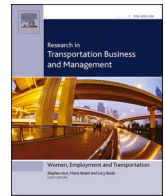




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Corporate social responsibility and passengers' behavioral intentions: A case study on railway services

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ABSTRACT

Corporate Social Responsibility (CSR) has become a key factor for businesses to compete in the market and maintain sustainable growth. Although there is abundant literature on the relationship between CSR and customer satisfaction, only a few papers have dealt with the transportation sector. This study fills this gap by analyzing the outcome of engaging in environmental, social, economic, and ethical initiatives in the rail sector. To this aim, we surveyed 2713 customers of Trenitalia, the leading railway operator in Italy. Estimating hybrid discrete choice models, we found that investing in initiatives aimed at creating new jobs, contributing to national economic development, safeguarding the environment, and protecting passengers' safety significantly affects customers' level of satisfaction which is positively related to passengers' loyalty, intention to recommend the service to others, and willingness to pay higher fares.

1. Introduction

Since the 1960s, when the paradigm of corporate social responsibility (CSR) was introduced, the willingness of businesses and a broader set of stakeholders beyond their shareholders to acknowledge and be accountable for their responsibilities toward society has significantly increased (Carrol, 1999). It was only in 2001, however, that the European Commission officially defined CSR as the voluntary integration of companies' "social and ecological concerns in their business operations and in their interaction with their stakeholders", a holistic management framework aimed at going beyond compliance and at "investing 'more' into human capital, the environment and the relations with stakeholders". Other milestones in the evolution of voluntary codes for globally responsible business conduct include the *Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy*, first issued in 1977 and last amended in 2017 by the [International Labour Organization \(2017\)](#), and the *Guidelines for Multinational Enterprises*, first adopted in 1976 and updated in 2011 by the [Organisation for Economic Co-operation and Development \(2011\)](#). Another significant voluntary corporate responsibility initiative is the United Nations Global Compact (UNGC). Since 2000, this initiative has enabled multinational corporations and small and medium-sized businesses worldwide to adopt sustainable and socially responsible strategies encouraging reporting on human rights, labor, and environmental protection

initiatives, and on anti-corruption projects. Although some authors were skeptical about the effectiveness of this UN initiative (Baldi, 2007; Knight & Smith, 2008), according to Rasche (2009), the debated role of the Global Compact was mainly due to a misunderstanding about its nature, its mandate, and its goals. The UNGC should be considered a "long-term learning experience" aimed at corporate citizenship within a stable institutional framework rather than a regulatory/certification scheme or a reporting standard. Indeed, its participation growth is ongoing, in 2022, it reached 17,000 business and 3000 non-business participants (Global Compact Office, 2022), and it is currently the world's largest voluntary corporate responsibility initiative.

The industrial sectors most likely to engage in CSR are those close to consumers in the value chain or using environmental resources in their production processes that can significantly harm communities (Rowley & Berman, 2000). Indeed, the scientific literature on CSR mostly focuses on retail, pharmaceuticals, mining and quarrying, tourism, textiles and clothing, food, banking and finance, and insurance. In the literature review conducted by Dabic, Colovic, Lamotte, Painter-Morland, and Brozovic (2016), only two over 170 papers have dealt with transportation, although it is one of the largest contributors to anthropogenic greenhouse gas emissions and other air pollutants (e.g., particulate matter, nitrogen oxides, and volatile organic compounds). It is also a major direct contributor to employment and national and global gross domestic product and is an essential enabler of sustainable social and

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economic development. Our goal is to fill the existing gap in the CSR literature by focusing on the railway sector because, with the exception of Park, Kwon, and Kim (2016), there are currently no other relevant studies on this transport mode and because it significantly contributes to the Green Transition fostered by the European Commission.¹ More specifically, our paper aims to answer the following research questions:

- 1) Do CSR initiatives financed by rail companies influence passengers' satisfaction?
- 2) Do train passengers equally appreciate the CSR initiatives financed by rail companies?
- 3) Do passengers' environmental sensitivity and risk propensity influence the perception of the CSR initiatives financed by rail companies?
- 4) Is there a positive relationship between passengers' level of satisfaction and their willingness to reuse the service, to recommend the service to relatives and friends, and to pay higher fares?

Our analysis focuses on the Italian market. To the best of our knowledge, this is the first paper studying the role of CSR in rail transport in Italy.

The paper is structured as follows. Section 2 reviews the literature analyzing how CSR affects firms' performance and customers' satisfaction, with a special focus on applications dealing with the transportation industry. Section 3 describes our case study, including a brief description of the Italian rail company we analyzed; a description of the questionnaire we used to collect the data; and a summary of the sociodemographic characteristics, preferences, and behavioral intentions stated by the sample of train passengers we surveyed. Section 4 illustrates the research model, while Section 5 presents the results of our statistical and econometric analysis. Section 6 discusses the main results and describes future research lines.

2. Literature review

CSR is defined as a business's voluntary commitment to contributing to consumer and employee wellbeing, community engagement, and environmental issues (Chang & Yeh, 2017). Although there is no unanimous consensus on the alleged positive relationship between CSR and financial performance (see Barauskaite & Streimikiene, 2021; Cochran & Wood, 1984; Raza, Ilyas, Rauf, & Qamar, 2012; Q. Wang, Dou, & Jia, 2016), CSR can potentially create value by reducing costs and risks, increasing competitive advantages, developing reputation and legitimacy, and discovering win-win outcomes (Chang & Yeh, 2016). Since the notion of CSR was introduced by Bowen (1953), it has gained attention among both academics and practitioners, and an increasing number of corporations have committed to addressing larger societal challenges (H. Wang, Tong, Takeuchi, & George, 2016), including society's economic, legal, ethical, and discretionary expectations (Agliata, Ferrone, & Tuccillo, 2017).

Although several studies have analyzed the relationship between CSR and financial performance (e.g., Alshehhi, Nobanee, & Khare, 2018; W. Lu, Chau, Wang, & Pan, 2014; Van Beurden & Gössling, 2008; Velte, 2021), only a few of them have focused on the transport sector (e.g., Dabic et al., 2016). This is likely because the transport industry is lagging behind other industries in terms of CSR commitment and contribution (D. Lee, Faff, & Langfield-Smith, 2009); its position in the supply chain is far from end consumers; and its involvement in CSR is seldom monitored by the public, media, or shippers (Yuen, Thai, & Wong, 2018). Table 1 summarizes the studies we found by searching Scopus, Web of Science, and Google Scholar.

Most of the papers on CSR and its impacts on firms' performance and

customer satisfaction in the transport sector were recent, with the large majority being published in the last eight years (Fig. 1). Additionally, most focused on firms operating in Asia (Fig. 2).

Most of the articles we reviewed were based on survey questionnaires administered to either customers (Agliata et al., 2017; Chang & Yeh, 2017; Park, 2019; Park et al., 2015; Park et al., 2016; Shin & Thai, 2015; Yuen, Thai, & Wong, 2018) or to managers and experts (Chang & Yeh, 2016; Choi, 2012; C. Lu et al., 2009; Yuen et al., 2016, 2017; Yuen, Thai, Wong, & Wang, 2018). Other studies, however, focused on financial and non-financial reports published either on firms' websites (Arimany Serrat et al., 2019) or in public databases, such as Thomson Reuters Eikon (Abdi et al., 2020, 2022; Kuo et al., 2021; Yang & Baasandorj, 2017), KLD (S. Lee & Park, 2010), and Bloomberg (Özcan, 2021).

The methodologies used to analyze the relationship between CSR and firms' performance were quite heterogeneous, including qualitative descriptions (Arimany Serrat et al., 2019), descriptive statistics (Agliata et al., 2017), analytic hierarchy process with pair comparisons (Chang & Yeh, 2016), growth models (Kuo et al., 2021), and hierarchical regression modeling (Yuen et al., 2016, 2017). Most of the papers used either panel regression analysis (Abdi et al., 2020, 2022; S. Lee & Park, 2010; Lu et al., 2009; Özcan, 2021; Yang & Baasandorj, 2017) or structural equation modeling (Chang & Yeh, 2017; Choi, 2011; Park, 2019; Park et al., 2016; Park et al., 2015; Shin & Thai, 2015; Yuen, Thai, & Wong, 2018; Yuen, Thai, Wong, & Wang, 2018).

Only two papers dealt with transport infrastructures, specifically airport management (Chang & Yeh, 2017; Özcan, 2021). In fact, most of the studies focused on transport services, with a large majority on passenger transport and only few studies on freight transport (C. Lu et al., 2009; Shin & Thai, 2015; Yuen et al., 2016, 2017; Yuen, Thai, & Wong, 2018; Yuen, Thai, Wong, & Wang, 2018) and logistics (Choi, 2011).

Air transport was by far the transport mode most frequently studied, followed by maritime transport and road transport (Fig. 3). Road passengers' transportation was studied both at the urban level (Agliata et al., 2017; Arimany Serrat et al., 2019) and at the interurban level (Chang & Yeh, 2017). To the best of our knowledge, only the study by Park et al. (2016) explored the relationship between CSR and firms' performance with reference to rail transport.

The empirical evidence emerging from the literature on the transport sector showed a positive relationship between CSR and firms' performance measured via either financial or non-financial indexes. However, different measurement units were used to quantify firms' CSR commitment and to define firms' performance. The latter was often described in terms of market value, business market share, or profitability, but it was also frequently expressed in terms of customer satisfaction, loyalty, and willingness to pay (WTP). More specifically, within the air transport sector, implementing environmentally sustainable initiatives was positively related to financial performance (Abdi et al., 2020; Abdi et al., 2022; Yang & Baasandorj, 2017) and customer satisfaction (Park, 2019). Similarly, Lu et al. (2009) estimated a positive correlation between the adoption of environmentally sustainable initiatives and the financial performance of firms operating in the maritime sector. From a broader perspective, investments in CSR positively affected the corporate image and customer satisfaction of firms providing intercity bus services (Chang and Yeh, 2017) and within the maritime transport sector (Shin & Thai, 2015; Yuen, Thai & Wong, 2018). CSR initiatives were also found positively correlated with market value (Lee & Park, 2010; Özcan, 2021) and financial performance (Lu et al., 2009; Özcan, 2021) within the air transport sector and maritime transport sector. While with specific reference to air transport, Park et al. (2015) also found a positive relationship between CSR initiatives and intention to revisit, word-of-mouth, and WTP, and Park et al. (2016) detected a positive correlation between CSR and customer satisfaction.

¹ https://ec.europa.eu/reform-support/what-we-do/green-transition_en#transport-and-mobility

Table 1
Summary of the scholarly conducted research and models used regarding the relationship between CSR and firms' performance.

Authors	Transport Mode	Region	Period	Approach	Data	Data Analysis	Results
Abdi, Li, and Càmara-Turull (2020)	Air transport	Worldwide	2013–2019	Financial and non-financial reports	Data on rated ESG factors of 27 airlines worldwide from Thomson Reuters Eikon database	Panel regression analysis	Positive relationship between environmental/governance strategies and firm value/financial performance; negative relationship between airlines' commitment to developing better working conditions and firm value/performance
Abdi, Li, and Càmara-Turull (2022)	Air transport	Worldwide	2009–2019	Financial and non-financial reports	Data on rated ESG factors of 38 airlines worldwide from Thomson Reuters Eikon database; official websites of sampled airlines; official annual reports	Panel regression analysis	Governance initiatives improve a firm's market-to-book ratio; social and environmental activities positively and significantly rewarded by a higher level of financial efficiency; bigger airlines' efforts to improve their value through environmental activities have smaller results
Agliata et al. (2017)	Bus (urban services)	Naples (Italy)	2009	Customers' preferences and perceptions	Survey questionnaire distributed to 2000 passengers	Descriptive statistics	Investment in CSR decreased complaints and absenteeism; greater safety perceived by both workers and passengers
Arimany Serrat, Sabata Aliberch, and de Uribe Gil (2019)	Bus (urban services)	Barcelona (Spain)	2018	Financial and non-financial reports	Financial statements and website content of 30 bus companies	Qualitative and descriptive statistics	50% of the sampled companies did not publish CSR non-financial indicators; 30% published information on polluting emissions/waste generation; 15% published information on consumption of energy/water; only 30% provided details on gender diversity, employee training, and job creation; no websites included corporate governance indicators
Chang and Yeh (2016)	Air transport	Taiwan's Taoyuan International Airport	n.a.	Expert opinion	Face-to-face interviews with six internal (airport senior management) and six external (government aviation officials and academic researchers) experts	Pairwise comparison of 18 CSR strategies	Airport safety and security, service quality, and corporate governance have the highest priority when implementing CSR
Chang and Yeh (2017)	Bus (intercity services)	Four major cities in Taiwan	n.a.	Customers' preferences and perceptions	Survey questionnaire distributed to 349 passengers	Structural equation modeling	CSR positively affects, directly and/or indirectly, corporate image and customer satisfaction, which influence customer loyalty
Choi (2012)	Logistics sector	Korea	Feb–Apr 2011	Expert opinion	Survey via 129 face-to-face or telephone interviews with staff, section chief, and manager of logistics enterprise members of a Korean trucking association	Structural equation modeling	Positive impact of green awareness and green logistics practices on performance; no statistically significant impact of green strategy on performance
Kuo, Chen, and Meng (2021)	Air transport	Worldwide	2013–2017	Financial and non-financial reports	Data on rated ESG factors of 30 airlines worldwide from Thomson Reuters Eikon database	Multilevel quadratic growth model	U-shaped relationship between ESG performance indicators and financial performance: relationship is negative in the short run, positive in the medium to long run
Lee and Park (2010)	Air transport	USA	1991–2006	Financial and non-financial reports	Data on rated ESG factors of six North American airlines from KLD database	Panel regression analysis	Linear positive relationship between CSR and value performance (average market value and excess market value); no significant relationship between CSR and accounting performance (based on ROA, ROE, and ROS)
Lu, Lin, and Tu (2009)	Maritime transport	Taiwan	Jan–Mar 2007	Managers' values and beliefs	Survey questionnaire administered electronically to 116 managers of container shipping agencies	Factor analysis and panel regression analysis	Community involvement, environmental protection, and CSR disclosure positively affect financial performance; employee and customer care positively affect non-financial performance
Özcan (2021)	Air transport	13 countries	2007–2017	Financial and non-financial reports	Data on ESG disclosure scores of 20 airport companies worldwide from the Bloomberg database	Panel regression analysis	CSR disclosure positively related to both profitability and market value of airport companies

