposed to embrace and endorse. Therefore, we hypothesize:

H1. Innovativeness is positively associated with RIRS.

3.2. Environmental consciousness

Environmentally conscious consumers are more disposed to advocate for services they perceive as ecologically beneficial. Martínez et al. (2022) find that environmental consciousness positively predicts WOM for environmentally certified hotels. Evidence from the mobility-sharing literature further demonstrates that environmental consciousness positively influences WOM (Ha et al., 2026; Zhou et al., 2022) and consumer attitudes (Zhang and Li, 2020). In ride-sharing, environmental consciousness is anticipated to play a salient role. Consumers sensitive to the ecological footprint of their mobility choices are more likely to advocate ride-sharing as a pro-environmental option aligned with their values. We therefore hypothesize:

H2. Environmental consciousness is positively associated with RIRS.

3.3. Materialism

Belk (2010) identified possessiveness and non-generosity as dimensions of materialism fundamentally antithetical to sharing behavior.

Consistent with this view, materialism has been shown to negatively influence sharing participation. Lindblom et al. (2018) find that materialism is negatively associated with collaborative consumption attitudes. Lang and Joyner Armstrong (2018) confirm that materialism is significantly and negatively associated with clothing renting and swapping. In public bicycle-sharing, Yin et al. (2018) demonstrate that materialism undermines adoption intention by depressing consumers' teleological ethical evaluations. In ride-sharing, this inhibitory dynamic is likely to be particularly salient. Ride-sharing substitutes shared access for personal ownership, an arrangement materialistic consumers may perceive as eroding the symbolic and instrumental value of ownership. Consumers with stronger materialistic orientations are therefore less disposed to embrace ride-sharing and, by extension, less inclined to recommend it. Therefore, we hypothesize:

H3. Materialism is negatively associated with RIRS.

3.4. Price consciousness

Price is widely recognized as a critical determinant of consumer behavior (Gabor and Granger, 1979; Lichtenstein et al., 1988, 1993). Consumer responses to pricing cues are shaped by holistic perceptions and psychological orientations toward price information. Price consciousness is a key psychological factor shaping consumer reactions to price information (Lindblom et al., 2018). Pai et al. (2025) demonstrate that price sensitivity exerts a significant positive effect on deal-content sharing behavior in omnichannel retail. Specifically, price-sensitive consumers are more inclined to share discount information, shopping tips, and other promotional content. Lee and Wong (2021) confirm that price consciousness is positively associated with WOM in ride-hailing. Ride-sharing converts individual transportation costs into shared expenses, offering a tangible cost advantage over private vehicles or ride-hailing. Price-conscious consumers are well positioned to recognize this economic benefit. When perceived savings exceed expectations, such consumers are motivated to recommend the service, as advocating a cost-efficient option signals economic rationality and generates social value for recipients. Stronger price consciousness is therefore expected to increase the propensity to recommend ride-sharing. We hypothesize that:

H4. Price consciousness has a positive effect on RIRS.

3.5. Economic value

Shared services are widely regarded as economical alternatives to private ownership (Belk, 2010; Lamberton and Rose, 2012). Hamari et al. (2016) argue that sharing represents rational, utility-maximizing behavior whereby consumers substitute exclusive ownership with lower-cost collaborative alternatives. Economic value is a consistent driver of positive attitudes toward sharing and willingness to participate (Li et al., 2025a; Oliveira et al., 2022). At the meta-analytic level, Ladeira et al. (2026) confirm that economic value positively predicts WOM. Lee and Wong (2021) further indicate that economic value stimulates WOM in ride-hailing. In ride-sharing, economic value operates through two mechanisms. First, passengers benefit from splitting trip expenses among co-riders. Second, ride-sharing yields lower travel costs compared to private taxis or personal vehicle use. This tangible cost advantage constitutes a compelling motivation for consumers to recommend ride-sharing. We hypothesize that:

H5. Economic value has a positive effect on RIRS.

3.6. Enjoyment

Enjoyment is recognized as a significant driver of consumer platform engagement (Van der Heijden, 2004). Hamari et al. (2016) find that perceived enjoyment of collaborative consumption positively influences attitudes and participation intentions. Subsequent studies extend these findings to mobility-sharing. Fauzi and Sheng (2021) and Oliveira et al. (2022) confirm the positive effects of enjoyment on continuance intention and usage behavior. Barnes and Mattsson (2017) and Lee and Wong (2021) find that enjoyment directly enhances recommendation intention. In ride-sharing, enjoyment extends beyond pure transportation utility. Unlike conventional taxis or ride-hailing, which prioritize efficiency and economy, ride-sharing often involves longer trips, unpredictable and diverse co-riders. These features introduce a distinctive experiential dimension. Enjoyment may arise from social interaction, the thrill of novelty, and the opportunity to listen to others' stories during extended shared journeys. Such experiential pleasure enriches the journey and motivates WOM, as users are inclined to share memorable encounters with their social networks. We hypothesize that:

H6. Enjoyment has a positive effect on RIRS.

3.7. Social value

Social value is a recognized motivator of consumer participation in mobile platforms (Kim et al., 2013). Zhu et al. (2017) demonstrate that social value is positively associated with the overall perceived value of ride-sharing applications, underscoring its role in enhancing service attractiveness. Mattia et al. (2022) indicate that socialization benefits significantly and positively affect ride-sharing usage intention. Do and Pereira (2023) identify social benefits as major determinants of e-WOM intentions, a finding corroborated by meta-analytic evidence (Ladeira et al., 2026). In ride-sharing, social value is embedded in the service's structural features. Platform algorithms match users according to overlapping routes and time windows, effectively screening for individuals with similar life trajectories and commuting patterns. This route-based social homophily increases the likelihood of shared topics and interpersonal connection among co-riders. The resulting social experience cultivates positive service evaluations and motivates WOM. Based on these theorizations, we hypothesize that:

H7. Social value has a positive effect on RIRS.

3.8. Sustainability

Sustainability is widely recognized as a driver of positive consumer attitudes toward the sharing economy. Ben Arfi et al. (2026) and Akel and Bayir (2025) find that sustainability enhances consumer well-being and attitudes toward mobility-sharing. Mattia et al. (2022) validate a direct positive effect of sustainability on ride-sharing usage intention. Ladeira et al. (2026) confirm a significant positive impact of sustainability on WOM based on a meta-analytic synthesis of sharing economy literature. In ride-sharing, sustainability assumes particular salience. Ride-sharing directly reduces vehicles on the road by consolidating trips that would otherwise be made separately. This tangible environmental benefit enhances positive service evaluations. It also motivates advocacy, as recommending an eco-friendly alternative allows consumers to signal environmental responsibility while promoting sustainable mobility. Based on the foregoing, we hypothesize that:

H8. Sustainability has a positive effect on RIRS.

Drawing on the foregoing literature, this study develops a conceptual model of how consumer traits and perceived value jointly configure RIRS, as presented in Fig. 1.

4. Research methodology

4.1. Measures

All measurement items were adapted from validated scales with minor wording modifications to suit the ride-sharing context. The questionnaire comprises nine scales: four consumer trait scales, four

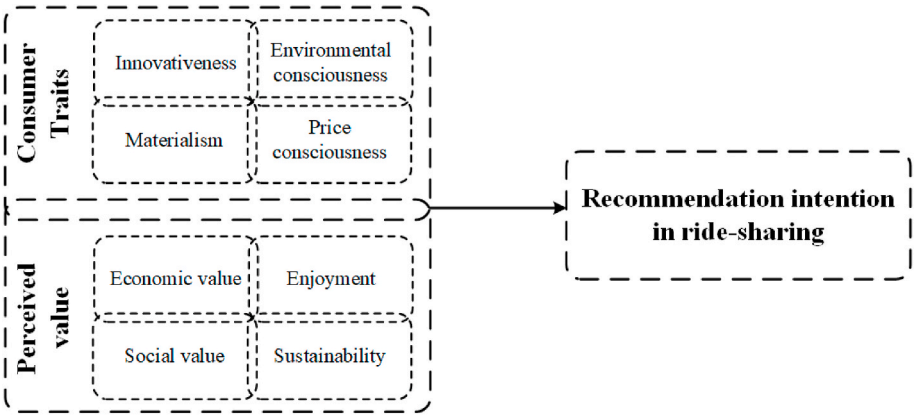


Fig. 1. Research model.

perceived value scales, and one RIRS scale. Innovativeness (4 items) was adapted from Agarwal and Prasad (1998); environmental consciousness (5 items) from Haws et al. (2014) and Lee and Wong (2021); materialism (5 items) from Richins and Dawson (1992) and Ni (2021); price consciousness (4 items) from Lindblom et al. (2018) and Alford and Biswas (2002). Economic value (3 items) and enjoyment (3 items) were both adapted from Hamari et al. (2016). Social value (3 items) was adapted from Lee and Wong (2021) and Arteaga-Sanchez et al. (2020). Sustainability (3 items) was adapted from Hamari et al. (2016) and Arteaga-Sanchez et al. (2020). RIRS was adapted from Barnes and Mattsson (2017). All constructs were measured on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). The questionnaire was translated into Chinese and independently back-translated to verify semantic equivalence following standard translation-back-translation procedures. The finalized survey instrument is presented in Appendix Table A4.

4.2. Sampling and data collection

The target population comprises ride-sharing platform users in China. China's rapid adoption of ride-sharing has generated a large and demographically diverse consumer base, providing an appropriate empirical context for the study. A multi-mode approach was employed, combining online and paper-based questionnaires. The survey was hosted on Wenjuanxing (https://wjx.cn), one of the largest questionnaire platforms in China. The survey link was distributed via WeChat using snowball sampling, yielding 370 responses (Group 1). An additional 346 responses were obtained through Wenjuanxing's panel of randomly selected respondents (Group 2). A further 184 responses were randomly collected offline from consumers at several large shopping centers in Shanghai (Group 3).

A total of 900 responses were initially collected. Data cleaning proceeded sequentially. First, 52 respondents who had never used ride-sharing were excluded. Second, 70 responses that failed attention-check items were removed. Third, straight-lining was assessed following Curran's (2016) criterion: respondents were flagged for careless or insufficient effort (C/IE) if any uninterrupted sequence of identical responses exceeded half the total scale length, resulting in the removal of 34 cases. Fourth, intra-individual response consistency was evaluated using a psychometric synonym-pairs approach. Z-scores were computed from absolute discrepancies between responses to conceptually equivalent item pairs, including reverse-coded items. Applying the widely adopted threshold of $|z| > 3.29$ (Tabachnick and Fidell, 2013), 14 respondents exceeding this criterion were excluded. Finally, Cook's distance was applied to detect multivariate outliers. No observation exceeded the conventional cutoff of 1 (Stevens, 2012), confirming the absence of influential cases. Following this procedure, the final sample comprised 730 valid responses, representing a valid response rate of 81.11%. To verify comparability across the three sampling sources, a sample equivalence test was conducted. No significant differences in construct means were detected across sources, supporting the validity of pooling the subsamples (Teo and Liu, 2007). Distributional properties were assessed via skewness and kurtosis; all values fell within the accepted range of ±3, indicating no severe non-normality (Sadiq et al., 2021).

