






# “Assessing pro-environmental behaviors and implications for integrated conservation in protected areas: A study of visitors and entrepreneurs in the Asinara National Park, Italy”

<b>AUTHORS</b>	Marta Meleddu  Manuela Pulina  Marco Vannini  Marilena Vecco 
<b>ARTICLE INFO</b>	Marta Meleddu, Manuela Pulina, Marco Vannini and Marilena Vecco (2023). Assessing pro-environmental behaviors and implications for integrated conservation in protected areas: A study of visitors and entrepreneurs in the Asinara National Park, Italy. <i>Environmental Economics</i> , 14(2), 28-48. doi: <a href="https://doi.org/10.21511/ee.14(2).2023.03">10.21511/ee.14(2).2023.03</a>
<b>DOI</b>	<a href="http://dx.doi.org/10.21511/ee.14(2).2023.03">http://dx.doi.org/10.21511/ee.14(2).2023.03</a>
<b>RELEASED ON</b>	Wednesday, 16 August 2023
<b>RECEIVED ON</b>	Saturday, 17 June 2023
<b>ACCEPTED ON</b>	Wednesday, 19 July 2023
<b>LICENSE</b>	 This work is licensed under a <a href="https://creativecommons.org/licenses/by/4.0/">Creative Commons Attribution 4.0 International License</a>
<b>JOURNAL</b>	"Environmental Economics"
<b>ISSN PRINT</b>	1998-6041
<b>ISSN ONLINE</b>	1998-605X
<b>PUBLISHER</b>	LLC “Consulting Publishing Company “Business Perspectives”
<b>FOUNDER</b>	LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

**67**



NUMBER OF FIGURES

**7**



NUMBER OF TABLES

**12**

© The author(s) 2024. This publication is an open access article.



## BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"  
Hryhorii Skovoroda lane, 10,  
Sumy, 40022, Ukraine  
[www.businessperspectives.org](http://www.businessperspectives.org)

**Received on:** 17<sup>th</sup> of June, 2023  
**Accepted on:** 19<sup>th</sup> of July, 2023  
**Published on:** 16<sup>th</sup> of August, 2023

© Marta Meleddu, Manuela Pulina,  
Marco Vannini, Marilena Vecco, 2023

Marta Meleddu, Ph.D., Associate  
Professor, Department of Economics  
& Business (DISEA) & CRENoS,  
University of Sassari, Italy.  
(Corresponding author)

Manuela Pulina, Ph.D., Professor,  
Department of Economics & Business  
(DISEA) & CRENoS, University of  
Sassari, Italy.

Marco Vannini, Ph.D., Professor,  
Department of Economics & Business  
(DISEA) & CRENoS, University of  
Sassari, Italy.

Marilena Vecco, Ph.D., Professor,  
Department of Humanities, Arts and  
Management, Burgundy School of  
Business, France.



This is an Open Access article,  
distributed under the terms of the  
[Creative Commons Attribution 4.0  
International license](https://creativecommons.org/licenses/by/4.0/), which permits  
unrestricted re-use, distribution, and  
reproduction in any medium, provided  
the original work is properly cited.

**Conflict of interest statement:**  
Author(s) reported no conflict of interest

Marta Meleddu (Italy), Manuela Pulina (Italy), Marco Vannini (Italy),  
Marilena Vecco (France)

# ASSESSING PRO-ENVIRONMENTAL BEHAVIORS AND IMPLICATIONS FOR INTEGRATED CONSERVATION IN PROTECTED AREAS: A STUDY OF VISITORS AND ENTREPRENEURS IN THE ASINARA NATIONAL PARK, ITALY