(continued on next page)

Table 1 (continued)

Authors	Transport Mode	Region	Period	Approach	Data	Data Analysis	Results
Park, Lee, Kwon, and Del Pobil (2015)	Air transport	South Korea	n.a.	Customers' preferences and perceptions	Survey questionnaire distributed to 1189 South Koreans who had used the same airline more than three times	Structural equation modeling	Significant positive relationship of CSR with intention to revisit, word-of-mouth, and WTP through customer satisfaction
Park et al. (2016)	Rail transport	South Korea	n.a.	Customers' preferences and perceptions	Survey questionnaire administered electronically to 914 rail passengers in South Korea	Structural equation modeling	CSR increases service provider competitiveness, which leads to greater customer satisfaction
Park (2019)	Air transport	South Korea	n.a.	Customers' preferences and perceptions	Survey questionnaire administered electronically to 967 airline service users	Structural equation modeling	Economic responsibility results in improved customer attitude and satisfaction; environmental responsibility has significant effects on customer attitude and satisfaction; corporate reputation significantly determined by customer attitude and satisfaction
Shin and Thai (2015)	Maritime transport	South Korea	Mar–May 2013	Customers' preferences and perceptions	Survey questionnaire administered electronically to 214 shippers and freight forwarders listed in the Korea International Trade Association	Structural equation modeling	Positive relationship of firm's CSR with customer satisfaction, relationship maintenance, and customer loyalty
Yang and Baasandorj (2017)	Air transport	Worldwide	2006–2015	Financial and non-financial reports	Data on rated ESG factors of 16 airlines (11 full-service carriers and five low-cost carriers) worldwide from Thomson Reuters ASSET4 ESG and Thomson Reuters Datastream database	Panel regression analysis	Financial performance positively influenced by CSR for full-service air carriers and by environmental CSR activities for low-cost carriers
Yuen, Thai, and Wong (2018)	Maritime transport	Singapore	Apr 2015–Jun 2016	Customers' preferences and perceptions	Survey questionnaire administered electronically to 276 shippers: 152 manufacturers and 124 freight forwarders	Structural equation modeling	Shippers with strong CSR beliefs show stronger loyalty, repurchase intentions, and positive word of mouth when engaging shipping firms that are socially responsible
Yuen, Thai, Wong, and Wang (2018)	Maritime transport	Singapore	Feb–Apr 2015	Managers' values and beliefs	Survey questionnaire administered electronically to 156 shipping firms with operations in Singapore	Structural equation modeling	CSR positively affects customer and job satisfaction; interaction between CSR and service quality produces synergistic effects on customer satisfaction and compensatory effects on job satisfaction
Yuen, Thai, and Wong (2017)	Maritime transport	Singapore	Feb–Mar 2016	Managers' values and beliefs	Survey questionnaire administered electronically to 223 shipping firms	Hierarchical regression modeling	Financial benefits of CSR are greater if shipping companies adopt differentiation strategies due to complementary resources and better congruency with customers' value orientation
Yuen, Thai, and Wong (2016)	Maritime transport	Singapore	Feb–Mar 2016	Managers' values and beliefs	Survey questionnaire administered electronically to 223 shipping firms	Hierarchical regression modeling	Firms with high continuous improvement capacities have better success in transforming CSR into business performance

Note. CSR: corporate social responsibility; ESG: environmental, social, and governance; WTP: willingness to pay.

3. The case study and the data collected

In Italy, the main railway operator is Trenitalia, a subsidiary of the state-owned enterprise Ferrovie dello Stato Italiane. Trenitalia offers both national and international services connecting Italy with Austria, France, Germany, and Switzerland. The company operates both regional and long-distance trains, and it offers high-speed rail services. In Italy Trenitalia holds 70% of the rail freight market, approximately 75% of the high-speed rail market, and 90% of the regional rail market being the only service provider of regional services in four out of 20 Italian regions.²

Trenitalia is committed to adopting a more eco-sustainable management model. To this aim, it has engaged in several socially responsible initiatives, such as including top managers' remuneration based on CO₂ emissions performance achievements, using hydrogen buses as

complementary means for regional and interregional services, using energy produced by renewable sources, and designing and adopting guidelines to promote the environmental sustainability of its procurement channels. To help reduce the use of private vehicles and the negative externalities produced by private transport, Trenitalia has partnered with car and bike sharing providers in most of the large and medium-sized Italian cities. It has also financed charitable projects supporting disadvantaged people, and it has promoted new collaborative welfare systems based on mutual assistance involving the public, private, and third sector. It supports a Help Center solidarity project aimed at reducing the social emergency resulting from the latest economic and migratory crises further exacerbated by the COVID-19 pandemic. As part of the project, day and night recovery centers have been set up at several rail stations. Trenitalia also promotes solidarity initiatives and awareness-raising campaigns aimed at supporting the preservation of child health, prevention of school dropouts, promotion of gender equality, and women's empowerment.

² https://group.intesasanpaolo.com/content/dam/portalgroup/repository-documenti/research/it/esg/Trasporto_ferroviaro_regionale_ottobre2018.pdf

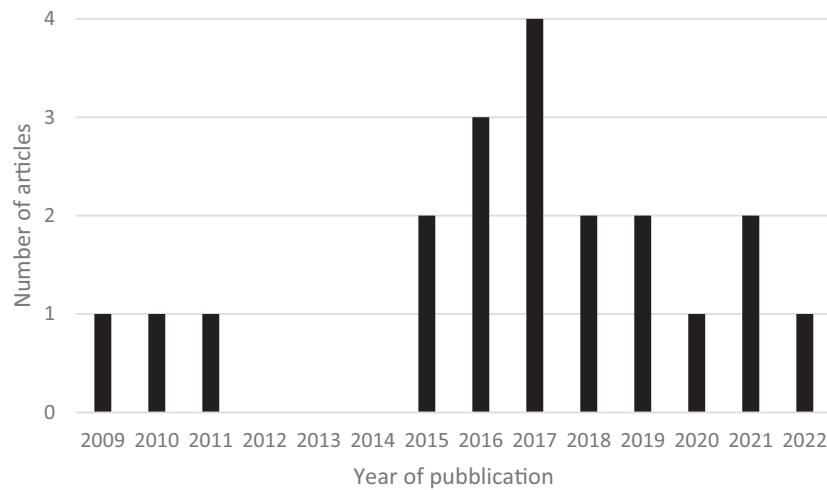


Fig. 1. Number of articles reviewed by year of publication.

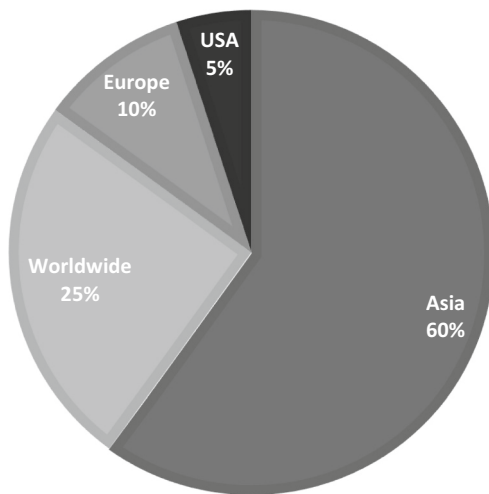


Fig. 2. Percentage of articles reviewed by geographical area analyzed.

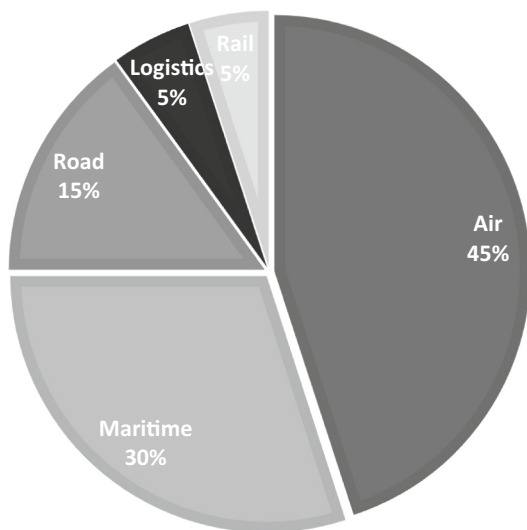


Fig. 3. Percentage of articles reviewed by transport mode analyzed.

3.1. Survey

To study whether the socially responsible initiatives carried out by Trenitalia are positively correlated to customer satisfaction, loyalty, and WTP, we conducted an online survey in 2020–2021 using a snowball sampling method via different social media platforms (e.g., Facebook, Instagram, and Twitter). We structured the questionnaire into five sections (Fig. 4).

The first section was focused on the sociodemographic characteristics of the respondents, including age, gender, occupational status, and level of education. We also asked if the respondent had traveled by train at least three times before the pandemic began.

In the case of a positive answer, the respondent was referred to the second section of the questionnaire in which they were requested to state via a 7-point Likert scale (1 = totally disagree; 7 = totally agree) if they agreed that Trenitalia was committed to:

- 1) Creating new jobs,
- 2) Contributing to the country’s economic development by investing in new infrastructure,
- 3) Safeguarding the environment,
- 4) Raising funds for social causes,
- 5) Supporting sporting and cultural events,
- 6) Reducing the risk of railway accidents,
- 7) Ensuring passengers’ health with specific reference to the COVID-19 pandemic,
- 8) Fighting corruption, and
- 9) Protecting human rights and equal opportunities.

Items 1–5 were validated by Park et al. (2016), while we developed Items 6–9 on the basis of a focus group involving professors and researchers in transport economics and service quality management. The third section of the questionnaire aimed at measuring the respondents’ level of satisfaction with reference to the services provided by Trenitalia. Using a 7-point Likert scale, the items asked if the participant agreed that:

- 1) The staff on board are available and ready to assist passengers.
- 2) The service is punctual, and Trenitalia promptly communicates any delays.
- 3) The trains are clean.
- 4) Passengers’ safety on board the trains is guaranteed.
- 5) The Trenitalia staff employed in the ticket offices are polite and friendly.

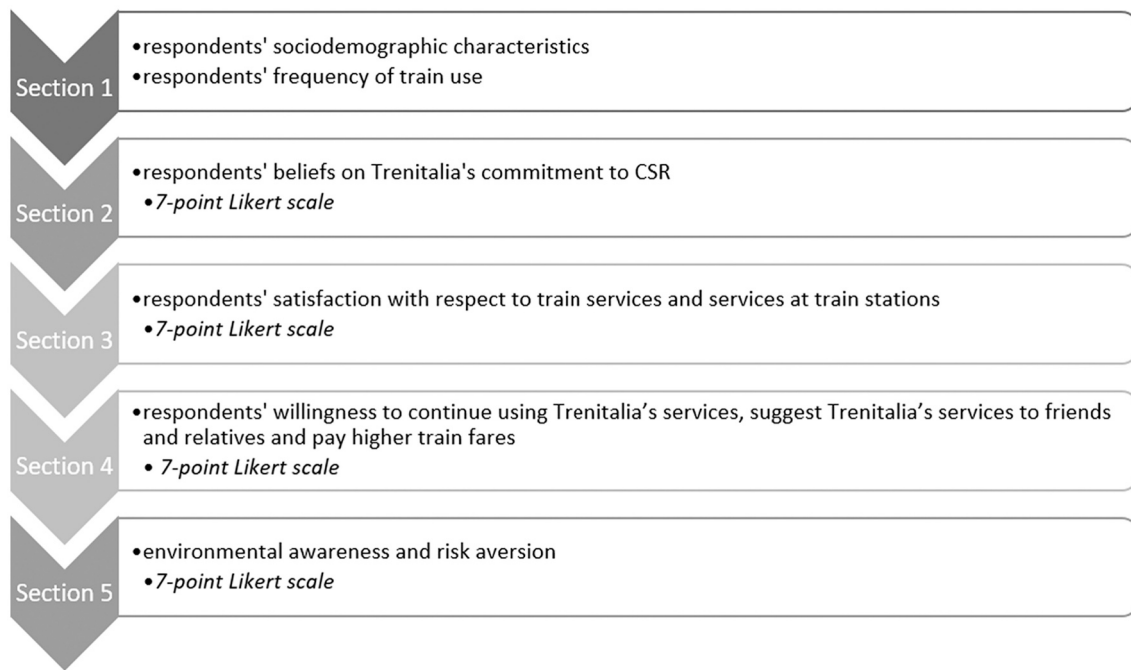


Fig. 4. Structure of the questionnaire.