The demographic profile of the final sample (N = 730) is summarized in Table 1. Female respondents constituted 62.19% of the sample and males 37.81%. The age distribution was concentrated in the 21-30 (43.56%) and 31-40 (38.90%) brackets. Bachelor's degree holders represented the largest educational group (56.03%). Income was predominantly distributed across the <5000 (28.08%), 5001-10000 (38.90%), and 10001-20000 (26.58%) RMB brackets. The profile is consistent with those reported in comparable Chinese ride-sharing and ride-hailing studies (Sun and Xu, 2025; Chen and Zhou, 2025; Hou et al., 2020), lending support to the sample's representativeness. Regarding ride-sharing experience over the preceding six months, 31.92% reported 1-5 times, 28.22% reported 6-10 times, 16.03% reported 11-15 times, and 23.83% reported 16 or more times, indicating meaningful variation across the sample.

4.3. Data analysis

The research model was tested using a two-stage analytical approach. First, we employed the PLS-SEM via SmartPLS (v4.1.1.1) to examine the direct effects of eight antecedents on RIRS. PLS-SEM was preferred over CB-SEM (covariance-based structural equation modeling) given the study's predictive orientation and focus on antecedent identification rather than confirmatory theory testing (Hair et al., 2021). Second, we employed the fsQCA technique to identify sufficient configurations of antecedents producing high RIRS. Whereas PLS-SEM captures net effects, fsQCA adopts a configurational logic to detect case-level patterns (Hair et al., 2019). Their integration addresses both perspectives, consistent with established practice in management research (Woodside, 2013). fsQCA thereby deconstructs causal structures underlying consumer decision-making by revealing synergistic mechanisms among antecedents, extending the net-effects findings from PLS-SEM.

4.4. Common method bias

Large-sample survey data collected via random sampling, while enhancing representativeness, are susceptible to common method bias (CMB) (Podsakoff et al., 2003). To mitigate this concern, procedural remedies were implemented, including a pilot test and multi-source data collection. Three statistical tests were further employed to assess the extent of CMB. First, we examined the full collinearity VIF values using

Table 1
Descriptive statistics of valid respondents.

Measure	Value	Group 1		Group 2		Group 3		Total	
		Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Gender	Male	109	39.07%	116	39.73%	51	32.08%	276	37.81%
	Female	170	60.93%	176	60.27%	108	67.92%	454	62.19%
Age	18-20	23	8.24%	9	3.08%	10	6.29%	42	5.75%
	21-30	113	40.50%	132	45.21%	73	45.91%	318	43.56%
	31-40	106	37.99%	119	40.75%	59	37.11%	284	38.90%
	41-50	32	11.47%	25	8.56%	13	8.18%	70	9.59%
	>51	5	1.80%	7	2.40%	4	2.51%	16	2.20%
Education	Senior high school or below	60	21.51%	58	19.86%	35	22.01%	153	20.96%
	Bachelor	158	56.63%	171	58.56%	80	50.31%	409	56.03%
	Master	33	11.83%	36	12.33%	27	16.98%	96	13.15%
	Doctorate	28	10.03%	27	9.25%	17	10.70%	72	9.86%
Income	<5000	68	24.37%	96	32.88%	41	25.79%	205	28.08%
	5001-10000	115	41.22%	108	36.99%	61	38.36%	284	38.90%
	10001-20000	76	27.24%	72	24.66%	46	28.93%	194	26.58%
	>20001	20	7.17%	16	5.47%	11	6.92%	47	6.44%
Experiences with ride-sharing services in the last 6 months (times)	1-5	96	34.41%	89	30.48%	48	30.19%	233	31.92%
	6-10	71	25.45%	74	25.34%	61	38.36%	206	28.22%
	11-15	28	10.04%	54	18.49%	35	22.01%	117	16.03%
	16 or more	84	30.10%	75	25.69%	15	9.44%	174	23.83%

SmartPLS 4 and SPSS 27, ranging from 1.493 to 2.502, well below the threshold of 3.3, suggesting no serious CMB (Kock, 2015). Second, Harman's (1976) single-factor test was conducted on all survey items. The first component explained 38.265% of the total variance, below the 50% threshold (Fornell and Larcker, 1981). Finally, we used the method proposed by Liang et al. (2007) to test for the presence of CMB. The results are shown in Appendix Table A5. The mean variance explained by the substantive construct (0.6933) substantially exceeded that attributable to the common method factor (0.0048). The resulting ratio was 144:1. This ratio indicates that CMB does not pose a significant threat to the study's findings.

5. Results

5.1. Assessment of the measurement model

Internal consistency reliability was assessed using Dijkstra-Henseler's rho (ρA), which offers a less biased estimate of composite reliability than Cronbach's alpha (α) (Hair et al., 2019). Cronbach's alpha is also reported for supplementary reference. As shown in Table 2, all ρA values exceeded 0.7 (Henseler et al., 2015) and all α values surpassed the 0.7 threshold for management and social science research (Hair et al., 2019), collectively confirming construct reliability. Convergent validity was supported: all indicator loadings exceeded 0.708 and all AVE (average variance extracted) values exceeded 0.5 (Fornell and Larcker, 1981; Hair et al., 2021), with the exception of one materialism item (MA3 = 0.679). As a loading above 0.6 is considered acceptable (Abu Khalek and Chakraborty, 2025), MA3 was retained. Discriminant validity was evaluated using the heterotrait-monotrait ratio of correlations (HTMT) criterion (Henseler et al., 2015). As shown in Table 3, the upper bounds of 95% confidence intervals for HTMT values fell below 0.85, confirming discriminant validity. Table 4 further shows that the inter-construct correlations are all lower than the square roots of their respective AVEs, providing additional support for discriminant validity.

5.2. Assessment of the structural model

The structural model demonstrates moderate-to-substantial explanatory power. The adjusted R^2 of 58.2% indicates that the model accounts for a substantial proportion of variance in RIRS. The Q^2 value of 0.570 (>0) further confirms satisfactory predictive relevance for this outcome. Hypothesis testing was conducted via bias-corrected bootstrapping with 5000 subsamples and 95% confidence intervals (Hair et al., 2021). Effect sizes (f^2) were assessed following Cohen's (1988) benchmarks: wherein values of 0.02, 0.15, and 0.35 represent small, medium, and large effects, respectively.

As shown in Table 5 and Fig. 2, innovativeness exerts no significant

Table 2
Loadings, reliability, and convergent validity of measured variables.

Constructs	Items	Loadings	α	rho (ρA)	AVE	Constructs	Items	Loadings	α	rho (ρA)	AVE
Innovativeness (INN)	INN1	0.863	0.847	0.852	0.685	Price consciousness (PC)	PC1	0.823	0.786	0.793	0.610
	INN2	0.800					PC2	0.774			
	INN3	0.861					PC3	0.815			
	INN4	0.785					PC4	0.707			
Environmental consciousness (EC)	EC1	0.832	0.850	0.855	0.626	Materialism (MA)	MA1	0.735	0.795	0.797	0.551
	EC2	0.776					MA2	0.811			
	EC3	0.792					MA3	0.679			
	EC4	0.802					MA4	0.766			
	EC5	0.751					MA5	0.713			
Economic value (EV)	EV1	0.897	0.856	0.862	0.776	Enjoyment (EN)	EN1	0.898	0.861	0.865	0.784
	EV2	0.898					EN2	0.913			
	EV3	0.847					EN3	0.844			
Social value (SV)	SV1	0.908	0.892	0.892	0.822	Sustainability (SUS)	SUS1	0.879	0.847	0.847	0.776
	SV2	0.914					SUS2	0.877			
	SV3	0.899					SUS3	0.869			
Recommendation intention (RIRS)	RI1	0.912	0.804	0.805	0.836						
	RI2	0.917									

Table 3
Heterotrait-Monotrait ratio (HTMT).

Constructs	INN	EC	MA	PC	EV	EN	SV	SUS
1. Innovativeness (INN)								
2. Environmental consciousness (EC)	0.688							
3. Materialism (MA)	0.650	0.639						
4. Price consciousness (PC)	0.511	0.589	0.541					
5. Economic value (EV)	0.519	0.613	0.500	0.537				
6. Enjoyment (EN)	0.594	0.662	0.587	0.496	0.724			
7. Social value (SV)	0.492	0.622	0.448	0.400	0.513	0.735		
8.Sustainability (SUS)	0.453	0.584	0.477	0.520	0.695	0.580	0.472	
9. Recommendation intention (RIRS)	0.551	0.705	0.565	0.658	0.755	0.730	0.637	0.726

Table 4
Fornell-Larcker criterion.

Constructs	INN	EC	MA	PC	EV	EN	SV	SUS	RIRS
1. Innovativeness (INN)	***0.828***								
2. Environmental consciousness (EC)	0.586	***0.791***							
3. Materialism (MA)	0.535	0.530	***0.742***						
4. Price consciousness (PC)	0.418	0.488	0.431	***0.781***					
5. Economic value (EV)	0.446	0.528	0.416	0.441	***0.881***				
6. Enjoyment (EN)	0.509	0.567	0.489	0.409	0.624	***0.885***			
7. Social value (SV)	0.426	0.540	0.381	0.336	0.448	0.644	***0.907***		
8.Sustainability (SUS)	0.387	0.498	0.392	0.425	0.593	0.495	0.411	***0.875***	
9. Recommendation intention (RIRS)	0.457	0.586	0.453	0.525	0.629	0.609	0.541	0.600	***0.915***

Note: The numbers marked in italics on the diagonal are the square roots of the AVEs.

Table 5
Results of hypotheses testing.