## Abstract

Understanding pro-environmental behaviors in protected areas is vital for effective resource management, visitor management, infrastructure development, and conservation strategies. Therefore, this study aims to assess environmentally friendly practices and behaviors (eco-practices) of visitors (demand side) and entrepreneurs and tour operators (supply side) to explore the implications for the long-term sustainability of the protected area. The study utilizes the shared value framework and the value-belief-norm theory extended to environmentalism to investigate the relevant values for pro-environmental behaviors. The paper focuses on the Asinara National Park in Italy. It employs a partial least squares-structural equation model to analyze the pro-environmental behavior and willingness to commit to conservation goals. The findings reveal that visitors demonstrate a willingness to commit to eco-practices in a protected area based upon non-extractive cultural ecosystem services (path coefficient = 0.196\*) and accept earmarked taxation (path coefficient = 0.254\*\*\*), which indicates their loyalty and satisfaction with their visit. On the other hand, entrepreneurs are motivated by internally adopted ecological practices (path coefficient = 0.509\*\*\*) and altruistic reasons (path coefficient = 0.377\*\*). In conclusion, the study emphasizes aligning service and facility supply with demand and the mission of protected areas to achieve balanced and sustainable resource management. By understanding and promoting pro-environmental behaviors, long-term resilience can be ensured for protected areas, benefiting both the environment and the visitors.

## Keywords

protected area, ecosystem services, commitment,  
ecological practices

## JEL Classification

Q26, Q57, C31, C38

## INTRODUCTION

Managing protected areas involves preserving natural and cultural resources while balancing conservation goals and recreational needs. The increase in waste generation and changes in travel behavior due to climate change and global shocks, such as the COVID-19 pandemic, have amplified the demand for ecotourism in these areas. The European Union's (EU) focus on biodiversity conservation further highlights the significance of studying these trends. Protected area tourism's increasing popularity and profitability have attracted investors interested in ecological and conservation objectives. Understanding pro-environmental behaviors in protected areas is vital for effective resource management. Aligning visitor services with demand allows managers to

meet expectations, enhance satisfaction, and encourage positive word-of-mouth. However, inadequate supply management could jeopardize conservation objectives by exceeding the carrying capacity of protected areas.

While visitor attitudes and behaviors have received extensive attention, on the supply side, limited consideration has been given to pro-environmental behavior. Thus, there is a need to investigate the influence of non-extractive recreation, non-extractive information knowledge, willingness to pay, satisfaction, loyalty, and word-of-mouth on visitors' willingness to commit to the protected area (demand side). It is also crucial to examine how entrepreneurs' motivations, ideal reasons, economic evaluation, internal actions, and external actions influence their willingness to commit to the protected area (supply side).

## 1. LITERATURE REVIEW

The role of individual values in influencing human behavior is widely acknowledged. The value-belief-norm theory of environmentalism has established a connection between values and other predictors of environmental actions (Stern et al., 1999). Andrade et al. (2022) identified five types of individual values relevant to environmental contexts: biospheric (care for the biophysical environment), altruistic (care for human well-being), selfish (care only for oneself), hedonic (gratification from experiencing pleasure), and eudaimonic (principles for living well).

Self-representation, environmental values, and attitudes positively influence ecological ideals and pro-environmental behaviors (Kaiser et al., 1999; Hwang & Lee, 2018; Passafaro, 2020). Environmental values are linked to a higher willingness to pay to support the environment (Hwang & Lee, 2018; Bravo-Vargas et al., 2019). Meleddu and Pulina (2016) emphasize the role of environmental values in the willingness to pay a premium price for ecotourism. The existing literature frequently employs willingness to pay as an indicator of raising revenues for internalizing costs and negative intra- and inter-generation externalities in protected areas and local communities (Vecco, 2019). One strand of this literature explicitly concentrates on eliciting visitors' willingness to pay by employing stated preference methods in a protected area (Thapa & Parent, 2020; Spenceley et al., 2021). Yet, this economic indicator also embeds the power of ideal values and beliefs in ecological purchasing behavior that needs to be further explored (Liebe et al., 2011; Hultman et al., 2015; Kazemina et al., 2016; Garcia et al., 2019; Aseres & Sira, 2020).

Satisfaction and perceived value are crucial indicators for evaluating the visitor experience and the likelihood of revisiting or recommending the destination (Meleddu et al., 2015; Garcia et al., 2019). These indicators also relate to the commitment to the protected area's mission of conserving common resources. However, there needs to be more understanding of how individuals' attitudes toward experiencing cultural ecosystem services within a protected area influence their commitment.

While studies on visitor behavior in protected areas are relatively abundant, fewer have focused on analyzing the pro-environmental behavior of the supply side (Panta & Thapa, 2018; Piñeiro-Chousa et al., 2021). Previous studies assumed that self-interest motivations and profit maximization drove entrepreneurship, but recent research suggests a shift toward non-financial incentives, ideal drivers, and shared value maximization (Porter & Kramer, 2019).