- 6) The waiting areas in the train station are comfortable and welcoming.
- 7) The train stations are clean.
- 8) Passengers' safety at the train stations is guaranteed.
- 9) The respondent was overall satisfied with Trenitalia's services.

Using a 7-point Likert scale, the fourth section of the questionnaire focused on the respondents' willingness to:

- 1) Continue using Trenitalia's services in the future,
- 2) Suggest Trenitalia's services to friends and relatives, and
- 3) Pay higher train fares.

In the fifth section of the questionnaire, we proposed a few more statements for respondents to determine their environmental awareness and risk propensity. More specifically, we administered the following items on a 7-point Likert scale:

- 1) Each person is responsible for protecting the environment in everyday life.
- 2) The government should adopt stricter laws to protect the environment.
- 3) I should do my best not to pollute and not to waste natural resources.
- 4) I often try to convince others to respect the environment.
- 5) Taking risks makes life more interesting.
- 6) I usually make risky decisions.
- 7) People who know me would say that I am a risk taker.

3.2. Sample characteristics

We collected primary data from 3831 individuals. Two-thirds of them ($n = 2713$) stated that they traveled by train at least three times in 2019. In Table 2, we describe them as train users (second column) as opposed to occasional train users (third column). In the rest of the paper, we focus exclusively on the subsample comprised of train users, in line with the approach used by Park et al. (2016).

In our sample, males were slightly under-represented compared to the Italian population, where males are 49% of the total. Furthermore,

Table 2
Sociodemographic characteristics of the sample.

Characteristic	Train Users	Occasional Train Users
Gender		
Male	42%	45%
Female	58%	55%
Age (Years)		
≤ 24	69%	53%
25–44	18%	17%
≥ 45	13%	30%
Occupational status		
Student	65%	46%
Employed	30%	41%
Unemployed	5%	13%
Level of education		
Middle or high school	59%	77%
Bachelor's or master's degree	41%	23%
Place of residence		
Friuli-Venezia Giulia	45%	56%
Veneto	33%	27%
Other Italian region	22%	18%

while people aged 24 or younger represent 38% of the Italian population,³ in our sample, they represented 65% of the people interviewed. This age bias might have affected our results since younger people exhibit higher levels of interest and concern about the environment (Corner et al., 2015). However, according to Pickard (2019), Wallis and Loy (2021), and Witek and Kuźniar (2020), this explains their stronger willingness to engage in climate activism, but does not necessarily affect their consumer choices since they are embedded in shared household routines and are mostly driven by parents or older adults. Additionally, most of the respondents lived in Friuli-Venezia Giulia (48%) and Veneto (31%), two Italian regions in the northeast of the country. Consequently, our sample is not representative of the Italian population with reference to age and place of residence.

³ <http://dati.istat.it/Index.aspx?QueryId=42869>

3.3. Train users' perceptions of Trenitalia's commitment to CSR initiatives

Over half of the train users we surveyed agreed with the statement that Trenitalia supports initiatives aimed at reducing the risk of train accidents (56%; Fig. 5, Item 6: SAFETY) and adopts measures aimed at minimizing the risk of COVID-19 among passengers (64%; Fig. 5, Item 7: COVID). The lowest agreement was regarding the statements on Trenitalia's commitment to supporting charitable (38%; Fig. 5, Item 4: CHAR) and cultural (39%; Fig. 5, Item 5: CULT) initiatives.

3.4. Train users' satisfaction with Trenitalia's services

Almost half of the train users were satisfied (score of 5–7) with the services provided by Trenitalia (48%; Fig. 6, Item 9: SAT). We registered the largest percentages of positive evaluations with reference to the readiness, availability, and politeness of the staff on board of the trains (63%; Fig. 6, Item 1: STAFF) and at the ticket offices (49%; Fig. 6, Item 5: POL). The largest percentages of negative evaluations (score of 1–3) were reported with reference to train service punctuality (55%; Fig. 6, Item 2: PUNCT) and train station security (41%; Fig. 6, Item 8: SAFES).

3.5. Train users' environmental awareness and risk propensity

The majority of the train users totally agreed that everybody is responsible for the environment (70%; Fig. 7, Item 1: RESP) and that they should personally adopt environmentally sustainable behaviors (73%; Fig. 7, Item 3: PERS). However, only 58% totally agreed that the government should impose stricter laws to protect the environment (Fig. 7, Item 2: GOV), and an even smaller segment of the sample totally agreed that they personally try to convince others to adopt more environmentally sustainable behaviors (35%; Fig. 7, Item 4: OTHER).

The subsample of train users was fairly balanced between the respondents who agreed and who did not agree on the fact that taking risks makes life more interesting (Fig. 7, Item 5: INT). However, the majority of the sample did not describe themselves as risk takers (Fig. 7, Item 6: TAKER) or as individuals having a reputation as a risk taker (Fig. 7, Item 7: REP).

3.6. Train users' behavioral intentions

Most of the train users agreed (score of 5–7) that they would be willing to travel by train again (79%; Fig. 8, Item 1: REUSE), and about half of the sample agreed (score of 5–7) that they would be willing to

suggest to travel by train to others (55%, Fig. 8, Item 2: WOM). However, only 12% of the respondents agreed (score of 5–7) that they would be willing to pay higher train fares in order to travel by train (Fig. 8, Item 3: WTP).

4. The research model

On the basis of the stated preferences, we tested the following hypotheses:

- H1. Good service quality is positively correlated with customer satisfaction.
- H2. Adoption of CSR initiatives is positively correlated with customer satisfaction.
- H3. Environmental awareness and risk propensity influence the relationship between customer satisfaction and the adoption of socially responsible initiatives, such as safeguarding the environment and reducing the risk of railway accidents.
- H4. Customer satisfaction is positively correlated with the customer's behavioral intention to use the service again, to suggest the service to others, and to pay higher fees to continue using the service.

Our research model is described in Fig. 9.

We operationalized our research model via a system of hybrid discrete choice models. Hybrid choice models include three components: (1) latent variable measurement equations, (2) latent variable structural equations, and (3) choice models.

The latent variable measurement equations describe the relationship between each observable indicator of a latent phenomenon and the unobservable latent variable to be modeled (Cohen, Cohen, Teresi, Marchi, & Velez, 1990), in our case study, environmental awareness, risk propensity, and customer satisfaction (Fig. 10). To this aim, we tested four indicators (*I*) for the latent variable environmental awareness (*LV_{EA}*; Fig. 7, Items 1–4), three indicators for the latent variable risk propensity (*LV_{RP}*; Fig. 7, Items 5–7), and one indicator for the latent variable customer satisfaction (*LV_{CS}*; Fig. 6, Item 9).

The structural equations describe the relationship between a set of observable exogenous variables (e.g., the socio-demographic characteristics of the respondents) and each latent variable, in our case, environmental awareness and risk propensity, as depicted in Fig. 11.

The structural equation of the latent variable customer satisfaction includes the socio-demographic characteristics of the respondents, the level of satisfaction for each dimension of the service quality (Fig. 6,

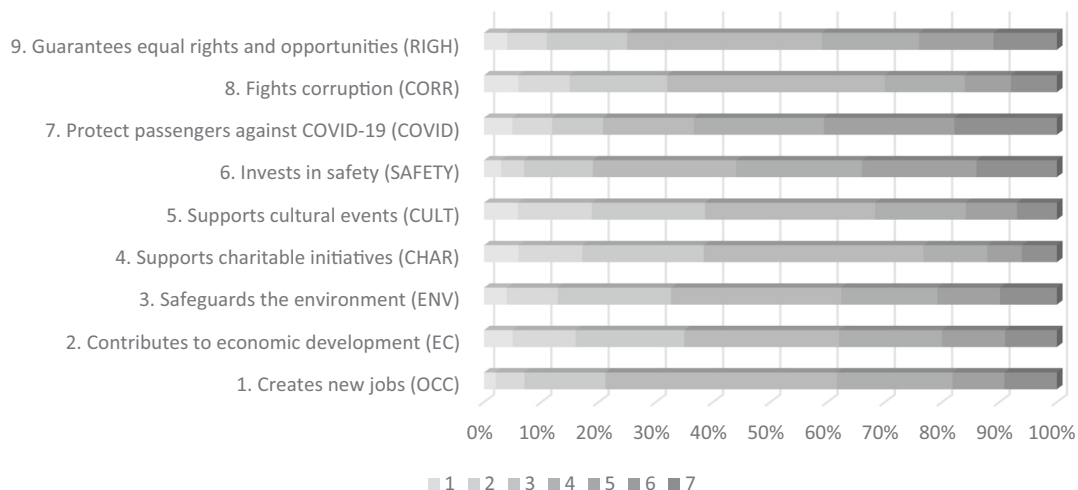


Fig. 5. Evaluation of Trenitalia's commitment to CSR management. Note. 1 = totally disagree; 7 = totally agree.

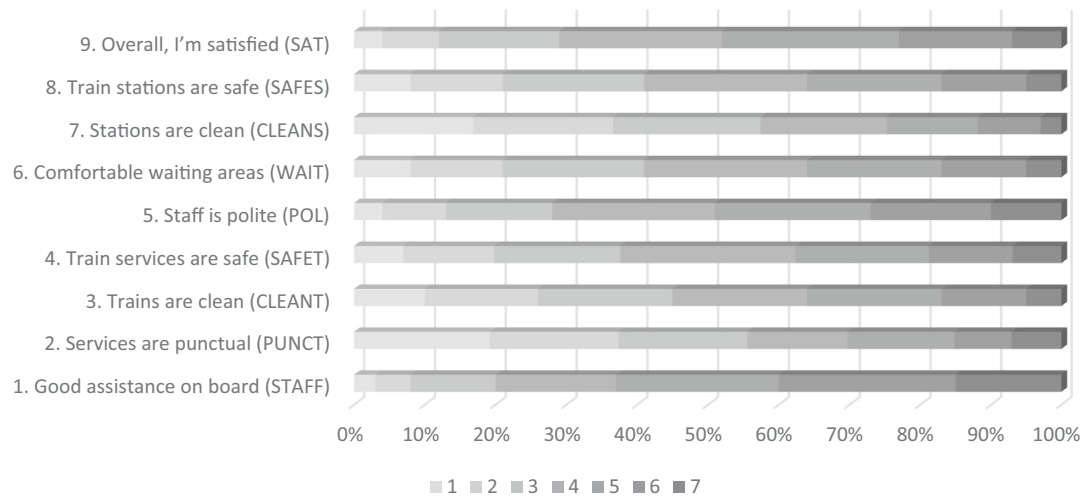


Fig. 6. Evaluation of Trenitalia's services.
 Note. 1 = totally disagree; 7 = totally agree.

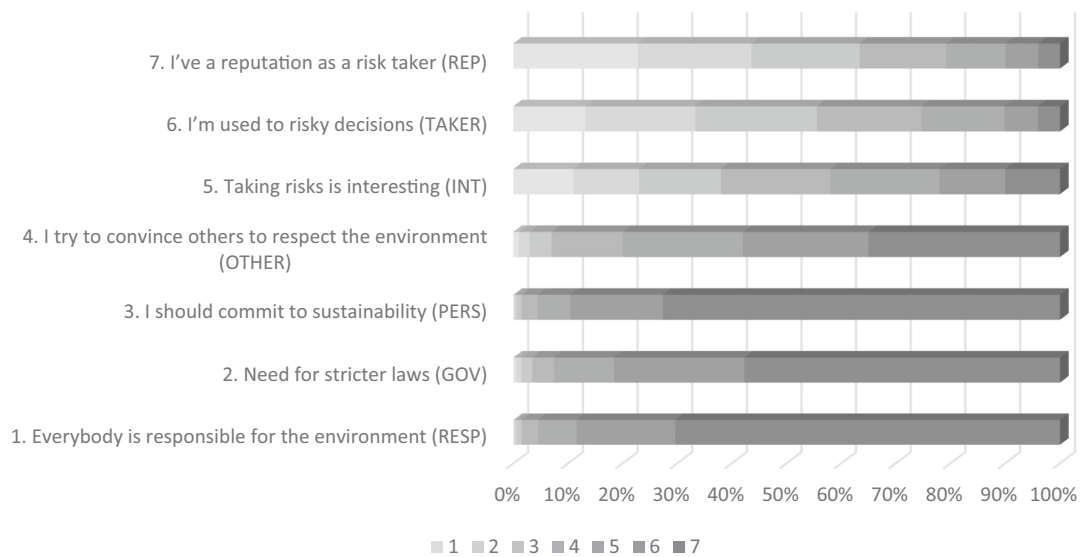


Fig. 7. Indicators of latent environmental awareness and risk propensity.
 Note. 1 = totally disagree; 7 = totally agree.