Hypothesis	Paths	Path coefficients	Standard Deviation	T-value	p-value	f^2	CI [2.5%-97.5%]
H1	Innovativeness → RIRS	−0.003	0.036	0.082	0.935	0.000	[-0.075,0.065]
H2	Environmental consciousness →RIRS	0.124	0.045	2.752	0.006	0.017	[0.036,0.212]
H3	Materialism → RIRS	0.028	0.034	0.810	0.418	0.001	[-0.038,0.097]
H4	Price consciousness → RIRS	0.171	0.041	4.227	0.000	0.048	[0.089,0.249]
H5	Economic value →RIRS	0.208	0.043	4.877	0.000	0.050	[0.124,0.291]
H6	Enjoyment →RIRS	0.131	0.052	2.512	0.012	0.017	[0.029,0.234]
H7	Social value →RIRS	0.144	0.043	3.342	0.001	0.027	[0.056,0.229]
H8	Sustainability →RIRS	0.208	0.042	4.978	0.000	0.061	[0.128,0.292]

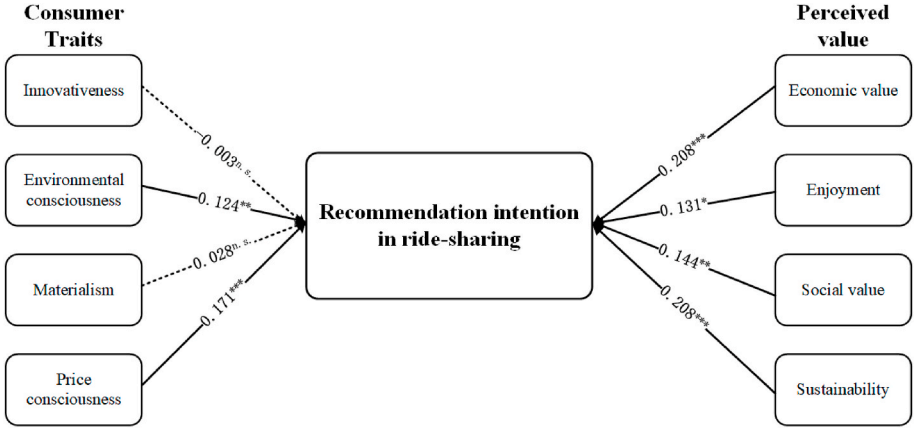


Fig. 2. Estimated causal relationships of the structural model.
Notes: $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$; $^{n.s.}$ = Not significant; Dotted line represents insignificant path.

effect on RIRS ($\beta = -0.003, p = 0.935, f^2 = 0.000$), thus H1 is not supported. Environmental consciousness exerts statistically significant positive effect on RIRS ($\beta = 0.124, p < 0.01, f^2 = 0.017$), supporting H2. Materialism shows a positive but non-significant coefficient ($\beta = 0.028$, $p = 0.418, f^2 = 0.001$), opposite in sign to the negative direction hypothesized in H3; thus H3 is not supported. Price consciousness ($\beta = 0.171, p < 0.001, f^2 = 0.048$) positively and significantly affects RIRS, supporting H4. Similarly, all perceived value dimensions, economic value ($\beta = 0.208, p < 0.001, f^2 = 0.050$), enjoyment ($\beta = 0.131, p < 0.05, f^2 = 0.017$), social value ($\beta = 0.144, p < 0.01, f^2 = 0.027$), and sustainability ($\beta = 0.208, p < 0.001, f^2 = 0.061$), exert statistically significant positive effects on RIRS, thereby supporting H5, H6, H7, and H8. However, effect sizes vary considerably across paths. Environmental consciousness and enjoyment, while statistically significant, yield

negligible effect sizes, indicating limited net contributions to variance in RIRS. The remaining significant predictors each yield small effect sizes, with sustainability demonstrating the largest effect size. This pattern of modest individual effect sizes is theoretically expected when explained variance is distributed across a large set of antecedents ($k = 8$), as each predictor's net incremental contribution is necessarily attenuated. Small individual effects in symmetric analyses, however, do not preclude stronger joint explanatory power when antecedents operate in combination. Antecedent configurations, rather than isolated predictors, may constitute necessary or sufficient conditions for high RIRS, which provides the theoretical motivation for the subsequent fsQCA.

5.3. Post-hoc analysis: fsQCA

The fsQCA procedure involves three analytical steps: data calibration, truth table construction, and causal condition analysis (Ragin, 2006). All analyses were performed using fsQCA software (v4.1).

5.3.1. Calibrating variables

Variables measured on a five-point Likert scale were first aggregated into mean scores and then calibrated into fuzzy membership scores. Ragin's (2009) direct calibration method derives continuous membership scores from three anchors: full membership, the crossover point (0.5, indicating maximum ambiguity), and full non-membership. Three calibration approaches are commonly employed: (1) scale anchors combined with sample minimum, median, and maximum, selected according to distributional alignment (Du and Kim, 2021; Fiss, 2011); (2) sample percentiles for all three anchors (Greckhamer, 2016); (3) a mean ± 1 SD plus median rule (Douglas et al., 2020). Du and Kim (2021) recommend scale anchors when the sample distribution aligns with the scale, and sample-based anchors when a distributional discrepancy exists. Transparent reporting of calibrating anchors and sensitivity-based robustness tests are essential quality standards in fsQCA (Greckhamer et al., 2018). To better capture the actual data distribution (Fiss, 2011; Ragin, 2009), sample minimum, median, and maximum were used as calibration anchors for seven variables whose distributions deviated substantially from their scale anchors. For the remaining one variable (social value), scale anchors were applied as its distribution closely aligned with the scale. Following established practice, a constant of 0.001 was added to all membership scores of exactly 0.5 to avoid set-membership ambiguity. Table 6 summarizes the calibration anchors and descriptive statistics for all variables.

5.3.2. Analysis of necessary conditions

Following established QCA practice, necessary condition analysis was first conducted with a consistency threshold of 0.9. As depicted in Table 7, no condition individually constituted a necessary condition for high RIRS. As all consistency values fell below 0.9, configurational analysis was warranted to examine how antecedents combine to produce high RIRS.

Table 7
Analysis of necessary conditions for high RIRS in fsQCA.

Sets of conditions	Consistency	Coverage
Innovativeness	0.833	0.782
~ Innovativeness	0.604	0.646
Environmental consciousness	0.854	0.806
~Environmental consciousness	0.598	0.636
Materialism	0.811	0.785
~ Materialism	0.630	0.652
Price consciousness	0.831	0.776
~ Price consciousness	0.616	0.663
Economic value	0.859	0.830
~ Economic value	0.613	0.636
Enjoyment	0.887	0.771
~ Enjoyment	0.536	0.631
Social value	0.847	0.764
~ Social value	0.562	0.631
Sustainability	0.865	0.812
~ Sustainability	0.616	0.660

5.3.3. Analysis of sufficient conditions

The truth table was constructed with a consistency threshold of 0.8 and a minimum frequency threshold of 3. Following established thresholds for large samples (Li et al., 2025b; Fiss, 2011), a frequency cutoff of 3 was applied, retaining 77.40% of cases. A PRI (Proportional Reduction in Inconsistency) consistency threshold of 0.70 was imposed; configurations falling below this criterion were excluded (Appendix Table A6). Directional assumptions for each causal condition were specified by integrating theoretical expectations, hypothesis-testing results, and contextual knowledge. Specifically, most conditions were designated as "present," reflecting the theoretical expectation that their presence promotes high RIRS. Two exceptions were made for innovativeness and materialism. Given their non-significant effects in the PLS-SEM analysis, no directional expectations were imposed (coded as "present or absent"), allowing both presence and absence to enter the minimization procedure. This approach avoids imposing unwarranted directional constraints on empirically ambiguous conditions while preserving the theoretical grounding of all remaining assumptions. Following the principle of minimal complexity, we selected the parsimonious solution that covers all positive outcome configurations while remaining theoretically and empirically grounded. Where multiple equivalent solutions existed, those with the greatest theoretical plausibility were preferred. The intermediate solution was then identified in conjunction with the parsimonious solution to systematically reveal the causal configurations producing high RIRS. Following the notation of Fiss (2011), eleven causal configurations that lead to high RIRS are presented in Table 8. All configurations meet the benchmarks for management research: individual consistency reaches 0.9 or higher and overall solution coverage exceeds 0.5, demonstrating satisfactory explanatory power.

All eleven configurations can be clustered into four patterns based on their core conditions (Table 9).

Table 6
Sets, calibrations, and descriptive statistics.

Sets	Fuzzy set calibrations			Descriptive statistics				
	Fully out	Crossover	Fully in	Mean	SD	Min	Median	Max
1. Innovativeness (INN)	1	3.75	5	3.63	0.81	1	3.75	5
2. Environmental consciousness (EC)	1.2	3.8	5	3.68	0.79	1.2	3.8	5
3. Materialism (MA)	1	3.6	5	3.46	0.82	1	3.6	5
4. Price consciousness (PC)	1	3.75	5	3.64	0.76	1	3.75	5
5. Economic value (EV)	1	4	5	3.78	0.82	1	4	5
6. Enjoyment (EN)	1	3.33	5	3.47	0.89	1	3.33	5
7. Social value (SV)	1	3	5	3.17	0.98	1	3.17	5
8. Sustainability (SUS)	1	4	5	3.85	0.79	1	4	5
9. Recommendation intention (RIRS)	1	4	5	3.72	0.89	1	4	5

Table 8
Results of the fsQCA on sufficient conditions*.

Configuration Condition	Configuration Solution										
	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
1. Innovativeness	●	●	●		●	●	●	●		●	
2. Environmental consciousness		●	●		●	●	●		●		●
3. Materialism		⊗	⊗	⊗	●	●	●	●	●	●	●
4. Price consciousness				●	●		●	●	●	●	
5. Economic value	●	●		●		●	●	●	●		●
6. Enjoyment	●		●	●	●	●		●		●	●
7. Social value	●	●	●	●	●	●			●	●	●
8. Sustainability	●	●	●	●			●	●	●	●	●
Consistency	0.937	0.978	0.975	0.974	0.929	0.937	0.952	0.950	0.952	0.945	0.947
Raw coverage	0.651	0.449	0.452	0.466	0.614	0.619	0.610	0.611	0.599	0.599	0.613
Unique coverage	0.015	0.003	0.004	0.015	0.006	0.006	0.008	0.003	0.002	0.002	0.004
Overall Solution consistency	0.903										
Overall Solution coverage	0.786										

*Large ●= core condition present; Small ●=peripheral condition present; Large ⊗= core condition absent; Small ⊗=peripheral condition absent; Blank space=don't care.

Table 9
Results of the fsQCA on configuration patterns.