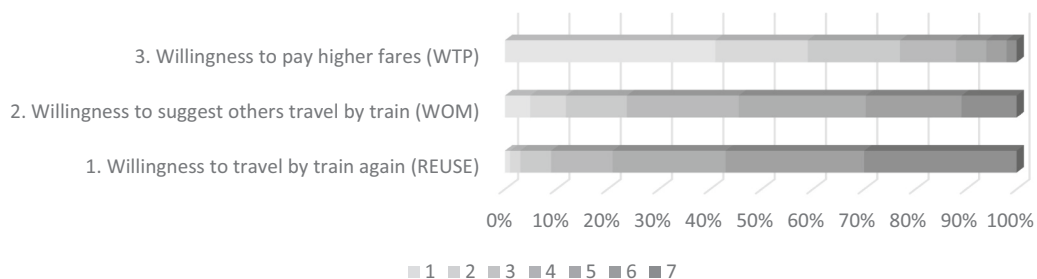


Fig. 8. Intentional behavior of train users.
 Note. 1 = totally disagree; 7 = totally agree.

Items 1–8), and the level of satisfaction for the socially responsible initiatives carried out by Trenitalia (Fig. 5, Items 1–9). Moreover, it includes some interaction terms between the latent variables environmental awareness and risk propensity and the level of satisfaction for the

socially responsible initiatives carried out by Trenitalia (Fig. 12).

The choice component of the hybrid models describes the willingness to use the train again, to recommend others travel by train, and to pay higher train fares as a function of the socio-demographic characteristics

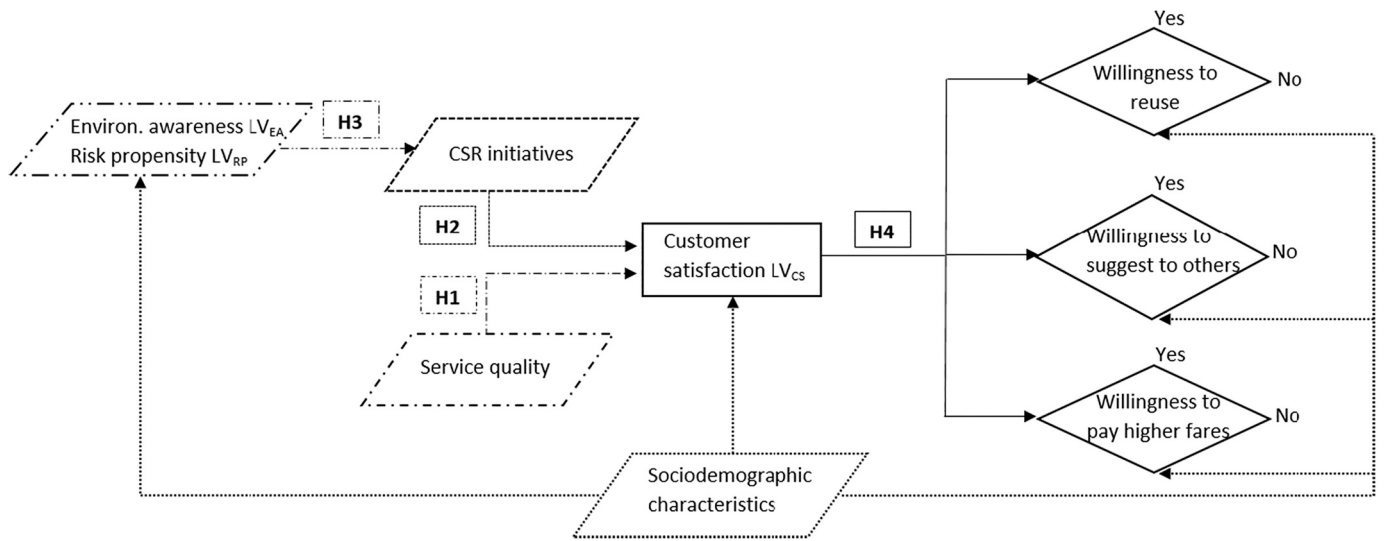


Fig. 9. Structure of the research model.

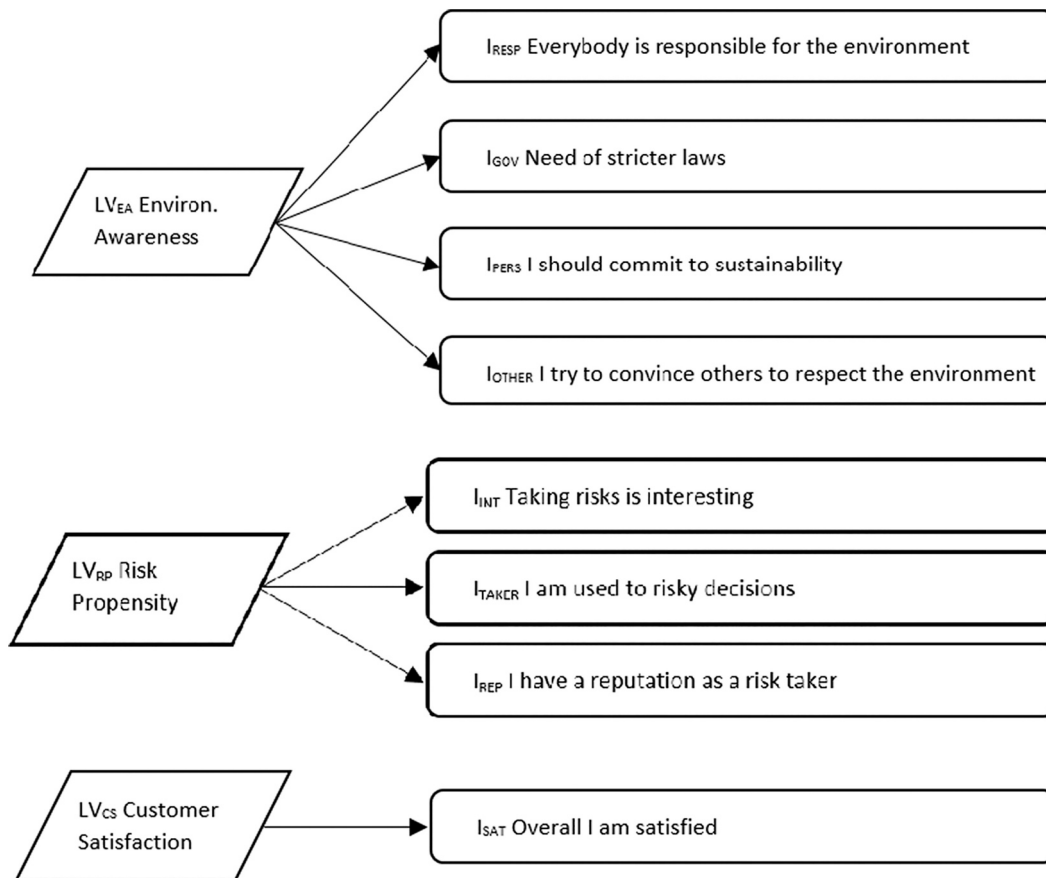


Fig. 10. Relationship between each latent variable and the corresponding indicators depicted by the measurement equations.

of the respondents and the latent variable customer satisfaction (Fig. 13).

Fig. 14 shows the whole architecture of the hybrid models we developed for each behavioral intention variable (i.e., willingness to use the train again, to recommend others travel by train, and to pay higher train fares).

4.1. The measurement equations

Although a latent variable (LV) cannot be directly observed, it can be measured indirectly via one or more observed variables, or measurement indicators (I_i). The relationship between a latent variable and each measurement indicator (Fig. 10) is expressed by a measurement model (Eq. (1)) that is specified as an ordered probit model as long as the indicator is a discrete ordered variable and the error term has a normal

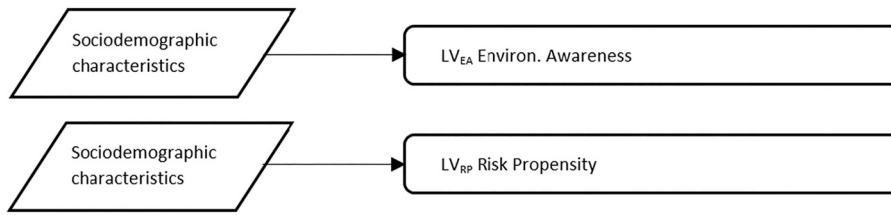


Fig. 11. Relationship between the latent variables environmental awareness and risk propensity and the sociodemographic characteristics of the respondents described by the respective structural equations.

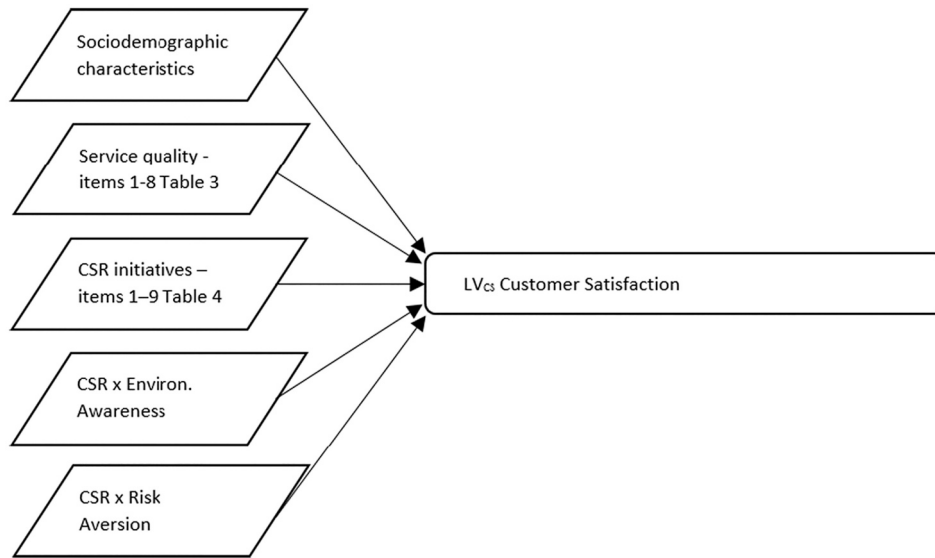


Fig. 12. Relationship between the latent variable customer satisfaction and the factors influencing it as described by the structural equation model.

distribution.

$$I_l = \begin{cases} I_1 & \text{if } (-\infty) < LV_l \leq \omega_1 \\ I_2 & \text{if } \omega_1 < LV_l \leq \omega_2 \\ \dots & \\ I_i & \text{if } \omega_{i-1} < LV_l \leq \omega_i \\ \dots & \\ I_w & \text{if } (W-1) < LV_l \leq (\infty) \end{cases} \quad (1)$$

In Eq. (1), the measurement indicator I_l is defined over W possible values I_1, I_2, \dots, I_w , and $\omega_1, \omega_2, \dots, \omega_{W-1}$ are parameters to be estimated, such that,

$$\omega_1 \leq \omega_2 \leq \dots \leq \omega_{W-1} \quad (2)$$

Once the parameters of the measurement model are estimated, it is possible to predict the probability of occurrence for each level of the measurement indicator, as described in Eq. (3). CDF describes the cumulative distribution function of the error term:

$$Pr(I_i) = Pr(\omega_{i-1} < LV_l \leq \omega_i) = CDF(\omega_i) - CDF(\omega_{i-1}) \quad (3)$$

The measurement equations of each latent variable, one equation for each n measurement indicator, can be described as:

$$I_{ln} = \bar{I}_{ln} + \tau_{ln} LV_{ln} + \nu_{lnq} \quad (4)$$

where $\nu_{lnq} \sim N(0, \sigma_{I_{ln}}^2)$ is the error term of the n th measurement indicator related to latent variable l for each respondent q , and τ_{ln} are parameters to be estimated. These parameters measure the relationship between the latent variable l and the n th measurement indicator. The relationship exists as long as τ_{ln} is statistically significant, while the direction of the relationship is given by the sign of τ_{ln} .

4.2. The structural equations

The structural equation of each latent variable describes the relationship between the estimated latent variable l and a set of s observable variables Z and j estimated variables K :

$$LV_l = \vartheta'_l Z_{ls} + \zeta'_l K_{lj} + \eta_{LV_{lq}} \quad (5)$$

The variable $\eta_{LV_{lq}}$ is an error term that takes into account the random component of the latent variable for each individual q , while the Z variables describe the sociodemographic characteristics of the respondents (Fig. 11). The K variables are included only in the structural equation of the latent variable depicting the respondents' overall level of satisfaction. They describe the level of satisfaction for each dimension of the service quality and for the socially responsible initiatives carried out by Trenitalia (Fig. 12).

4.3. The choice models

We modeled the behavioral intention to use the train again, to recommend travel by train to others, and to pay higher train fares via three binary logit models (Fig. 13). The dependent variable is a dummy variable equal to 0 if the respondent answered negatively (Rating 1–4) to the behavioral intention questions (Fig. 8) and equal to 1 if the respondent answered positively (Rating 5–7).

We specified the choice c of stating a rating higher than 4 as a function of the Z variables describing the sociodemographic characteristics of the respondents and the latent variable LV_{CS} describing the respondents' overall level of satisfaction:

$$U_c = ASC_c + \beta'_c Z_s + \alpha'_{cs} LV_{cs} + \varepsilon_{cq} \quad (6)$$

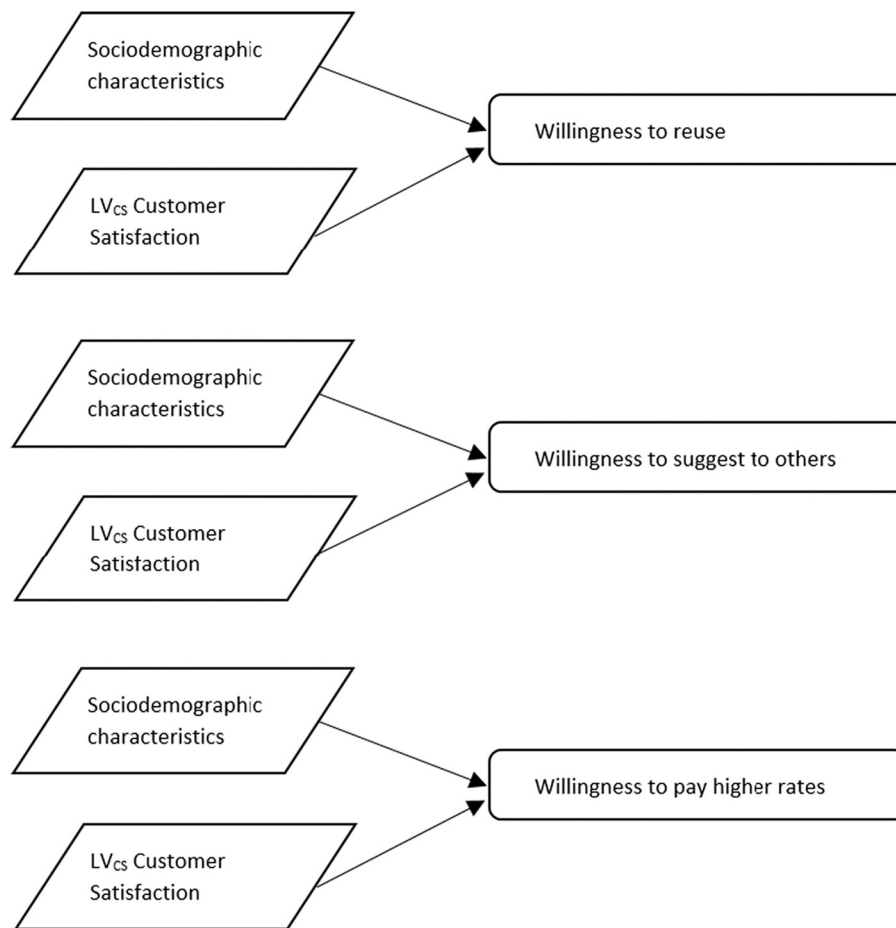


Fig. 13. Relationship between the respondents' stated behavioral intentions, sociodemographic characteristics, and level of satisfaction as described by the discrete choice models.

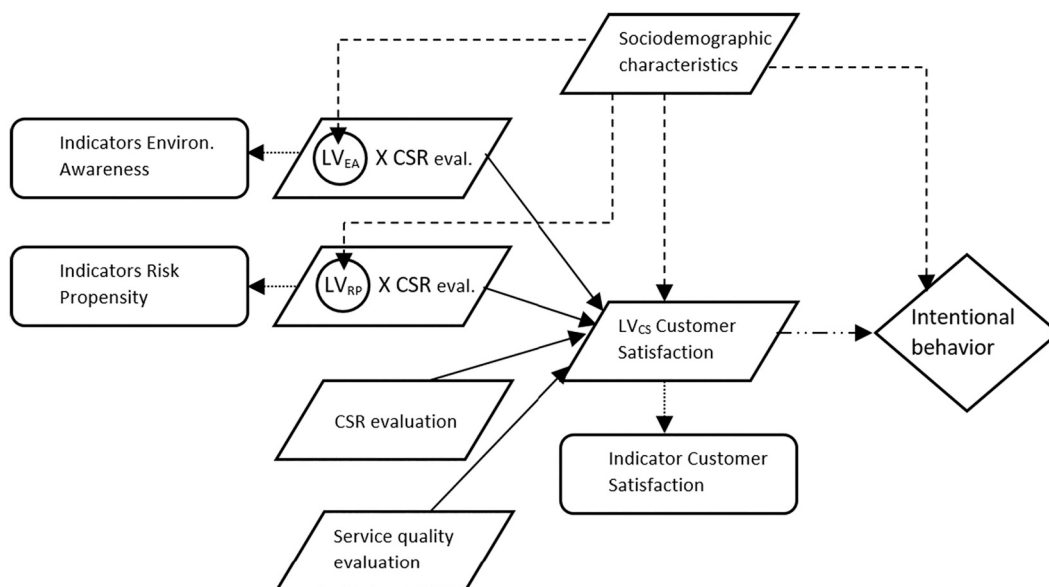


Fig. 14. Architecture of the hybrid discrete choice models.

where ASC is the alternative-specific constant referred to the behavioral intention c , β is a vector parameters describing the relationship between the behavioral intention and the sociodemographic characteristics of the

respondent, α is a parameter describing the relationship between the behavioral intention and the respondent's overall level of satisfaction, and ϵ_{cq} is the error term.

5. Results

5.1. Confirmatory factor analysis

We tested whether there was a statistically significant relationship between the measurement indicators we collected via the questionnaire and the latent variables we wanted to trace. To this aim, we performed a confirmatory factor analysis. We specified the factor environmental awareness (Fig. 15, Env) with the indicators RESP, GOV, PERS, and OTHER (Fig. 7, Items 1–4); the factor risk propensity (Fig. 15, Rsk) with the indicators INT, TAKER, and REP (Fig. 7, Items 5–7); and the factor customer satisfaction (Fig. 15, Sat) with the indicator SAT (Fig. 6, Item 9). We used maximum likelihood estimation to perform our analysis.

We obtained the following global fit indices: comparative fit index (CFI) = 0.987, Tucker–Lewis index (TLI) = 0.980, standardized root mean square residual (SRMR) = 0.026, and root mean square error of approximation (RMSEA) = 0.046 (90%CI = 0.038, 0.054). According to standard threshold levels of the goodness of fit indices (CFI \geq 0.95, TLI \geq 0.95, RMSEA \leq 0.06, and SRMR \leq 0.08), our results are more than satisfactory, signaling a strong relationship between each latent variable and the corresponding indicators. The resulting path diagram is illustrated in Fig. 15. Table 3 reports the standardized loadings, further indicating that the relationship between the latent variables and the respective indicator(s) is strong.

5.2. Econometric estimates

We estimated the research model described in Section 4 with the Apollo package in R (Hess & Palma, 2019). Although we tested different model specifications,⁴ in this section, we present only the best performing ones, including all the latent variables depicted in Fig. 9 (LV_{EA} , LV_{RP} , and LV_{CS}). In the following paragraphs, we report the outcome of our estimates starting from the measurement and the structural equations of each latent variable (Table 4–Table 6) followed by a description of the results of the choice component of the hybrid models (Table 7). Because we studied three behavioral intention variables—willingness to reuse, recommend, and pay higher fares—for the sake of brevity, in the following tables, we report the estimates of each corresponding hybrid choice model side by side.

Table 4 presents the parameters for the measurement equations and the structural equation of the latent variable environmental awareness. In the first two columns, we report the estimates of the hybrid choice model of the willingness to reuse the service. In the following two columns, we depict the estimates of the hybrid choice model of the willingness to recommend the service to others. In the last two columns, we report the estimates on the hybrid choice model of the willingness to pay higher fares.

All of the parameters of the four indicators we used to trace the latent variable environmental awareness (ω_{RESP} , ω_{PERS} , ω_{GOV} , ω_{OTHER}) were statistically significant (Eq. (1)). Additionally, all of the parameters of the measurement indicators (τ_{RESP} , τ_{PERS} , τ_{GOV} , τ_{OTHER}) were statistically significant and had the expected sign (Eq. (4)), confirming the results of the factor analysis (Table 4). These results held true for each of the three hybrid choice models estimated.

According to the estimates of the parameters of the structural equation model (θ in Eq. (5) and in Table 4), there is a statistically significant relationship between some of the sociodemographic characteristics and the latent variable environmental awareness. More

specifically, females (θ_{GENDER}), people aged 45 and older (θ_{AGE1} and θ_{AGE2}), and people living in Italian regions other than Friuli-Venezia Giulia (θ_{RES1}) or Veneto (θ_{RES2}) were more sensitive with respect to environmental protection and sustainability. We could not develop any a priori assumptions on the relationship with the place of residence because the empirical evidence on this factor was missing. We expected female and younger people to be more sensitive to environmental sustainability issues (Bimbo et al., 2022; Dangelico, Schiaroli, & Fraccascia, 2022; Gazzola, Grechi, Pavione, & Gilardoni, 2022; Mazzocchi, Orsi, Zilia, Costantini, & Bacenetti, 2022; Notaro, Lovera, & Paletto, 2022). Instead, our results align with the empirical evidence reported in the literature only with reference to gender. Indeed, the result we obtained regarding age was quite unexpected. We have come to the conclusion that the indicators need for stricter laws, and I try to convince others to respect the environment may have produced the surprising result since, at least in Italy, young people are less involved in the institutional life of the country and are less confident in sharing their personal opinions with their peers. Also, concerning the structural equations, we found similar results for all three hybrid choice models we estimated.

The parameters of the three indicators we used to trace the latent variable risk propensity (τ_{INT} , τ_{TAKER} , τ_{REP}) and the parameters of the measurement indicators (ω_{INT} , ω_{TAKER} , ω_{REP}) were statistically significant and had the expected sign, in line with the results of the factor analysis (Table 5). According to the parameters of the structural equations (θ in Eq. (5) and in Table 5), all the sociodemographic characteristics we specified had a statistically significant relationship with the latent variable risk propensity except for the region of residence. Indeed, males (θ_{GENDER}), people aged 44 and younger (θ_{AGE1} and θ_{AGE2}), people who do not commute by train (θ_{COM}) and students (occupational status complementing employed [θ_{OCC1}] and not employed [θ_{OCC2}]) were or described themselves as being more risk prone (Table 5). These results are in line with our expectations with reference to age and occupational status. As for the commuting habits, the relationship might be due to the scarce punctuality of the regional train services in Italy inducing those who are risk adverse to travel by private vehicle rather than by train. These results were confirmed for all three of the hybrid choice models we estimated.

The parameters of the only indicator we used to trace the latent variable customer satisfaction (ω_{SAT}) and of the corresponding measurement indicator (τ_{SAT}) were statistically significant and had the expected sign, in line with the results of the factor analysis (θ in Eq. (5) and in Table 6). On the basis of the estimates of the parameters of the structural equation, we conclude that customer satisfaction was lower for the respondents who commuted by train (θ_{COM}) and was not significantly influenced by any other sociodemographic characteristics we studied. This result is in line with the evidence frequently reported by the daily news with reference to the scarce quality of the services typically provided for commuters (regional services scheduled early in the morning and in the late afternoon). In line with our expectations, all the parameters describing the relationship between customer satisfaction and the quality of the service provided by Trenitalia (ζ_{STAFF} , ζ_{PUNCT} , ζ_{CLEANT} , ζ_{POL} , ζ_{WAIT} , ζ_{CLEANS} , ζ_{SAFES}) were statistically significant and positive except for safety on board (ζ_{SAFET}), which was not statistically significant. Therefore, according to our results, Hypothesis 1 is supported.

The relationship between the respondents' appreciation for the socially responsible initiatives adopted by Trenitalia and the respondents' level of satisfaction (Parameters ζ in Eq. (5) and in Table 6) was statistically significant and positive for four items out of nine. These items dealt with Trenitalia's commitment to creating new jobs (ζ_{OCC}), contributing to national economic development (ζ_{EC}), safeguarding the environment (ζ_{ENV}), and protecting passengers' safety on board against COVID-19 (ζ_{COVID}). Although only a few CSR items showed a significant and positive relationship with customer satisfaction, we can conclude that—at least with reference to some initiatives carried out by

⁴ Initially, both in the structural equation models and in the choice models, we included a more extensive set of variables describing the respondents' socio-demographic characteristics and travel habits. We used both a forward and a backward stepwise procedure to define the best-performing set. We also tested an Ordered Probit model for the choice models, but the Binary Logit model performed better.