Patterns	1: Pragmatic Innovators			2: Hedonic Minimalists		3: Savvy Material Hedonists			4: Eco-Material Pragmatists		
	C1	C2	C6	C3	C4	C5	C8	C10	C7	C9	C11
1. Innovativeness	●	●	●	●		●	●	●	●		
2. Environmental consciousness		●	●	●		●			●	●	●
3. Materialism		⊗	●	⊗	⊗	●	●	●	●	●	●
4. Price consciousness					●	●	●	●	●	●	
5. Economic value	●	●	●		●		●		●	●	●
6. Enjoyment	●		●	●	●	●	●	●			●
7. Social value	●	●	●	●	●	●		●		●	●
8. Sustainability	●	●		●	●		●	●	●	●	●
Core individual characteristics	Innovativeness			De-materialism		Materialism + Price consciousness			Materialism + Environmental consciousness		
Primary Value Focus	Economic value			Enjoyment; Sustainability		Enjoyment			Economic value + Sustainability		
Consumer profile	*Innovation-driven value-rational adopters*			*Experience-oriented non-materialists*		*Cost-conscious material hedonists*			*Eco-conscious materialists seeking dual-track value fulfillment*		

(1) Pattern 1: Pragmatic Innovators (C1, C2, C6). This pattern is defined by a core structure of innovativeness and perceived economic value, reflecting a fundamental logic of adopting new mobility solutions for superior economic returns. Recommendations stem not only from novelty per se, but also from perceived economic superiority over conventional options. In C1, where innovativeness alone is active as a core trait condition, enjoyment, social value, and sustainability emerge as peripheral complements. This accounts for C1's highest raw coverage (0.651), representing the broadest value-seeking path with the most parsimonious trait inputs. In C2 and C6, environmental consciousness appears as a peripheral condition, though with varying levels of materialism. Low-materialism consumers emphasize sustainability, whereas high-materialism consumers focus on the gratification of diverse problem-solving options, leading to a narrowed scope despite displaying environmental sensitivity. The three sub-segments reveal a value-driven shifting mechanism. The value constellation associated with high RIRS varies systematically with the richness of trait inputs. The sparser the individual traits, the broader the compensatory value coverage; the richer the traits, the more convergent the value focus.

(2) Pattern 2: Hedonic Minimalists (C3, C4). The defining hallmark of this pattern is the absence of materialism (peripheral absence in C4; core absence in C3). C3 and C4 represent two anchors on a "de-materialization spectrum". As de-materialism deepens, recommendation motives shift progressively away from utilitarian concerns. The perceived value structure narrows from multi-dimensional assessment toward a hedonic-sustainability dual core, with economic and social values progressively marginalized. C3 fully de-materializes consumption logic via the core absence of materialism and indifference to price consciousness. Here, value perception converges strictly on enjoyment and sustainability. In contrast, C4's peripheral absence of materialism, coupled with core price consciousness, retains utilitarian motives and all four perceived-value dimensions appear as core conditions, characterizing the calculating experientialist.

(3) Pattern 3: Savvy Material Hedonists (C5, C8, C10). An invariant core triangle of acquisitive materialism, price consciousness, and enjoyment defines this pattern. These consumers seek to access previously unaffordable mobility solutions via ride-sharing, scrutinizing prices while relying on enjoyment as their emotional anchor for their recommend intention. C5, the standard form, includes innovativeness, environmental consciousness, and social value as peripheral conditions, with economic value and sustainability as "don't care" conditions. This subsegment reflects consumers insensitive to macroeconomic and ecological concerns, basing their recommendations on value-for-money and experiential pleasure. C10, the equilibrated form, mirrors C5's structure but elevates sustainability to a peripheral condition, indicating mild acceptance of sustainability while remaining anchored in hedonic and price concerns. C8, the bridging configuration with Pattern 1, upgrades innovativeness and economic value from peripheral or "don't care" states to core conditions, forming a high-density core of five conditions. The dual core of innovativeness and economic value, a signature of

Pattern 1, renders C8 a subtype of Pattern 3 bearing Pragmatic Innovators' traits. While retaining acquisitive and hedonic pursuits, these consumers are open to novel solutions and weight economic value more heavily, aligning more with Pattern 1's logic than C5 or C10.

(4) Pattern 4: Eco-Material Pragmatists (C7, C9, C11). This pattern is defined by an invariant four-condition core comprising environmental consciousness, materialism, economic value, and sustainability. Acquisitive aspirations are anchored by economic value, while environmental aspirations are anchored by sustainability. C7, the high-innovativeness sub-segment, converges on an economic-sustainability dual-track core, exhibiting a compensatory signature of high individual drive and a streamlined value constellation. In addition to the invariant four-condition core, social value emerges as a core condition in C9 and C11, distinguishing them from C7. C9 incorporates peripheral price consciousness with enjoyment as a "don't care" condition, forming a calculative mechanism that prioritizes pricing scrutiny over experiential pleasure. C11, by contrast, treats price consciousness as a "don't care" condition while elevating enjoyment to a peripheral role, yielding an experiential mechanism driven by hedonic pleasure. Acquisitive and ecological motives are not mutually exclusive in the sharing economy. Ride-sharing platforms reconcile these motives through a dual-track value mechanism, providing independent channels for both aspirations.

5.3.4. Robustness checks

Three robustness checks were conducted to validate the fsQCA findings. First, Necessary-Condition Analysis (NCA) was performed to corroborate the necessity findings. Table 10 reports NCA results based on calibrated data, using the ceiling regression (CR) and ceiling envelopment (CE) procedures to estimate necessary effect sizes. A condition is classified as necessary when its effect size ($d \geq 0.1$) is corroborated by a significant permutation test (Dul, 2016). As shown in Table 10, no conditions achieved an effect size of $d \geq 0.1$. No single condition is necessary for high RIRS, corroborating the QCA necessity analysis. Second, the sufficiency analysis was re-estimated using a more conservative PRI threshold (≥ 0.75) (Misangyi and Acharya, 2014). The resulting configurations remained substantively consistent with the baseline, with only minor fluctuations in consistency and coverage scores. Third, to assess sensitivity to the frequency cutoff in the current sample ($N = 730$), the threshold was incrementally raised from 3 to 5. The baseline cutoff of 3 retains 77.4% of cases, aligning with the recommended 75%-80% retention range. Stricter cutoffs produced sparser solutions but preserved the same core configurations across all threshold levels. Intermediate solution coverage shifts modestly from 0.786 to 0.776 and 0.725 as the cutoff increased, while consistency improved from 0.903 to 0.913 and 0.920. Parsimonious solutions converged on an identical set of central causal conditions across all cutoff levels. Collectively, these results confirm that the identified causal configurations are not sensitive to the choice of frequency threshold, establishing the robustness of the baseline findings.

Table 10
Results of necessary-condition analyses (NCA).

Fuzzy-set condition	Method	Accuracy	Ceiling zone	Scope	Effect size (d)	p value
INN	CR	100%	0.000	0.81	0.000	1.000
	CE	100%	0.000	0.81	0.000	1.000
EC	CR	100%	0.008	0.81	0.010	0.047
	CE	100%	0.016	0.81	0.019	0.030
MA	CR	99.9%	0.013	0.81	0.016	0.012
	CE	100%	0.021	0.81	0.025	0.007
PC	CR	99.7%	0.064	0.81	0.079	0.000
	CE	100%	0.078	0.81	0.097	0.000
EV	CR	99.6%	0.051	0.81	0.063	0.000
	CE	100%	0.048	0.81	0.059	0.000
EN	CR	100%	0.022	0.81	0.028	0.000
	CE	100%	0.045	0.81	0.055	0.000
SV	CR	100%	0.000	0.81	0.000	1.000
	CE	100%	0.000	0.81	0.000	1.000
SUS	CR	100%	0.000	0.81	0.000	1.000
	CE	100%	0.000	0.81	0.000	1.000

Note: NCA procedures are taken directly from Dul (2016). NCA analysis with the permutation test (resampling = 10,000).

5.4. Comparing PLS-SEM and fsQCA results

A primary area of convergence lies in the role of perceived value dimensions. PLS-SEM reveals that all four perceived value constructs significantly and positively predict RIRS, with economic value and sustainability emerging as the stronger drivers. fsQCA corroborates that economic value is a core condition in eight configurations and sustainability in five. Economic value and sustainability jointly anchor Pattern 4 (the pattern with the highest core-condition density), while innovativeness serves as the defining core trait of Pattern 1. Environmental consciousness and materialism exhibit comparable convergence. Environmental consciousness forms the core of Pattern 4, consistent with Value-Belief-Norm theory (Stern et al., 1999), while materialism operates as a consistent acquisitive motivator across Pattern 3 and Pattern 4 (e.g., C5, C8, C10, C7, C9, C11).

The most theoretically significant divergences involve constructs whose net-effect insignificance in PLS-SEM belies their configurational centrality in fsQCA, a pattern reflecting the asymmetric causal logic of configurational analysis (Woodside, 2013) rather than genuine methodological contradictions. Innovativeness and materialism are the clearest cases. Despite yielding insignificant path coefficients in PLS-SEM, both constructs play indispensable configurational roles. Innovativeness defines the core individual trait of Pattern 1. Materialism's presence constitutes Pattern 3 and co-anchors Pattern 4, while its absence equally defines Pattern 2. This bidirectional causal relevance is explicable in terms of INUS causality (Insufficient but Necessary parts of Unnecessary but Sufficient) (Mackie, 1965), which holds that each construct influences the outcome only conjunctively, its net effect suppressed when PLS-SEM averages across heterogeneous consumer segments. This finding challenges the prevailing assumption that materialism is inherently antagonistic to collaborative consumption (Belk, 2007). When combined with high environmental consciousness or price consciousness, materialist consumers can become active advocates of ride-sharing.

Taken together, PLS-SEM identifies which variables matter on average and to what degree, while fsQCA reveals for whom and under what combinatorial conditions they operate. A complete account of RIRS requires both analytical lenses.

6. Discussion and implications

This study makes three contributions to the literature. First, we advance research on ride-sharing by developing an integrative model of RIRS that illustrates its formation mechanisms. Second, by integrating consumer traits and perceived value, a combination rarely examined in sharing economy research, we reveal how inherent consumer attributes shape RIRS through both direct and configurational pathways. Third, methodologically, the integration of symmetric (PLS-SEM) and asymmetric (fsQCA) approaches enriches the analytical toolkit available to sharing economy research and broadens the field's methodological scope. The findings confirm that RIRS follows complex combinatorial logic rather than single-variable determinism.