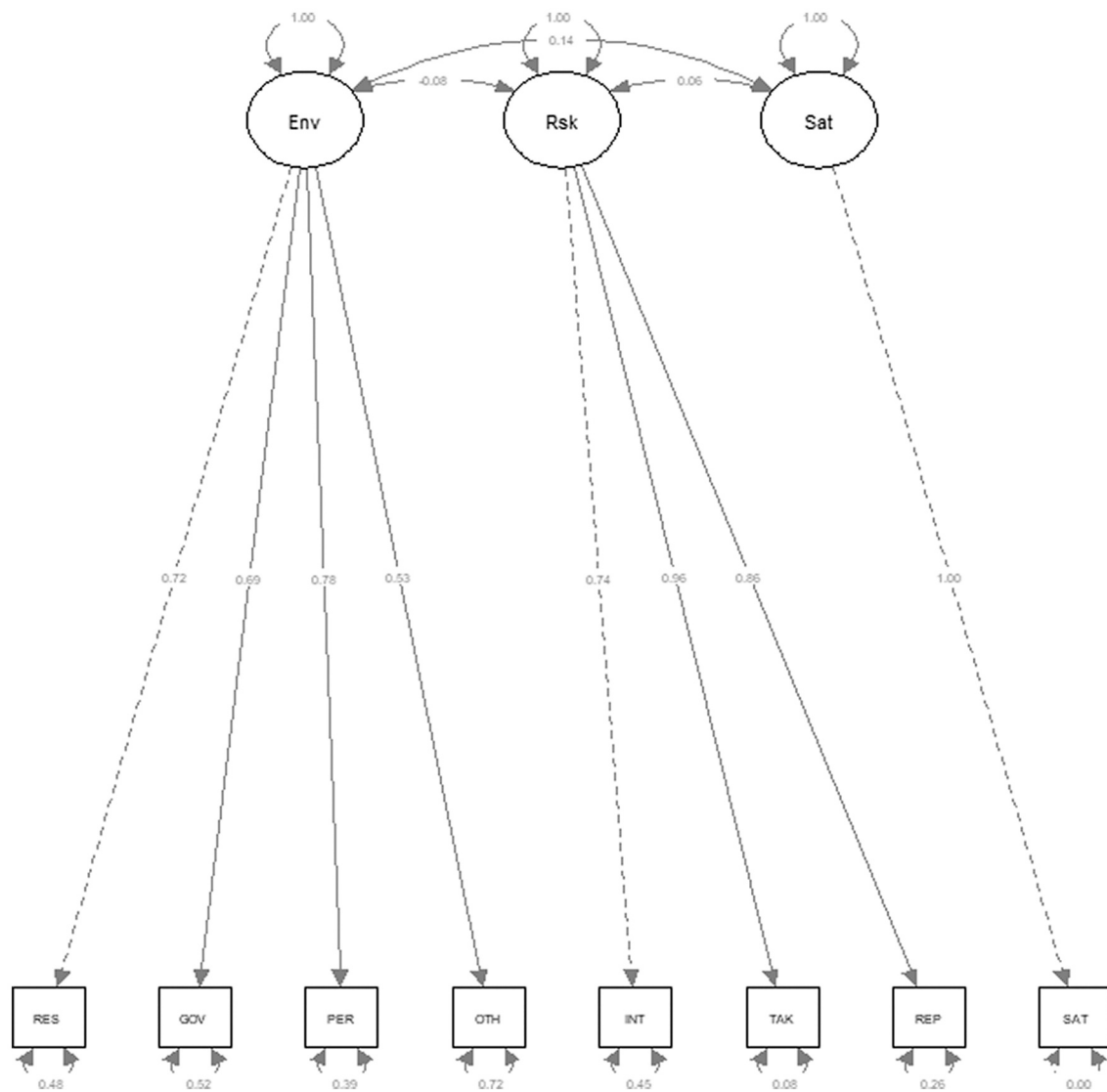


Fig. 15. Three-factor confirmatory factor analysis model.

Trenitalia—Hypothesis 2 is supported. Our results are in line with those obtained by Park et al. (2016) with reference to the initiatives aimed at protecting the environment. However, unlike Park et al. (2016), we did not find any significant relationship with the social initiatives we tested: supporting charitable initiatives (ζ_{CHAR}), supporting cultural events (ζ_{CULT}), and guaranteeing equal rights and opportunities to all its employees (ζ_{RIGH}).

Finally, since the parameter depicting the joint effect of appreciating Trenitalia’s commitment to protecting the environment and subjective environmental sensitivity ($\zeta_{\text{ENV}} \times \text{LV}_{\text{EA}}$) was statistically significant and positive, Hypothesis 3 is also supported. Therefore, we can conclude that the higher the respondents’ environmental sensitivity, the higher their appreciation for Trenitalia’s commitment to the initiatives aimed at protecting the environment. We cannot confirm, instead, our assumption that respondents’ risk propensity significantly influences their judgment regarding Trenitalia’s commitment to investing in initiatives aimed at reducing the risk of railway accidents ($\zeta_{\text{SAFETY}} \times \text{LV}_{\text{RP}}$). This is probably because rail transport is and is already perceived as being significantly safer than road transport. To the best of our knowledge, no previous studies have analyzed the relationship between respondents’ latent environmental sensitivity and their level of satisfaction with train services mediated via the CSR initiatives carried out by the service provider. Indeed, none of the articles we reviewed

analyzed the relationship between service quality and customer satisfaction within the behavioral intention theoretical framework operationalized via hybrid discrete choice models. The results of the measurement equation and the structural equation of the latent variable customer satisfaction were very similar across all three hybrid choice models that we estimated.

The results we obtained for the choice components of the research model are reported in Table 7. The intention to continue using Trenitalia’s services was higher for people aged 24 and younger (β_{AGE1}), most likely because they do not own a private vehicle, for commuters (β_{COM}), for students (compared to employed [β_{OCC1}] and not employed [β_{OCC2}]), and for people who did not reside in Friuli-Venezia Giulia (RES1). The willingness to recommend traveling by train was higher for females (β_{GENDER}) and for commuters (β_{COM}). The willingness to pay higher fares to continue using Trenitalia’s services was lower for females (β_{GENDER}), most likely because they have lower income levels compared to males, and people aged 25–44 (β_{AGE2}), possibly because they have lower income levels than older people but do not live with parents (as younger people do) and thus have more stringent budget constraints. The relationship between the latent variable customer satisfaction and each variable describing the customers’ behavioral intention ($\alpha_{\text{LV_satisfaction}}$) was statistically significant and positive, in line with our expectation and supporting

Table 3
Confirmatory factor analysis results.

Factors and Indicators	Estimate	Std. Err	z-value	p(> z)	Std. lv	Std. all
Environmental awareness						
RESP (Everybody responsible for the environment)	1.000				0.569	0.722
GOV (Need for stricter laws)	1.133	0.038	29.538	< 0.001	0.645	0.693
PERS (I should commit to sustainability)	1.023	0.033	31.117	< 0.001	0.582	0.781
OTHER (I try to convince others to respect the environment)	1.244	0.053	23.399	< 0.001	0.708	0.528
Risk propensity						
INT (Taking risks is interesting)	1.000	1.317	0.743			
TAKER (I'm used to risky decisions)	1.166	0.025	46.449	< 0.001	1.536	0.958
REP (I've a reputation as a risk taker)	1.094	0.024	45.478	< 0.001	1.441	0.859
Customer satisfaction						
SAT (Overall, I'm satisfied)	1.000				1.485	1.000

Hypothesis 4.

The final value of the log likelihood of each model we studied significantly improved compared to the starting value, indicating the explanatory power of the models we estimated. To test the robustness of our estimates, we tested several model specifications, adopting both forward selection and backward elimination of potentially significant variables. We further checked the robustness of our results constraining the value of the parameters of the measurement and structural equations of all the latent variables to the values obtained for the hybrid choice model describing the willingness to travel again by train (see Appendix, Table –A4). Since the estimates of the unconstrained parameters were not significantly different from those reported in Table 7, we can conclude that our results are stable and robust.

6. Discussion and conclusions

Firms are increasingly required to integrate social and environmental concerns into their business operations and when interacting with their stakeholders. Indeed, according to the literature, financing and promoting CSR initiatives is crucial to competing in the market (Park et al., 2016; Yuen et al., 2016, 2017). Adopting socially responsible management strategies allows firms to strengthen the bonds with their stakeholders, such as customers (Chang & Yeh, 2016; Park, 2019; Park et al., 2015; Park et al., 2016), employees (Agliata et al., 2017; C. Lu et al., 2009), suppliers (Abdi et al., 2020), and the communities in which they operate (Özcan, 2021). Additionally, CSR enables firms to differentiate their products from those of their competitors, compensating for the costs and risks of investing in such initiatives. However, there are several factors that critically affect the willingness to commit to socially responsible behavior. Firms' ownership has to be long-term orientated because stronger stakeholder relationships through CSR emerge only over the long term (Kuo et al., 2021). Moreover, society has to value the CSR activities carried out by the firms.

Because only a few studies have tested whether CSR could be a profitable strategy in the transportation sector, and Park et al. (2016) were the only researchers to study CSR in terms of rail transport, we conducted a survey of 2712 customers of Trenitalia, the leading rail company in Italy. We found that investing in CSR initiatives is positively related to customers' level of satisfaction, which is positively correlated

Table 4
Estimates of the measurement and structural equations of the latent variable environmental awareness (LV_{EA}).

Parameter	Willingness to Reuse		Willingness to Recommend		Willingness to Pay Higher Fares	
	Estimate	p-value	Estimate	p-value	Estimate	p-value
<i>Measurement Equations (Ordered Probit Models)</i>						
τ_RESP (Everybody is responsible for the environment)	2.39	< 0.001	2.39	< 0.001	2.36	< 0.001
ω_1_RESP	-9.51	< 0.001	-9.51	< 0.001	-9.44	< 0.001
ω_2_RESP	-8.12	< 0.001	-8.10	< 0.001	-8.06	< 0.001
ω_3_RESP	-6.71	< 0.001	-6.69	< 0.001	-6.66	< 0.001
ω_4_RESP	-5.36	< 0.001	-5.34	< 0.001	-5.31	< 0.001
ω_5_RESP	-3.83	< 0.001	-3.80	< 0.001	-3.78	< 0.001
ω_6_RESP	-1.84	< 0.001	-1.81	< 0.001	-1.80	< 0.001
τ_GOV (Need for stricter laws to protect the environment)	2.18	< 0.001	2.18	< 0.001	2.18	< 0.001
ω_1_GOV	-7.82	< 0.001	-7.82	< 0.001	-7.83	< 0.001
ω_2_GOV	-6.83	< 0.001	-6.81	< 0.001	-6.83	< 0.001
ω_3_GOV	-5.74	< 0.001	-5.72	< 0.001	-5.74	< 0.001
ω_4_GOV	-4.52	< 0.001	-4.50	< 0.001	-4.51	< 0.001
ω_5_GOV	-2.86	< 0.001	-2.83	< 0.001	-2.84	< 0.001
ω_6_GOV	-0.87	< 0.001	-0.84	< 0.001	-0.85	< 0.001
τ_PERS (I should commit to sustainability)	2.86	< 0.001	2.84	< 0.001	2.87	< 0.001
ω_1_PERS	-10.88	< 0.001	-10.8	< 0.001	-10.90	< 0.001
ω_2_PERS	-9.12	< 0.001	-9.03	< 0.001	-9.14	< 0.001
ω_3_PERS	-8.05	< 0.001	-7.96	< 0.001	-8.07	< 0.001
ω_4_PERS	-6.19	< 0.001	-6.11	< 0.001	-6.20	< 0.001
ω_5_PERS	-4.61	< 0.001	-4.54	< 0.001	-4.60	< 0.001
ω_6_PERS	-2.43	< 0.001	-2.38	< 0.001	-2.42	< 0.001
τ_OTHER (I try to convince others to respect the environment)	1.41	< 0.001	1.41	< 0.001	1.42	< 0.001
ω_1_OTHER	-5.44	< 0.001	-5.43	< 0.001	-5.45	< 0.001
ω_2_OTHER	-4.43	< 0.001	-4.42	< 0.001	-4.43	< 0.001
ω_3_OTHER	-3.38	< 0.001	-3.37	< 0.001	-3.38	< 0.001
ω_4_OTHER	-1.98	< 0.001	-1.97	< 0.001	-1.98	< 0.001
ω_5_OTHER	-0.63	< 0.001	-0.61	< 0.001	-0.62	< 0.001
ω_6_OTHER	0.67	< 0.001	0.68	< 0.001	0.68	< 0.001
<i>Structural Equation (Binary Logit Model)</i>						
	0.56		0.55		0.56	

(continued on next page)

Table 4 (continued)

Parameter	Willingness to Reuse		Willingness to Recommend		Willingness to Pay Higher Fares	
	Estimate	p-value	Estimate	p-value	Estimate	p-value
<i>Measurement Equations (Ordered Probit Models)</i>						
θ_GENDER (dummy 1, female)		< 0.001		< 0.001		< 0.001
θ_AGE1 (dummy 1, age < 25)	-0.37	< 0.001	-0.36	< 0.001	-0.37	< 0.001
θ_AGE2 (dummy 1, age 25–44)	-0.23	0.01	-0.23	0.01	-0.23	0.01
θ_COM (dummy 1, commuter)	0.02	0.67	0.02	0.73	0.02	0.63
θ_OCC1 (dummy 1, employed)	-0.01	0.89	0.00	0.97	-0.02	0.76
θ_OCC2 (dummy 1, not employed)	0.01	0.90	0.02	0.86	0.00	0.98
θ_RES1 (dummy 1, living in FVG)	-0.22	< 0.001	-0.21	< 0.001	-0.20	< 0.001
θ_RES2 (dummy 1, living in VENETO)	-0.20	< 0.001	-0.19	< 0.001	-0.19	< 0.001

to customers' loyalty, intention to recommend the service to others, and willingness to pay higher fares. Our results are in line with those found by other studies for rail transport (Park et al., 2016), bus service (Chang & Yeh, 2017), and air transport (Park, 2019; Park et al., 2016). However, unlike other studies in the literature, we also found that the strength of these positive correlations depended on the type of CSR initiative carried out by the service provider and on the sociodemographic characteristics and environmental sensitivity of the individuals interviewed. Regarding our case study, only strategies aimed at creating new jobs, contributing to national economic development, safeguarding the environment, and protecting passengers' safety are significantly related to respondents' level of satisfaction and behavioral intentions. Moreover, in our case study, the positive influences of initiatives aimed at protecting the environment were amplified for customers sensitive to environmental sustainability issues. The outcome of our research highlights that adopting the CSR paradigm is positively correlated with the benefits of the society and communities in which the firms operate, but also with the market value and profitability of the firms themselves. It represents a Pareto efficiency outcome that firms can pursue to compete in the market successfully. However, it also demonstrates that creating a win-win result requires designing initiatives that are transparent, visible, and in line with the customers' preferences and latent attitudes. Although our results demonstrate the significance and strength of the relationships analyzed, further tests should be conducted to prove any causality's existence and direction.

Despite the insightful results we have obtained, some research questions could be further analyzed. First, future studies should test whether customers' level of knowledge on the CSR initiatives carried out by the firms significantly affects their level of satisfaction and behavioral intentions. If the relationship is positive and significant, it would imply that the profitability and effectiveness of adopting socially responsible management of the firm is related only on the commitment to invest in such initiatives but also on the promotion of the benefits obtained for all the stakeholders involved. This is a research goal which has not been pursued yet in the literature but could have significant implications for how transport companies should approach CSR. Marketing campaigns focused on the projects implemented and on increasing the sensitivity for social values such as environment protection, social inclusion, solidarity, and gender equality could indeed amplify and complement the positive relationship between CSR and customer satisfaction, word of mouth, and WTP. Second, future studies should test if allowing

Table 5

Estimates of the measurement and structural equations of the latent variable risk propensity (LV_{RP}).

Parameter	Willingness to Reuse		Willingness to Recommend		Willingness to Pay Higher Fares	
	Estimate	p-value	Estimate	p-value	Estimate	p-value
<i>Measurement Equations (Ordered Probit Models)</i>						
τ_INT (Taking risks is interesting)	2.13	< 0.001	2.14	< 0.001	2.13	< 0.001
ω_1_INT	-2.99	< 0.001	-2.97	< 0.001	-3.08	< 0.001
ω_2_INT	-1.62	< 0.001	-1.6	< 0.001	-1.71	< 0.001
ω_3_INT	-0.39	0.07	-0.36	0.10	-0.48	0.03
ω_4_INT	1.02	< 0.001	1.04	< 0.001	0.92	< 0.001
ω_5_INT	2.58	< 0.001	2.61	< 0.001	2.49	< 0.001
ω_6_INT	4.00	< 0.001	4.03	< 0.001	3.91	< 0.001
τ_TAKER (I'm used to risky decisions)	6.69	< 0.001	6.57	< 0.001	6.82	< 0.001
ω_1_TAKER	-6.48	< 0.001	-6.29	< 0.001	-6.89	< 0.001
ω_2_TAKER	-1.80	0.01	-1.69	0.01	-2.13	< 0.001
ω_3_TAKER	2.24	< 0.001	2.28	< 0.001	2.00	< 0.001
ω_4_TAKER	6.04	< 0.001	6.01	< 0.001	5.87	< 0.001
ω_5_TAKER	10.32	< 0.001	10.22	< 0.001	10.22	< 0.001
ω_6_TAKER	13.85	< 0.001	13.69	< 0.001	13.81	< 0.001
τ_REP (I've a reputation as a risk taker)	3.23	< 0.001	3.23	< 0.001	3.22	< 0.001
ω_1_REP	-2.16	< 0.001	-2.12	< 0.001	-2.29	< 0.001
ω_2_REP	0.02	0.95	0.06	0.86	-0.12	0.71
ω_3_REP	1.94	< 0.001	1.98	< 0.001	1.80	< 0.001
ω_4_REP	3.75	< 0.001	3.8	< 0.001	3.61	< 0.001
ω_5_REP	5.58	< 0.001	5.62	< 0.001	5.44	< 0.001
ω_6_REP	7.39	< 0.001	7.43	< 0.001	7.24	< 0.001
<i>Structural Equation (Binary Logit Model)</i>						
θ_GENDER (dummy 1, female)	-0.42	< 0.001	-0.42	< 0.001	-0.42	< 0.001
θ_AGE1 (dummy 1, age < 25)	0.55	< 0.001	0.56	< 0.001	0.51	< 0.001
θ_AGE2 (dummy 1, age 25–44)	0.31	< 0.001	0.29	< 0.001	0.29	< 0.001
θ_COM (dummy 1, commuter)	-0.18	< 0.001	-0.18	< 0.001	-0.19	< 0.001
θ_OCC1 (dummy 1, employed)	0.23	< 0.001	0.25	< 0.001	0.21	< 0.001
θ_OCC2 (dummy 1, not employed)	0.26	0.01	0.26	0.02	0.22	0.03
θ_RES1 (dummy 1, living in FVG)	0.03	0.54	0.03	0.58	0.03	0.54
θ_RES2 (dummy 1, living in VENETO)	0.05	0.36	0.05	0.35	0.05	0.33

Table 6
Estimates of the measurement and structural equation of the latent variable customer satisfaction (LV_{CS}).

Parameter	Willingness to Reuse		Willingness to Recommend		Willingness to Pay Higher Fares	
	Estimate	p-value	Estimate	p-value	Estimate	p-value
	<i>Measurement Equation (Ordered Probit Model)</i>					
τ _{SAT} (Overall, I'm satisfied)	1.69	< 0.001	2.03	< 0.001	0.83	< 0.001
ω _{1_SAT}	-2.44	< 0.001	-2.74	< 0.001	-1.96	< 0.001
ω _{2_SAT}	-0.65	0.02	-0.77	0.01	-0.49	0.02
ω _{3_SAT}	1.38	< 0.001	1.47	< 0.001	1.12	< 0.001
ω _{4_SAT}	3.62	< 0.001	3.92	< 0.001	2.87	< 0.001
ω _{5_SAT}	6.43	< 0.001	6.97	< 0.001	5.10	< 0.001
ω _{6_SAT}	9.31	< 0.001	10.13	< 0.001	7.45	< 0.001
<i>Structural Equation (Binary Logit Model)</i>						
θ _{GENDER} (dummy 1 female)	-0.06	0.38	-0.05	0.35	-0.03	0.76
θ _{AGE1} (dummy 1, age < 25)	0.01	0.95	0.00	0.97	0.02	0.91
θ _{AGE2} (dummy 1, age 25-44)	-0.08	0.48	-0.06	0.54	-0.10	0.61
θ _{COM} (dummy 1, commuter)	-0.17	0.01	-0.15	0.01	-0.28	0.01
θ _{OCC1} (dummy 1, employed)	0.01	0.91	0.01	0.93	0.01	0.95
θ _{OCC2} (dummy 1, not employed)	0.19	0.23	0.16	0.26	0.27	0.30
θ _{RES1} (dummy 1, living in FVG)	0.12	0.12	0.12	0.08	0.21	0.12
θ _{RES2} (dummy 1, living in VENETO)	0.05	0.51	0.06	0.45	0.10	0.46
ζ _{STAFF} (dummy 1, if rating > 4)	0.41	< 0.001	0.37	< 0.001	0.62	< 0.001
ζ _{PUNCT} (dummy 1, if rating > 4)	0.84	< 0.001	0.74	< 0.001	1.39	< 0.001
ζ _{CLEANT} (dummy 1, if rating > 4)	0.79	< 0.001	0.72	< 0.001	1.34	< 0.001
ζ _{SAFET} (dummy 1, if rating > 4)	0.07	0.34	0.07	0.31	0.09	0.48
ζ _{POL} (dummy 1, if rating > 4)	0.45	< 0.001	0.36	< 0.001	0.66	< 0.001
ζ _{WAIT} (dummy 1, if rating > 4)	0.41	< 0.001	0.37	< 0.001	0.68	< 0.001
ζ _{CLEANS} (dummy 1, if rating > 4)	0.40	< 0.001	0.37	< 0.001	0.70	< 0.001
ζ _{SAFES} (dummy 1, if rating > 4)	0.36	< 0.001	0.34	< 0.001	0.67	< 0.001
ζ _{OCC} (dummy 1, if rating > 4)	0.26	< 0.001	0.25	< 0.001	0.48	< 0.001
ζ _{EC} (dummy 1, if rating > 4)	0.41	< 0.001	0.39	< 0.001	0.66	< 0.001

Table 6 (continued)

Parameter	Willingness to Reuse		Willingness to Recommend		Willingness to Pay Higher Fares	
	Estimate	p-value	Estimate	p-value	Estimate	p-value
	<i>Measurement Equation (Ordered Probit Model)</i>					
ζ _{ENV} (dummy 1, if rating > 4)	0.19	0.02	0.18	0.01	0.27	0.05
ζ _{ENV} × LV _{EA}	0.27	< 0.001	0.26	< 0.001	0.38	< 0.001
ζ _{CHAR} (dummy 1, if rating > 4)	-0.09	0.30	-0.09	0.24	-0.01	0.92
ζ _{CULT} (dummy 1, if rating > 4)	-0.01	0.86	-0.03	0.67	0.02	0.89
ζ _{SAFETY} (dummy 1, if rating > 4)	0.20	< 0.001	0.07	0.24	0.18	0.12
ζ _{SAFETY} × LV _{RP}	-0.03	0.44	-0.01	0.86	0.07	0.27
ζ _{COVID} (dummy 1, if rating > 4)	0.45	< 0.001	0.45	< 0.001	0.70	< 0.001
ζ _{CORR} (dummy 1, if rating > 4)	0.07	0.43	0.13	0.09	0.14	0.30
ζ _{RIGH} (dummy 1, if rating > 4)	0.07	0.39	0.07	0.31	0.10	0.44

customers to express their preferences on which CSR initiatives should be financed could further increase their level of satisfaction and their bond with the firm. Finally, our research is mainly focused on the preferences of individuals living in the northeastern part of Italy. Future research should extend our analysis to other geographical areas of the country to test the robustness of our conclusions.

Adopting a broader perspective, there is an evident gap in the literature with reference to the relationship between the adoption of CSR initiatives by firms operating in the transport sector and their profitability. Given the crucial role played by the transport sector for the energy and ecological transition and the high costs that this transition will require, other studies are needed on this topic, both at the national and international levels. We also suggest experimenting with new methodological frameworks to approach this research area, such as integrating the existing analytical tools with micro-founded interdisciplinary techniques (e.g., hybrid discrete choice models).

Finally, an important topic that has not been studied in the literature yet is the role played by policy makers. Indeed, although CSR initiatives are carried out on a voluntary basis, customers might only value these initiatives if they are certified and properly monitored by a third party, possibly a regulator defining the minimum standards to be met. This assumption should be explored and verified via ad hoc empirical studies, as it could have relevant implications for the profitability of adopting a socially responsible management approach. Secondly, policy makers could help promote information campaigns aimed at increasing citizens' awareness of how much their mode of transport choice impacts not only the environment but also economic development and degree of social inclusion in a country. These policy and regulatory frameworks could create the background needed by firms to leverage their engagement in CSR projects. The effectiveness of these policies, however, has not yet been studied. Finally, transport policies aimed at pursuing sustainable development goals should consistently and clearly signal what the sectorial regulative scenario will be in the medium to long run, giving operators the opportunity to anticipate via voluntary CSR initiatives what will be introduced as mandatory practices in the near future, reducing the compliance costs otherwise faced by firms while benefiting society before the deadlines defined by the regulator. None of the

Table 7
Estimates of the choice models (binary logit models).

Parameter	Willingness to Reuse		Willingness to Recommend		Willingness to Pay Higher Fares	
	Estimate	p (0)	Estimate	p (0)	Estimate	p (0)
ASC	-0.37	0.25	-3.26	< 0.001	-3.31	< 0.001
β_GENDER (dummy 1, female)	0.18	0.18	0.61	< 0.001	-0.28	0.04
β_AGE1 (dummy 1, age < 25)	0.44	0.08	-0.04	0.88	-0.20	0.43
β_AGE2 (dummy 1, age 25-44)	0.22	0.36	-0.15	0.58	-0.56	0.02
β_COM (dummy 1, commuter)	0.38	< 0.001	0.25	0.08	0.06	0.66
β_OCC1 (dummy 1, employed)	-0.67	< 0.001	-0.04	0.83	-0.17	0.41
β_OCC2 (dummy 1, not employed)	-0.85	0.01	-0.21	0.57	0.21	0.50
β_RES1 (dummy 1, living in FVG)	-0.36	0.03	0.15	0.39	-0.06	0.75
β_RES2 (dummy 1, living in VENETO)	-0.09	0.60	0.20	0.29	-0.10	0.60
α_LV _{CS}	1.10	< 0.001	1.72	< 0.001	0.39	< 0.001
Model diagnostics						
LL(start)	-31,250		-31,699		-32,077	
LL(final)	-28,426		-28,516		-28,215	
LL(intentional behavior)	-1141		-1340		-1880	
AIC	57,070		57,250		56,648	
BIC	57,714		57,894		57,532	
Estimated parameters	109		109		109	
Number of observations	2712		2712		2712	

studies we reviewed analyzed the relationship between the

Appendix A. Appendix

Table A1
Estimates of the measurement and structural equations of the latent variable environmental awareness (LV_{EA}).