The PLS-SEM results indicate that innovativeness has no significant direct effect on RIRS, consistent with Lee and Wong (2021) but inconsistent with Ha et al. (2026). This suggests that in markets where ride-sharing has reached broad consumer awareness, innovativeness may no longer function as a differentiating driver; rather, it operates as

an upstream activator in the causal chain, facilitating RIRS in conjunction with other antecedents. Prior research on environmental consciousness and recommendation intention has yielded inconsistent findings across cultural contexts. The present study confirms a positive effect of environmental consciousness on RIRS among Chinese consumers, consistent with Ha et al. (2026). Environmental consciousness manifests as a positive driver because RIRS functions as a form of value advocacy for green mobility. However, the negligible effect size suggests that environmental consciousness is a significant but non-dominant antecedent, whose impact may depend on consumers' capacity to translate abstract environmental beliefs into concrete behavioral endorsement, requiring configurational or mediating mechanisms (Zhang and Li, 2020). Prior research on materialism has yielded inconsistent findings, with results varying by conceptualization, industry type, and context. This study finds that materialism has a positive but non-significant effect on RIRS among Chinese consumers. This finding extends Ni's (2021) conclusions. Although ride-sharing satisfies instrumental rather than possessive materialistic needs, materialism may be positively associated with consumer attitudes without directly predicting RIRS. The formation of RIRS likely requires configurational support from other antecedent conditions. This study confirms that price consciousness positively influences RIRS, consistent with Lee and Wong's (2021) finding that price consciousness is positively associated with WOM in ride-hailing. This study extends this perspective to ride-sharing and supplements the empirical base with evidence from Chinese consumers.

All four perceived value dimensions significantly and positively predict RIRS, supporting the established view that perceived value constitutes the most proximal driver of recommendation (Ha et al., 2026). The positive effect of economic value aligns with the meta-analytic evidence reported by Ladeira et al. (2026). In the Chinese ride-sharing context, economic value directly translates into recommendation behavior without requiring mediating channels such as consumer reflexivity (Li et al., 2024), as perceived value-for-money inherently lends itself to social dissemination. The positive effect of enjoyment aligns with WOM research by Barnes and Mattsson (2017) and Lee and Wong (2021). However, its negligible effect size suggests that enjoyment functions as a complementary reinforcement rather than a dominant driver in the predominantly utilitarian context of mobility-sharing. The positive effect of social value aligns with the mainstream literature (Akel and Bayir, 2025) but contrasts with Lee and Wong's (2021) non-significant findings in ride-hailing. Ride-sharing and ride-hailing differ structurally in their degree of social embeddedness, which accounts for this divergence. In a ride-sharing scenario involving direct social contact, social value translates naturally into recommendation intention, as the act of recommending extends this social utility to others. Finally, the findings on sustainability carry notable theoretical implications, offering a counterpoint to the prevailing view that sustainability's direct effect on behavioral intention is inconsistent and operates primarily through indirect pathways (Li et al., 2025a). This divergence reflects a fundamental distinction between recommendation intention and general behavioral intention. Recommendation is both an extension of consumption decisions and an outward expression of value identification. Sustainability's inherent communication appeal strengthens its direct influence on the expressive, social act of recommendation relative to more inward behaviors such as usage or continuance intention. In the ride-sharing context, recommendation intention is primarily driven by value perceptions. Economic value and sustainability emerge as the dual dominant drivers, while social value and enjoyment constitute a supplementary support layer. This structure reflects the composite nature of ride-sharing as a multi-dimensional service integrating utilitarian, ecological, social, and experiential attributes.

The fsQCA results not only corroborate findings from the PLS-SEM analysis but also reveal that relationships unsupported in PLS-SEM may retain configurational validity within specific causal combinations. First, fsQCA corroborates the positive effects of environmental consciousness, price consciousness, economic value, enjoyment, social value, and sustainability on RIRS. The multiple configurations involving these six antecedents, characterized by high consistency and coverage, corroborate the PLS-SEM findings and provide complementary insights into their synergistic effects. Second, fsQCA reveals that innovativeness and materialism, while individually insignificant, can form causal configurations leading to high RIRS under specific antecedent combinations. The configurational role of innovativeness aligns with Wang and Jeong's (2018) proposition that innovativeness serves as an antecedent of perceived ease of use, perceived usefulness, and trust. This study further demonstrates that innovativeness operates in close conjunction with perceived value, and their combination generates multiplicative configurational effects. Prior literature has consistently documented a negative association between materialism and pro-sharing outcomes (e.g., Yin et al. (2018); Lindblom et al. (2018); Lang and Joyner Armstrong (2018)). This study refines this understanding by identifying two complementary configurational directions. On the one hand, the co-presence of materialism with other consumer traits in Patterns 3 and 4 constitutes sufficient conditions for high RIRS, extending Ni's (2021) finding that materialism positively affects consumer attitudes toward collaborative consumption. On the other hand, the absence of materialism functions as an equally constitutive configurational condition. De-materialization does not merely reduce attachment to private ownership but actively restructures the motivational architecture of collaborative consumption, shifting decisional logic from utilitarian calculation toward experiential and ethical imperatives. Materialism's relationship with RIRS is neither uniformly negative nor uniformly positive, but deeply contingent on its configurational context, a complexity that net-effects approaches are structurally unable to capture.

6.1. Theoretical and methodological implications

First, this study advances theory by extending prior work that has predominantly examined consumer traits and perceived value as separate antecedent categories, rather than jointly within a single configurational framework. This integrative approach opens avenues for future research, including examining synergistic interactions among other factor categories and exploring how diverse variable combinations shape additional outcome measures.

Second, this study adopts an integrated analytical approach combining PLS-SEM and fsQCA. Existing empirical research in the sharing economy predominantly relies on single-method SEM designs, consequently overlooking the synergistic effects among antecedents. Addressing this gap, the present study incorporates fsQCA to complement PLS-SEM. This dual-method design serves two objectives: (1) establishing direct effect relationships and (2) uncovering the sufficient configurational conditions through which antecedent combinations jointly produce high RIRS. This approach strengthens methodological rigor by overcoming the inherent limitations of single-method designs. In particular, fsQCA captures the configurational complexity arising from multiple concurrent causal pathways.

Finally, this study focuses on RIRS as the outcome variable. As a central consumer metric in the sharing economy, recommendation intention is closely linked to constructs such as attitude, trust, and behavioral intention. Yet this construct has received surprisingly limited empirical attention. By employing a dual-method framework with eight antecedents, this study develops a comprehensive model of RIRS. The study provides empirical evidence on the mechanisms underlying recommendation intention and the configurational conditions that produce it in the ride-sharing context. The theoretical contributions extend beyond the immediate context of ride-sharing. The findings offer transferable insights for subsequent research on related variables in the sharing economy, and the dual-method framework may inform future studies adopting similar integrative designs.

6.2. Practical implications

The findings carry practical implications for sharing economy platforms and service providers. First, sustainability demonstrates the largest effect size among all antecedents of RIRS. Ride-sharing platforms should position sustainability as a core brand narrative by communicating alignment with the circular economy and pursuing authoritative environmental certifications or partnerships. Economic value and price consciousness jointly reflect users' heightened sensitivity to cost transparency. Ride-sharing platforms should therefore maintain competitive and transparent pricing structures, introduce referral reward schemes that make economic benefits tangible at the point of recommendation, and deploy dynamic pricing communications that frame cost savings relative to alternatives.

Social value, enjoyment, and environmental consciousness also exert significant positive effects on RIRS. Ride-sharing platforms should foster positive social interactions, enhance the hedonic and novel elements in service design, and communicate the environmental credentials of their services. For instance, user matching could extend beyond proximity to incorporate shared interests, demographic similarity, and lifestyle preferences, thereby increasing social resonance. Light gamification elements, such as "City Map Unlocked" features that reward exploration of new locations, can encourage users to discover new destinations and service types. Mission-oriented storytelling can resonate with consumers' pre-existing environmental values.

The fsQCA reveals that the user population is heterogeneous. Four distinct consumer archetypes coexist, each requiring a differentiated engagement strategy. The "Pragmatic Innovators" are primarily driven by openness to new mobility solutions and perceived economic value. Platforms can identify this segment through behavioral indicators (e.g., high early adoption of new carpooling or payment models, moderate price sensitivity, and frequent multi-modal trials), and should communicate evidence-based messages that ride-sharing outperforms traditional mobility options. Within this archetype, however, environmental consciousness meaningfully shapes how value propositions should be communicated. For the broader innovative sub-segment (C1), platforms may design integrated ride packages that simultaneously deliver economic value (e.g., discounts), enjoyment (e.g., selected vehicles), social value (e.g., carpooling scenarios), and sustainability (e.g., carbon emission data). For environmentally sensitive sub-segments (C2, C6), platforms should further assess their materialism orientation before tailoring communications. For consumers with low-materialism, platforms should foreground carbon emission metrics and fuel savings rather than material upgrade appeals (e.g., luxury model upgrades) or price-based savings. For consumers with mild acquisitive orientations, platforms can frame messaging around "accessing previously unattainable experiences through sharing" rather than overemphasizing sustainability.

The "Hedonic Minimalists" are characterized by a de-materialist orientation and are primarily motivated by enjoyment and sustainability values. Platforms can identify this segment through behavioral indicators, including frequent use of sustainability features (e.g., carbon emission inquiries and electric vehicle selection), low willingness to upgrade to premium vehicles, and greater responsiveness to new experiential services than to discounts. Marketing positioning for this segment should contrast sharply with that of Savvy Material Hedonists, avoiding consumption-expansion appeals in favor of meaningful experiences and sustainable choices. Within this archetype, for highly de-materialistic consumers (C3), platforms should cultivate non-transactional engagement in which recommendation is activated through identity affirmation rather than instrumental rewards. Experiential offerings, such as scenic route rides, quiet commuting cabins, and new-energy vehicle trials, combined with symbolic non-material incentives (e.g., annual sustainable travel certificates) can effectively stimulate recommendation intention. For moderately de-materialist consumers (C4), utilitarian motives remain active alongside hedonic and sustainability drivers. Platforms should lead with experiential quality while supplementing communications with cost-efficiency cues that validate the economic rationality of platform adoption. Sustainability messaging should be framed experientially rather than statistically, and modest incentives tied to experiential rewards remain a viable mechanism for activating recommendations.

The "Savvy Material Hedonists" are primarily driven by materialism, price consciousness, and enjoyment. Once identified, through indicators such as high promotion responsiveness, frequent peak-hour carpooling, and flexible vehicle upgrading behavior ("upgrade with discounts, downgrade at regular prices"), this segment should be positioned as adherents of a savvy hedonistic lifestyle. For the standard sub-segments (C5 and C10), innovativeness is only a peripheral condition and aggregate economic value is largely disregarded, meaning recommendation intention is anchored in trip-level cost-performance rather than holistic value comparisons. Platforms should implement real-time cost-performance communication. For instance, post-ride summaries displaying "Listed: X yuan, Paid: Y yuan, Saved: Z yuan" and vehicle selection pages showing "Premium model costs only X yuan more than the economy model" can reinforce perceived cost-effectiveness. As social value operates only as a peripheral condition for these sub-segments, lightweight social features (e.g., a carpool partner rating system) suffice without requiring extensive community-building infrastructure. For the high-innovativeness sub-segment (C8), platforms should design product lines that deliver high value-for-money, such as early-access to newly launched carpooling models, dynamic price-comparison tools, and exclusive membership tiers bundling priority vehicle access with quarterly cost-performance reports. Unlike C5 and C10, aggregate economic value, not merely trip-level savings, constitutes a core motivator for this sub-segment, and communications should accordingly frame ride-sharing as a strategically superior mobility choice rather than a simple promotional bargain.

The "Eco-Material Pragmatists" are primarily driven by environmental consciousness, materialism, economic value, and sustainability. Once identified, through concurrent use of sustainability features and premium vehicle options, this segment should be engaged through a dual-enablement positioning that frames ride-sharing as allowing consumers to access desirable experiences while contributing to environmental goals. For the high-innovativeness sub-segment (C7), platforms should offer economically justified, eco-oriented products and communications. Effective offerings may include priority access to a green innovation fleet (e.g., newly introduced electric SUVs and hybrid MPVs), AI-generated carbon-optimized route reports, and annual low-carbon mileage certificates. For consumers with no clear signals of innovativeness and mild price consciousness (C9), social value replaces innovativeness as the fifth core condition, while hedonic value is explicitly ignored. Platforms should design community-based sustainable carpooling products (e.g., commuter ride-sharing groups, neighborhood travel plans) with transparent pricing, while avoiding entertainment-focused or hedonic communications. For consumers with neither clear signals of innovativeness nor price sensitivity (C11), social value similarly serves as the fifth core condition. Unlike C9, however, enjoyment is treated as a peripheral condition, while price consciousness is treated as "don't care". Platforms should design premium community mobility offerings for this sub-segment, such as themed carpools, community travel events, and green premium vehicles.

6.3. Limitations and future directions

This study makes several contributions to the sharing economy literature; nonetheless, a number of limitations warrant acknowledgment. First, the study is confined to China's ride-sharing context and adopts a single-sided consumer perspective. Future studies should adopt dual-perspective frameworks integrating consumer and platform viewpoints, and conduct cross-cultural comparisons across diverse mobility markets to enhance generalizability.

Second, the antecedents were derived primarily from existing mobility-sharing literature, without employing qualitative methods, such as in-depth interviews or text mining, to identify context-specific or emerging predictors. This may limit the comprehensiveness and theoretical scope of the research model. Future research could integrate quantitative analysis with qualitative evidence from user interviews and online review mining to uncover latent factors shaping RIRS.

Third, despite the use of multiple sampling approaches, full sample representativeness cannot be guaranteed, potentially limiting external validity. The cross-sectional design further precludes causal inference and the detection of dynamic changes in RIRS over time. Future research should employ stratified random sampling based on regional, demographic, and behavioral attributes, or collect longitudinal multi-wave data to track temporal changes in RIRS.

Fourth, although three complementary procedures were employed to assess common method bias, no theoretically grounded marker variable was embedded in the survey instrument at the data-collection stage. Future studies should embed an appropriate marker variable during questionnaire development, enabling more rigorous post-hoc assessment of common method bias and strengthening confidence in the structural estimates.

Fifth, the fsQCA calibration relied predominantly on a sample-distribution-based strategy. Although widely adopted in prior research, this approach lacks theoretical grounding. Future research should integrate theoretical criteria, contextual benchmarks, and domain knowledge to establish more theoretically grounded calibration thresholds, thereby enhancing the interpretability and replicability of fsQCA results.

Finally, while fsQCA identifies differentiated consumer profiles and informs targeted managerial recommendations, platform-level behavioral data were not accessible to the research team, which limits the ability to triangulate self-reported configurations against actual usage records. Future research should integrate objective platform records, such as usage patterns and booking trajectories, with fsQCA configurational findings.

CRediT authorship contribution statement

Yi Ding: Data curation, Formal analysis, Methodology, Software, Validation, Visualization. **Eldon Y. Li:** Conceptualization, Formal analysis, Funding acquisition, Visualization, Writing – review & editing. **Xiucheng Fan:** Conceptualization, Funding acquisition, Investigation, Supervision, Validation, Visualization. **Jiang Jiang:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Jiang Jiang reports financial support was provided by Humanities and Social Science Research Youth Foundation Project of the Ministry of Education of China. Xiucheng Fan reports financial support was provided by National Natural Science Foundation of China. Eldon Y. Li reports financial support was provided by National Science and Technology Council of Taiwan. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendices.

Table A1
Main empirical studies on recommendation intention in the sharing economy

Classification of variables	Independent variable	Author(s)	Context(s)	Method(s)	Main conclusion
Value perception	Overall perceived value or benefits	Ha et al. (2026)	Ride-hailing	SEM	· Perceived value positively impacts WOM.
		Shao et al. (2022)	Ride-sharing	SEM	· Perceived benefit is positively related to positive WOM.
		Lee and Wong (2021)	Ride-hailing	SEM	· Perceived value is positively related to WOM.
		Tsai et al. (2017)	Accommodation-sharing	SEM	· The path is statistically significant concerning the link from consumer perceived value to WOM.
	Economic benefits	Ladeira et al. (2026)	No specific context	Meta-analysis	· Economic benefits are significantly associated with WOM.
		Do and Pereira (2023)	Accommodation-sharing	SEM	· Monetary benefit effectively increases traditional WOM, but not eWOM.
	Social benefits	Ladeira et al. (2026)	No specific context	Meta-analysis	· Social benefits have a significant effect on WOM.
		Do and Pereira (2023)	Accommodation-sharing	SEM	· Social benefit positively relates to eWOM, but not traditional WOM.
		Wu et al. (2023)	Accommodation-sharing	SEM	· Commercial friendship correlates with guest citizenship behaviors.
	Enjoyment	Barnes and Mattsson (2017)	Car-sharing	PLSPM	· Feelings of enjoyment are positively associated with intention to recommend.
		Do and Pereira (2023)	Accommodation-sharing	SEM	· Hedonic benefits have no significant effects on both traditional and electronic WOM.
	Sustainability	Ladeira et al. (2026)	No specific context	Meta-analysis	· Environmental benefits have a significant effect on WOM.
		Do and Pereira (2023)	Accommodation-sharing	SEM	· Sustainable value has no significant effects on both traditional and electronic WOM.

(*continued on next page*)

Table A1 (*continued*)

Classification of variables	Independent variable	Author(s)	Context(s)	Method(s)	Main conclusion
	Perceived usefulness	Do and Pereira (2023)	Accommodation-sharing	SEM	· Functional value is positively associated with traditional WOM, but not eWOM.
		Lee and Wong (2021)	Ride-hailing	SEM	· Perceived usefulness is positively related to WOM in ride-hailing.
		Barnes and Mattsson (2017)	Car-sharing	PLSPM	· Perceived usefulness is positively related to intention to recommend.
	Experiential value	Zhu et al. (2023)	Accommodation-sharing	Text mining, sentiment analysis, and regression	· Educational experience, escapist experience, and entertainment experience are positively associated with recommendation intention. · Participants' experiences with hosts positively moderate the positive relationship between educational experience and recommendation intention.
Risk/cost perception	Perceived Risk	Shao et al. (2022)	Ride-sharing	SEM	· Perceived risk is negatively related to WOM.
	Perceived safety risk	Lee and Wong (2021)	Ride-hailing	SEM	· Perceived safety risk is negatively related to WOM in ride-hailing.
Consumer traits	Personal innovativeness	Ha et al. (2026)	Ride-hailing	SEM	· Personal innovativeness positively impacts WOM.
		Lee and Wong (2021)	Ride-hailing	SEM	· Personal innovativeness has no significant effect on WOM.
	Price consciousness	Lee and Wong (2021)	Ride-hailing	SEM	· Price consciousness is positively related to WOM in ride-hailing.
	Environmental consciousness	Ha et al. (2026)	Ride-hailing	SEM	· Environmental consciousness positively impacts WOM.
		Lee and Wong (2021)	Ride-hailing	SEM	· Environmental consciousness negatively related to WOM
	Previous experience	Giglio et al. (2023)	No specific context	SEM and fsQCA	· Previous experience is positively associated with the intention to recommend using collaborative services.
	Prosumer status	Giglio et al. (2023)	No specific context	SEM and fsQCA	· Having a prosumer status increases the intention to recommend.
Relationship quality	Trust	Huang et al. (2024)	Accommodation-sharing	SEM	· Trust in the platform is positively related to customer identification, which further promotes positive WOM.
		Alamoudi et al. (2023)	Ride-sharing	SEM	· Institutional trust increases users' intention to recommend the platform.
		Barnes and Mattsson (2017)	Car-sharing	PLSPM	· Trust is positively related to intention to recommend.
		Kong et al. (2020)	Accommodation-sharing	SEM	· Trust positively influences consumers' willingness to disseminate positive WOM on Airbnb.
	Satisfaction	Barbhuiya and Bansal (2026)	Accommodation-sharing	SEM and NCA	· Satisfaction serves as a necessary but not sufficient condition for positive eWOM. · A trusted platform and active host response positively moderate the link between satisfaction and positive eWOM.
		Alarcon-del-Amo et al. (2024)	Accommodation-sharing	SEM	· Satisfaction positively and significantly influences eWOM recommendation
		Do and Pereira (2023)	Accommodation-sharing	SEM	· Consumer satisfaction positively impacts traditional and electronic WOM intention.
	Airbnb likability	Akarsu et al. (2020)	Accommodation-sharing	SEM	· Airbnb likability positively influences intention to recommend.
	Place Attachment	Xu and Gursoy (2020)	Accommodation-sharing	SEM	· Place identity has a significant impact on intention to recommend. · Place affect has a significant impact on intention to recommend.
	Engagement	Alarcon-del-Amo et al. (2024)	Accommodation-sharing	SEM	· Engagement with the brand of a collaborative housing platform will directly and positively affect the user's eWOM.
Interaction quality with the platform	Perceived ease of use	Lee and Wong (2021)	Ride-hailing	SEM	· Perceived ease of use is positively related to WOM in ride-hailing.
Interaction quality with peers	Unequal review effort exchange	Harrison-Walker and Mead (2025)	Accommodation-sharing	Experiments	· Receiving an unequal review effort exchange can cause perceived inequity, leading to increased cognitive dissonance, which may further result in negative WOM toward home-sharing services.
	Host	Zhu et al. (2021)	Accommodation-sharing	Text mining and regression	· The guests' sentiment ratings for hosts and amenities have significant impacts on the guests' recommendations, whereas location only influences the private-room guests' recommendations.