Parameter	Willingness to Reuse		Willingness to Recommend		Willingness to Pay Higher Fares	
	Estimate	p-value	Estimate	p-value	Estimate	p-value
<i>Measurement Equations (Ordered Probit Models)</i>						
τ_RESP (Everybody is responsible for the environment)	2.39	< 0.001	2.39	NA	2.39	NA
ω_1_RESP	-9.51	< 0.001	-9.51	NA	-9.51	NA
ω_2_RESP	-8.12	< 0.001	-8.12	NA	-8.12	NA
ω_3_RESP	-6.71	< 0.001	-6.71	NA	-6.71	NA
ω_4_RESP	-5.36	< 0.001	-5.36	NA	-5.36	NA
ω_5_RESP	-3.83	< 0.001	-3.83	NA	-3.83	NA
ω_6_RESP	-1.84	< 0.001	-1.84	NA	-1.84	NA
τ_GOV (Need for stricter laws to protect the environment)	2.18	< 0.001	2.18	NA	2.18	NA
ω_1_GOV	-7.82	< 0.001	-7.82	NA	-7.82	NA
ω_2_GOV	-6.83	< 0.001	-6.83	NA	-6.83	NA
ω_3_GOV	-5.74	< 0.001	-5.74	NA	-5.74	NA
ω_4_GOV	-4.52	< 0.001	-4.52	NA	-4.52	NA
ω_5_GOV	-2.86	< 0.001	-2.86	NA	-2.86	NA
ω_6_GOV	-0.87	< 0.001	-0.87	NA	-0.87	NA
τ_PERS (I should commit to sustainability)	2.86	< 0.001	2.86	NA	2.86	NA
ω_1_PERS	-10.88	< 0.001	-10.88	NA	-10.88	NA
ω_2_PERS	-9.12	< 0.001	-9.12	NA	-9.12	NA
ω_3_PERS	-8.05	< 0.001	-8.05	NA	-8.05	NA
ω_4_PERS	-6.19	< 0.001	-6.19	NA	-6.19	NA

(continued on next page)

implementation of transport policies aimed at economic, social, and environmental sustainability and the adoption of CSR initiatives by transport operators, a topic that in our view should be carefully studied.

CRedit authorship contribution statement

Lucia Rotaris: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft. **Mariangela Scorrano:** Data curation, Formal analysis, Writing – original draft. **Barbara Campisi:** Visualization, Writing – review & editing. **Paola Rossi:** Visualization, Writing – review & editing.

Declaration of Competing Interest

None.

Table A1 (continued)

Parameter	Willingness to Reuse		Willingness to Recommend		Willingness to Pay Higher Fares	
	Estimate	p-value	Estimate	p-value	Estimate	p-value
<i>Measurement Equations (Ordered Probit Models)</i>						
ω ₅ _PERS	-4.61	< 0.001	-4.61	NA	-4.61	NA
ω ₆ _PERS	-2.43	< 0.001	-2.43	NA	-2.43	NA
τ_OTHER (I try to convince others to respect the environment)	1.41	< 0.001	1.41	NA	1.41	NA
ω ₁ _OTHER	-5.44	< 0.001	-5.44	NA	-5.44	NA
ω ₂ _OTHER	-4.43	< 0.001	-4.43	NA	-4.43	NA
ω ₃ _OTHER	-3.38	< 0.001	-3.38	NA	-3.38	NA
ω ₄ _OTHER	-1.98	< 0.001	-1.98	NA	-1.98	NA
ω ₅ _OTHER	-0.63	< 0.001	-0.63	NA	-0.63	NA
ω ₆ _OTHER	0.67	< 0.001	0.67	NA	0.67	NA
<i>Structural Equation (Binary Logit Model)</i>						
θ_GENDER (dummy 1, female)	0.56	< 0.001	0.56	NA	0.56	NA
θ_AGE1 (dummy 1, age < 25)	-0.37	< 0.001	-0.37	NA	-0.37	NA
θ_AGE2 (dummy 1, age 25–44)	-0.23	0.01	-0.23	NA	-0.23	NA
θ_COM (dummy 1, commuter)	0.02	0.67	0.02	NA	0.02	NA
θ_OCC1 (dummy 1, employed)	-0.01	0.89	-0.01	NA	-0.01	NA
θ_OCC2 (dummy 1, not employed)	0.01	0.90	0.01	NA	0.01	NA
θ_RES1 (dummy 1, living in FVG)	-0.22	< 0.001	-0.22	NA	-0.22	NA
θ_RES2 (dummy 1, living in VENETO)	-0.20	< 0.001	-0.2	NA	-0.20	NA

Table A2

Estimates of the measurement and structural equations of the latent variable risk propensity (LV_{RP}).

Parameter	Willingness to Reuse		Willingness to Recommend		Willingness to Pay Higher Fares	
	Estimate	p (0)	Estimate	p (0)	Estimate	p (0)
<i>Measurement Equations (Ordered Probit Models)</i>						
τ_INT (Taking risks is interesting)	2.13	< 0.001	2.13	NA	2.13	NA
ω ₁ _INT	-2.99	< 0.001	-2.99	NA	-2.99	NA
ω ₂ _INT	-1.62	< 0.001	-1.62	NA	-1.62	NA
ω ₃ _INT	-0.39	0.07	-0.39	NA	-0.39	NA
ω ₄ _INT	1.02	< 0.001	1.02	NA	1.02	NA
ω ₅ _INT	2.58	< 0.001	2.58	NA	2.58	NA
ω ₆ _INT	4.00	< 0.001	4.00	NA	4.00	NA
τ_TAKER (I'm used to risky decisions)	6.69	< 0.001	6.69	NA	6.69	NA
ω ₁ _TAKER	-6.48	< 0.001	-6.48	NA	-6.48	NA
ω ₂ _TAKER	-1.80	0.01	-1.80	NA	-1.80	NA
ω ₃ _TAKER	2.24	< 0.001	2.24	NA	2.24	NA
ω ₄ _TAKER	6.04	< 0.001	6.04	NA	6.04	NA
ω ₅ _TAKER	10.32	< 0.001	10.32	NA	10.32	NA
ω ₆ _TAKER	13.85	< 0.001	13.85	NA	13.85	NA
τ_REP (I've a reputation as a risk taker)	3.23	< 0.001	3.23	NA	3.23	NA
ω ₁ _REP	-2.16	< 0.001	-2.16	NA	-2.16	NA
ω ₂ _REP	0.02	0.95	0.02	NA	0.02	NA
ω ₃ _REP	1.94	< 0.001	1.94	NA	1.94	NA
ω ₄ _REP	3.75	< 0.001	3.75	NA	3.75	NA
ω ₅ _REP	5.58	< 0.001	5.58	NA	5.58	NA
ω ₆ _REP	7.39	< 0.001	7.39	NA	7.39	NA
<i>Structural Equation (Binary Logit Model)</i>						
θ_GENDER (dummy 1, female)	-0.42	< 0.001	-0.42	NA	-0.42	NA
θ_AGE1 (dummy 1, age < 25)	0.55	< 0.001	0.55	NA	0.55	NA
θ_AGE2 (dummy 1, age 25–44)	0.31	< 0.001	0.31	NA	0.31	NA
θ_COM (dummy 1, commuter)	-0.18	< 0.001	-0.18	NA	-0.18	NA
θ_OCC1 (dummy 1, employed)	0.23	< 0.001	0.23	NA	0.23	NA
θ_OCC2 (dummy 1, not employed)	0.26	0.01	0.26	NA	0.26	NA
θ_RES1 (dummy 1, living in FVG)	0.03	0.54	0.03	NA	0.03	NA
θ_RES2 (dummy 1, living in VENETO)	0.05	0.36	0.05	NA	0.05	NA

Table A3
Estimates of the measurement and structural equation of the latent variable customer satisfaction (LV_{CS}).

Parameter	Willingness to Reuse		Willingness to Recommend		Willingness to Pay Higher Fares	
	Estimate	p-value	Estimate	p-value	Estimate	p-value
<i>Measurement Equation (Ordered Probit Model)</i>						
τ _{SAT} (Overall, I'm satisfied)	1.69	< 0.001	1.69	NA	1.69	NA
ω _{1_SAT}	-2.44	< 0.001	-2.44	NA	-2.44	NA
ω _{2_SAT}	-0.65	0.02	-0.65	NA	-0.65	NA
ω _{3_SAT}	1.38	< 0.001	1.38	NA	1.38	NA
ω _{4_SAT}	3.62	< 0.001	3.62	NA	3.62	NA
ω _{5_SAT}	6.43	< 0.001	6.43	NA	6.43	NA
ω _{6_SAT}	9.31	< 0.001	9.31	NA	9.31	NA
<i>Structural Equation (Binary Logit Model)</i>						
θ _{GENDER} (dummy 1, female)	-0.06	0.38	-0.06	NA	-0.06	NA
θ _{AGE1} (dummy 1, age < 25)	0.01	0.95	0.01	NA	0.01	NA
θ _{AGE2} (dummy 1, age 25-44)	-0.08	0.48	-0.08	NA	-0.08	NA
θ _{COM} (dummy 1, commuter)	-0.17	0.01	-0.17	NA	-0.17	NA
θ _{OCC1} (dummy 1, employed)	0.01	0.91	0.01	NA	0.01	NA
θ _{OCC2} (dummy 1, not employed)	0.19	0.23	0.19	NA	0.19	NA
θ _{RES1} (dummy 1, living in FVG)	0.12	0.12	0.12	NA	0.12	NA
θ _{RES2} (dummy 1, living in VENETO)	0.05	0.51	0.05	NA	0.05	NA
ζ _{STAFF} (dummy 1, if rating > 4)	0.41	< 0.001	0.41	NA	0.41	NA
ζ _{PUNCT} (dummy 1, if rating > 4)	0.84	< 0.001	0.84	NA	0.84	NA
ζ _{CLEANT} (dummy 1, if rating > 4)	0.79	< 0.001	0.79	NA	0.79	NA
ζ _{SAFET} (dummy 1, if rating > 4)	0.07	0.34	0.07	NA	0.07	NA
ζ _{POL} (dummy 1, if rating > 4)	0.45	< 0.001	0.45	NA	0.45	NA
ζ _{WAIT} (dummy 1, if rating > 4)	0.41	< 0.001	0.41	NA	0.41	NA
Z _{CLEANS} (dummy 1, if rating > 4)	0.40	< 0.001	0.40	NA	0.40	NA
ζ _{SAFES} (dummy 1, if rating > 4)	0.36	< 0.001	0.36	NA	0.36	NA
ζ _{OCC} (dummy 1, if rating > 4)	0.26	< 0.001	0.26	NA	0.26	NA
ζ _{EC} (dummy 1, if rating > 4)	0.41	< 0.001	0.41	NA	0.41	NA
ζ _{ENV} (dummy 1, if rating > 4)	0.19	0.02	0.19	NA	0.19	NA
ζ _{ENV} × LV _{EA}	0.27	< 0.001	0.27	NA	0.27	NA
ζ _{CHAR} (dummy 1, if rating > 4)	-0.09	0.30	-0.09	NA	-0.09	NA
ζ _{CULT} (dummy 1, if rating > 4)	-0.01	0.86	-0.01	NA	-0.01	NA
ζ _{SAFETY} (dummy 1, if rating > 4)	0.20	< 0.001	0.20	NA	0.20	NA
ζ _{SAFETY} × LV _{RP}	-0.03	0.44	-0.03	NA	-0.03	NA
ζ _{COVID} (dummy 1, if rating > 4)	0.45	< 0.001	0.45	NA	0.45	NA
ζ _{CORR} (dummy 1, if rating > 4)	0.07	0.43	0.07	NA	0.07	NA
ζ _{RIGH} (dummy 1, if rating > 4)	0.07	0.39	0.07	NA	0.07	NA

Table A4
Estimates of the choice models (binary logit models).

Parameter	Willingness to Reuse		Willingness to Recommend		Willingness to Pay Higher Fares	
	Estimate	p-value	Estimate	p-value	Estimate	p-value
ASC	-0.37	0.25	-3.32	< 0.001	-3.21	< 0.001
β _{GENDER} (dummy 1, female)	0.18	0.18	0.61	< 0.001	-0.31	0.02
β _{AGE1} (dummy 1, age < 25)	0.44	0.08	-0.01	0.97	-0.26	0.30
β _{AGE2} (dummy 1, age 25-44)	0.22	0.36	-0.10	0.70	-0.60	0.01
β _{COM} (dummy 1, commuter)	0.38	< 0.001	0.25	0.06	0.03	0.81
β _{OCC1} (dummy 1, employed)	-0.67	< 0.001	-0.04	0.83	-0.17	0.42
β _{OCC2} (dummy 1, not employed)	-0.85	0.01	-0.21	0.54	0.24	0.43
β _{RES1} (dummy 1, living in FVG)	-0.36	0.03	0.15	0.37	-0.04	0.83
β _{RES2} (dummy 1, living in VENETO)	-0.09	0.60	0.20	0.25	-0.10	0.60
α _{LV_{CS}}	1.10	< 0.001	1.56	< 0.001	0.61	< 0.001
<i>Model Diagnostics</i>						
LL(start)	-31,250		-29,177		-32,582	
LL(final)	-28,426		-28,524		-28,230	
LL(intentional behavior)	-1141		-1346		-863	
AIC	57,070		57,069		56,479	
BIC	57,714		57,128		56,538	
Estimated parameters	109		10		10	
Number of observations	2712		2712		2712	

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