Table A2
Main empirical studies on consumer traits in the mobility-sharing context

Author(s) (year)	Context	Method	Focused consumer traits											Main conclusions
			INN	EC	MA	PC	SO	FO	GNO	NOO	FC	SE	PR	
Ha et al. (2026)	Ride-hailing	SEM	✓	✓										Both personal innovativeness and environmental consciousness positively impact WOM.
Jang et al. (2026)	Ride-sharing	HCM		✓									✓	Environmental consciousness has a significantly positive effect on willingness to ride-sharing (WTRS); privacy concerns are negatively associated with WTRS.
Roos (2026)	Car-sharing	Regression		✓										Most environmental attitudes, including general environmental concern and support for reducing car use, did not significantly differ (p between car sharers and non-car sharers and had a limited effect on car-sharing use.
Akel and Bayir (2025)	Car-sharing	SEM											✓	Privacy concern negatively affects continuance usage intention towards car-sharing services.
Shah and Hisashi (2025)	Ride-sharing	SEM	✓	✓										User innovativeness significantly positively influences perceived ease of use, trust, and attitude towards ride-sharing services. Users with higher environmental awareness hold a more positive attitude towards ridesharing services.
Małecka et al. (2022)	CC including ride-sharing	SEM	✓				✓							The effects of novelty seeking and sociability on the perceived usefulness of collaborative consumption are significant.
Fauzi and Sheng (2021)	Ride-hailing	SEM	✓											The direct effect of personal innovativeness on continuance intention toward ride-hailing services is insignificant; it operates through the full mediation of perceived hedonic and utilitarian value.
Lee and Wong (2021)	Ride-hailing	SEM	✓	✓		✓								Price consciousness significantly affects word of mouth, whereas personal innovativeness and environmental consciousness do not.
Ni (2021)	CC including ride-sharing	SEM	✓		✓			✓	✓	✓				Novelty orientation, materialism, frugality orientation, guanxi networking orientation, and non-ownership orientation positively affect the attitude towards collaborative consumption.
Sofi et al. (2021)	Carpooling	SEM										✓		Self-efficacy contributes to the formation and adoption of a favorable attitude towards carpooling.
Hahn et al. (2020)	Car-sharing	HLM				✓								Price consciousness does not have a significant direct effect on usage intention. However, in the interaction analysis, a significant interaction effect was found between price consciousness and the price model. This suggests that consumers with higher price consciousness prefer a monthly fee (fixed cost) model to a purely usage-dependent fee model.
Wang et al. (2020)	Ride-sharing	SEM	✓	✓										Personal innovativeness positively affects perceived ease of use, perceived usefulness, and behavioral intention and negatively affects perceived risk. Environmental awareness positively affects behavioral intention.
Zhang and Li (2020)	Car-sharing	SEM		✓										Environmental concern significantly affects Chinese college students' attitudes, subjective norms, and perceived behavioral control toward carsharing, but has no significant direct effect on their intention to use it.
Davidson et al. (2018)	Ride-sharing				✓									For American consumers, materialism positively influences willingness to participate through transformation expectations rather than perceived utility; for Indian consumers, materialism positively influences willingness to participate through perceived utility rather than transformation expectations. Materialism does not inherently oppose sharing; its pathway of influence depends on the cultural context.
Yin et al. (2018)	Bicycle-sharing	SEM			✓						✓			Materialism had negative effects on teleological evaluation, which, in turn, influenced the intention to adopt the public bicycle-sharing scheme. Face-consciousness has significant direct and indirect effects on adoption intention through deontological evaluation.
Zhu et al. (2017)	Ride-sharing and ride-hailing	PLS-PM										✓		Although adoption intention has no direct relationship with self-efficacy, the antecedents of perceived value and attitude are jointly influenced by self-efficacy.

Notes: INN = Innovativeness; EC = Environmental Consciousness; MA = Materialism; PC = Price Consciousness; SO = Sociability; FO = Frugality Orientation; GNO = Guanxi Networking Orientation; NOO = Non-ownership Orientation; FC = Face Consciousness; SE = Self-efficacy; PR = Privacy Concerns.

Table A3
Main empirical studies of perceived value in the mobility-sharing context

Author(s) (year)	Context	Method	Focused perceived values								Main conclusions
			EV	SV	EN	SUS	CON	INV	FV	EX	
Ben Arfi et al. (2026)	Ride-hailing and ride-sharing	SEM	✓			✓	✓	✓			Cost savings, environmental impact, and trend affinity are significant antecedents for consumer well-being; service quality does not.
Jang et al. (2026)	Ride-sharing	HCM	✓								Economic benefits have a positive coefficient on willingness to use ride-sharing, but the effect is not statistically significant.
Abu Khalek and Chakraborty (2025)	Car-sharing	ANOVA and SEM	✓								The decline in long-term economic value assessment is the core driver of consumer resistance to carsharing. It triggers anticipated regret and status quo bias, forming a psychological pathway of "low value-regret-conservatism-resistance."
Akel and Bayir (2025)	Car-sharing	SEM		✓		✓			✓		Both the direct effects of functional value and green value on attitude toward car-sharing and the indirect effects through perceived ease of use and usefulness are positively significant. Green value directly and indirectly influences attitude through perceived ease of use.
Chen and Zhou (2025)	Ride-sharing	SEM		✓	✓	✓			✓		Hedonic value, social connection value, and environmental value significantly and positively influence cognitive fit and emotional fit, which further promotes satisfaction and continuance intention. Utilitarian value has no significant effect on either cognitive or emotional fit, but it directly and significantly increases consumer satisfaction.
Li et al. (2025a)	Car-sharing	SEM	✓			✓				✓	Perceived cost and novel experience have significant positive effects on behavioral attitude and intention to use, whereas environmental value has no significant effect.
Li et al. (2024)	Sharing schemes include ride-hailing and ride-sharing	SEM, regression, and ANOVA	✓	✓		✓					The perceived economic utility, social value, and sustainability potential of sharing practices have a significant positive effect on consumer reflexivity, which, in turn, has a significant positive effect on re-engagement intention.
Mattia et al. (2022)	ride-sharing	SEM	✓	✓		✓					The effects of environmental and socialization benefits on intention to use are significant, whereas economic benefits have no significant effect.
Oliveira et al. (2022)	Digital platforms include car and ride-sharing	PLS-PM	✓	✓	✓	✓					Economic benefits and enjoyment exert positive, statistically significant effects on use behavior in the sharing economy, whereas sustainability has a negative effect. Sense of community exerts a positive influence on use behavior, but the effect is not statistically significant.
Fauzi and Sheng (2021)	Ride-hailing	SEM			✓				✓		Perceived hedonic and utilitarian value are effective drivers of continuance intention.
Lee and Wong (2021)	Ride-hailing	SEM	✓	✓	✓		✓				Economic, emotional, and technical value effectively predict WOM, whereas social value has an insignificant effect.
Arteaga-Sanchez et al. (2020)	Ride-sharing	SEM	✓	✓		✓					Economic benefits significantly and positively affect intention. Social value and environmental impact positively affect satisfaction with the ride-sharing service.
Hou et al. (2020)	Ride-sharing	Interviews and SEM	✓								Explicit cost is positively associated with trust.
Boateng et al. (2019)	Ride-hailing and ride-sharing	SEM		✓			✓				Social connection does not influence riders' usage of Uber services. The use of an Uber taxi is significantly influenced by search convenience.
Wang et al. (2019)	Ride-sharing	SEM		✓	✓						Consumers' perceptions of hedonic and social value are a significant component of perceived value and positively affect consumers' willingness to use ride-sharing services.
Lee et al. (2018)	Ride-hailing and ride-sharing	SEM	✓		✓						Users' perceived benefits, including economic rewards and enjoyment, are positively associated with their intention to participate in the sharing economy.
Barnes and Mattsson (2017)	Car-sharing	SEM		✓	✓	✓					Feelings of enjoyment are positively associated with renting intention and intention to recommend. Social and environmental benefits significantly explain perceived usefulness, which, in turn, determines renting intention in collaborative consumption.

(*continued on next page*)

Table A3 (*continued*)

Author(s) (year)	Context	Method	Focused perceived values								Main conclusions
			EV	SV	EN	SUS	CON	INV	FV	EX	
Zhu et al. (2017)	Ride-sharing	PLS-PM		✓	✓				✓		Perceived emotional, functional, and social value are positively related to the perceived value of the ridesharing application.
Möhlmann (2015)	Car-sharing	SEM	✓	✓		✓		✓			Cost savings are found to have a positive effect on satisfaction, but not on the likelihood of choosing again. Community belonging significantly affects the likelihood of choosing again, but does not affect satisfaction. Environmental impact and trend affinity have no significant effects on satisfaction and the likelihood of choosing again.

Notes: EV = Economic Value; SV = Social Value; EN = Enjoyment; SUS = Sustainability; CON = Convenience; INV = Innovative Value; FV =Functional Value; EX = Experiential Value.

Table A4
Constructs and items with sources

Constructs and measurement items
Innovativeness – Adapted from Agarwal and Prasad (1998)
INN1: If I heard about a new information technology, I would look for ways to experiment with it.
INN2: Among my peers, I am usually the first to try out new information technologies.
INN3: I like to experiment with new information technologies.
INN4: In general, I am hesitant to try out new information technologies. [a]
Environmental consciousness – Adapted from Haws et al. (2014) **and** Lee and Wong (2021)
EC1: I consider the potential environmental impact of my actions when making many of my decisions.
EC2: It is important to me that the services I use do not harm the environment.
EC3: My purchase habits are affected by my concern for our environment.
EC4: I am concerned about wasting the resources of our planet.
EC5: I am willing to be inconvenienced in order to take actions that are more environmentally friendly.
Materialism – Adapted from Richins and Dawson (1992) **and** Ni (2021)
MA1: The things I own say a lot about how well I am doing in life.
MA2: I admire people who own expensive houses, cars, and clothes.
MA3: I would be happier if I could afford to buy more things.
MA4: I like a lot of luxury in my life.
MA5: I like to own things that impress people.
Price consciousness – Adapted from Lindblom et al. (2018) **and** Alford and Biswas (2002)
PC1: I check prices, even for inexpensive items, before buying.
PC2: Low price is an important consideration in my purchases.
PC3: No matter what I buy, I shop around to get the lowest price.
PC4: I am not willing to make extra effort to find lower prices. [a]
Economic value – Adapted from Hamari et al. (2016)
EV1: I can save money by using ride-sharing services.
EV2: My participation in ride-sharing services benefits me financially.
EV3: My participation in ride-sharing services can improve my economic situation.
Enjoyment–Adapted from Hamari et al. (2016)
EN1: I think ride-sharing services are enjoyable.
EN2: I think ride-sharing services are fun.
EN3: I think ride-sharing services are interesting.
Social value–Adapted from Lee and Wong (2021) **and** Arteaga-Sanchez et al. (2020)
SV1: Ride-sharing services help me make new friends.
SV2: Ride-sharing services allow me to meet interesting people.
SV3: Ride-sharing services allow me to be accompanied on my trip.
Sustainability–Adapted from Hamari et al. (2016) **and** Arteaga-Sanchez et al. (2020)
SUS1: Ride-sharing services help save natural resources.
SUS2: Ride-sharing services are environmentally friendly.
SUS3: Ride-sharing services are a sustainable mode of consumption.
Recommendation intention–Adapted from Barnes and Mattsson (2017)
RI1: I would recommend ride-sharing services that I frequently use to my friends.
RI2: I am likely to spread positive WOM about the ride-sharing services I frequently use across various online platforms.

Note.
[a] indicates the reversed items.

Table A5
Assessment of common method bias: Comparison of Substantive and method variance

Construct	Indicator	Substantive Factor Loading	R1[a]	Method Factor Loading	R2[b]
Innovativeness (INN)	INN1	0.859***	0.7379	0.07*	0.0049
	INN2	0.814***	0.6626	0.001	0.0000
	INN3	0.864***	0.7465	−0.04	0.0016
	INN4	0.772***	0.5960	−0.035	0.0012
Environmental consciousness (EC)	EC1	0.826***	0.6823	0.097*	0.0094
	EC2	0.787***	0.6194	−0.135**	0.0182
	EC3	0.793***	0.6288	−0.027	0.0007
	EC4	0.797***	0.6352	−0.053	0.0028
	EC5	0.751***	0.5640	0.117*	0.0137
Materialism (MA)	MA1	0.729***	0.5314	0.061	0.0037
	MA2	0.822***	0.6757	−0.019	0.0004
	MA3	0.68***	0.4624	−0.147***	0.0216
	MA4	0.776***	0.6022	−0.022	0.0005
	MA5	0.697***	0.4858	0.127**	0.0161
Price consciousness (PC)	PC1	0.817***	0.6675	0.009	0.0001
	PC2	0.769***	0.5914	−0.081*	0.0066
	PC3	0.816***	0.6659	0.117***	0.0137
	PC4	0.717***	0.5141	−0.057	0.0032
Economic value (EV)	EV1	0.897***	0.8046	0.014	0.0002
	EV2	0.891***	0.7939	0.073*	0.0053
	EV3	0.854***	0.7293	−0.092**	0.0085
Enjoyment (EN)	EN1	0.895***	0.8010	0.022	0.0005
	EN2	0.913***	0.8336	−0.009	0.0001
	EN3	0.846***	0.7157	−0.013	0.0002
Social value (SV)	SV1	0.909***	0.8263	0.017	0.0003
	SV2	0.915***	0.8372	−0.052*	0.0027
	SV3	0.896***	0.8028	0.036	0.0013
Sustainability (SUS)	SUS1	0.878***	0.7709	0.083**	0.0069
	SUS2	0.881***	0.7762	−0.039	0.0015
	SUS3	0.867***	0.7517	−0.045	0.0020
Recommendation intention (RIRS)	RI1	0.914***	0.8354	−0.05	0.0025
	RI2	0.915***	0.8372	0.05	0.0025
Average		0.8299	0.6933	−0.0007	0.0048

*p < 0.05; **p < 0.01; ***p < 0.001.
[a] $R1^2$ = Substantive variance = Square of substantive factor loading.
[b] $R2^2$ = Method variance = Square of method factor loading.

Table A6
Truth table

INN	EC	MA	PC	EV	EN	SV	SUS	Number	RIRS	RAW consist.	PRI consist.	SYM consist.
1	1	0	1	1	1	1	1	11	1	0.9835	0.9014	0.9014
1	1	1	0	1	1	1	1	19	1	0.9795	0.8983	0.8983
0	1	1	1	1	1	1	1	8	1	0.9839	0.8826	0.8826
1	1	0	0	1	1	1	1	5	1	0.9818	0.8790	0.8790
1	1	1	1	1	1	1	0	19	1	0.9759	0.8781	0.8869
1	1	1	1	1	1	1	1	150	1	0.9563	0.8613	0.9109
1	1	1	1	0	1	1	1	11	1	0.9766	0.8543	0.8570
1	0	1	1	1	1	1	1	5	1	0.9802	0.8472	0.8472
0	1	0	1	1	1	1	1	12	1	0.9788	0.8334	0.8334
0	1	1	0	1	1	1	1	4	1	0.9797	0.8317	0.8435
1	1	1	0	1	1	1	0	5	1	0.9751	0.8207	0.8207
0	1	1	1	1	0	1	1	3	1	0.9817	0.7935	0.7935
1	0	1	0	1	1	1	1	5	1	0.9751	0.7934	0.7934
1	0	0	1	1	1	1	1	6	1	0.9747	0.7869	0.7926
1	1	1	1	1	0	0	1	4	1	0.9789	0.7793	0.7793
1	1	1	1	0	1	1	0	3	1	0.9653	0.7659	0.7659
1	0	0	0	1	1	1	1	9	1	0.9699	0.7615	0.7615
1	1	0	0	1	0	1	1	4	1	0.9781	0.7590	0.7590
1	0	1	1	1	1	0	1	4	1	0.9743	0.7437	0.7497
0	0	0	1	1	1	1	1	10	1	0.9716	0.7392	0.7392
1	1	0	0	0	1	1	1	4	1	0.9718	0.7353	0.7353
1	0	1	1	0	1	1	1	3	1	0.9714	0.7202	0.7202
0	0	0	0	1	1	1	1	9	0	0.9639	0.6950	0.6950
1	0	1	0	0	1	1	1	3	0	0.9697	0.6732	0.6732
0	1	0	1	1	0	0	1	3	0	0.9681	0.6469	0.6469
0	0	0	1	1	0	1	1	4	0	0.9680	0.6418	0.6418
0	0	0	1	1	1	0	1	4	0	0.9631	0.6206	0.6206
0	1	0	1	1	0	1	0	3	0	0.9679	0.6070	0.6070
0	0	0	1	0	1	1	1	3	0	0.9596	0.5940	0.5940
1	1	1	1	0	0	1	0	3	0	0.9590	0.5917	0.5917
0	0	0	1	1	1	1	0	3	0	0.9622	0.5807	0.5924

(*continued on next page*)

Table A6 (*continued*)

INN	EC	MA	PC	EV	EN	SV	SUS	Number	RIRS	RAW consist.	PRI consist.	SYM consist.
0	0	1	1	1	0	0	1	3	0	0.9619	0.5773	0.5773
0	0	1	0	1	1	0	1	3	0	0.9595	0.5567	0.5567
1	0	1	0	0	0	1	1	3	0	0.9613	0.5564	0.5564
0	0	0	0	1	0	1	1	6	0	0.9574	0.5476	0.5476
0	0	0	0	0	1	1	1	6	0	0.9488	0.5209	0.5272
0	0	1	0	1	0	0	1	4	0	0.9566	0.5009	0.5009
0	0	0	0	1	1	0	1	6	0	0.9483	0.4996	0.5022
0	0	0	0	1	1	1	0	5	0	0.9521	0.4957	0.4957
1	0	0	0	0	0	1	1	4	0	0.9494	0.4909	0.4909
0	0	0	0	1	0	0	1	4	0	0.9457	0.4469	0.4469
0	0	1	1	0	0	0	1	4	0	0.9461	0.4316	0.4352
0	0	1	0	1	0	1	0	4	0	0.9543	0.4258	0.4258
0	1	0	1	0	0	1	0	3	0	0.9401	0.4176	0.4176
0	0	0	0	0	0	1	1	4	0	0.9338	0.4176	0.4176
1	1	0	0	0	0	1	0	3	0	0.9381	0.4097	0.4097
0	0	0	0	1	0	1	0	3	0	0.9452	0.3933	0.3933
0	0	0	1	0	0	0	1	7	0	0.9339	0.3878	0.3878
1	0	0	0	0	0	0	1	3	0	0.9305	0.3647	0.3647
0	0	1	0	0	1	1	0	5	0	0.9328	0.3642	0.3642
0	0	1	0	0	0	0	1	6	0	0.9299	0.3486	0.3531
1	0	0	0	0	1	1	0	3	0	0.9246	0.3419	0.3419
1	0	0	1	0	0	1	0	4	0	0.9270	0.3412	0.3412
0	1	0	0	0	0	1	0	6	0	0.9251	0.3318	0.3318
0	0	0	0	1	0	0	0	3	0	0.9224	0.2984	0.2984
0	0	0	0	0	0	0	1	7	0	0.9081	0.2928	0.2928
0	0	0	1	0	0	1	0	7	0	0.9078	0.2805	0.2805
0	0	1	0	0	0	1	0	4	0	0.9168	0.2684	0.2684
0	0	0	0	0	1	1	0	11	0	0.8954	0.2673	0.2673
1	0	0	0	0	0	1	0	11	0	0.9018	0.2601	0.2601
0	0	1	1	0	0	0	0	7	0	0.9060	0.2495	0.2507
0	1	0	0	0	0	0	0	5	0	0.8960	0.2328	0.2328
0	0	0	1	0	0	0	0	4	0	0.8758	0.2003	0.2018
0	0	1	0	0	0	0	0	5	0	0.8821	0.1856	0.1856
1	0	0	0	0	0	0	0	5	0	0.8687	0.1827	0.1827
0	0	0	0	0	0	1	0	21	0	0.8579	0.1741	0.1741
0	0	0	0	0	0	0	0	37	0	0.7369	0.0813	0.0814

Data availability

Data will be made available on request.

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