Sustainable entrepreneurship aims to preserve nature, life support, and community by creating products, processes, and services that generate economic and non-economic gains for individuals, the economy, and society (Shepherd & Patzelt, 2011). Sustainable entrepreneurs, such as social entrepreneurs, possess different values from profit-driven firms (Dixon & Clifford, 2007; Mottiar et al., 2018; Gupta et al., 2020). Several studies propose a revised concept of sustainable entrepreneurship that promotes environmental improvements in small businesses, organizational design, business models, and motivations (Tilley & Parrish, 2009). In this respect, entrepreneurs may contribute to the growing volume of human-

itarian and ecological needs, such as the demand for clean water, cleaning up environmental toxins, and offsetting carbon emissions (Kirkwood & Walton, 2010).

Alternative motives and values of sustainability entrepreneurs may significantly contribute to socio-economic changes toward sustainable development (Ryan et al., 2012). These entrepreneurs balance profit-making and social responsibility and respond to calls for a moral turn (Mekawy, 2012). Koellner et al. (2010) highlight the role of intrinsically motivated sustainable entrepreneurs in financially oriented firms supporting ecosystem services. Notably, the highest motivation for paying for the provision of various ecosystem services is often non-financial benefits.

While previous research has explored the attitudes and behaviors of various stakeholders (i.e., residents, visitors, operators), there has been a lack of attention given to the experience and support of cultural ecosystem services within protected areas and the level of commitment from the demand and supply side (Imran et al., 2014; Van Riper & Kyle, 2014; Andrade et al., 2022; Zhang et al., 2023). From the visitors' perspective, there is a strong attraction toward cultural ecosystem services offered within protected areas, driven by attitudes, motivations, and past experiences. On the supply side, entrepreneurs and organizations are crucial in providing products and services that enable individuals to commit to these cultural ecosystem services. Therefore, analyzing the commitment of both the demand and supply sides to a protected area requires their alignment with the mission of conserving common resources through cultural ecosystem services. According to economic theory, commitment is typically associated with utility maximization for consumers and profit maximization for entrepreneurs, which involves factors such as prices, income, profits, and earmarked taxation (Dixon & Clifford, 2007; Ryan et al., 2012). However, commitment can also be linked to the pursuit of shared value based on ideal drivers, leading to positive externalities that benefit the well-being of both the demand and supply sides, as well as future generations (Mottiar et al., 2018; Porter & Kramer, 2019).

The theoretical framework in the present paper proposes an analysis of commitment that includes the theory of reasoned action, the theory of planned behavior, and the value-belief-norm theory of environmentalism (Ahtola, 1975; Ajzen, 1991; Stern et al., 1999; Fishbein & Cappella, 2006; López-Mosquera & Sánchez, 2012; Esfandiar et al., 2022). These behavioral models highlight the intrinsic value of attitudes and preferences. On the demand side, attitudes have been found to predict satisfaction and responsible behavior (Meleddu & Pulina, 2016; Passafaro, 2020). Additionally, a positive experiential encounter within the destination is likely to positively influence word-of-mouth (WOM) and loyalty (Meleddu et al., 2015). However, there is a lack of clear evidence regarding how the physical and experiential utilization of cultural ecosystem services, such as non-extractive recreation and non-extractive information knowledge, affect these indicators, particularly concerning individuals' willingness to commit to a protected area.

## 2. AIM AND HYPOTHESES

Considering the research gaps, this paper contributes to the existing literature by examining the relationship between the experience and support of cultural ecosystem services within protected areas and individuals' commitment to these areas. It sheds light on the influence of various factors, including attitudes, motivations, past behavior, and the physical/experiential utilization of cultural ecosystem services, on indicators such as satisfaction, responsible behavior, word-of-mouth, and loyalty. By investigating the willingness of individuals to commit to a protected area, this paper provides valuable insights into the drivers and implications of commitment from both the demand and supply sides within the context of conserving common resources through cultural ecosystem services.

Following the literature review, the study develops the demand framework on three main hypotheses (Figure 1). The ellipses represent the latent variables, while the boxes represent the observed variables. The direction of the arrows indicates how the constructs are measured (Venturini & Mehmetoglu, 2019).

The following hypotheses are drawn:

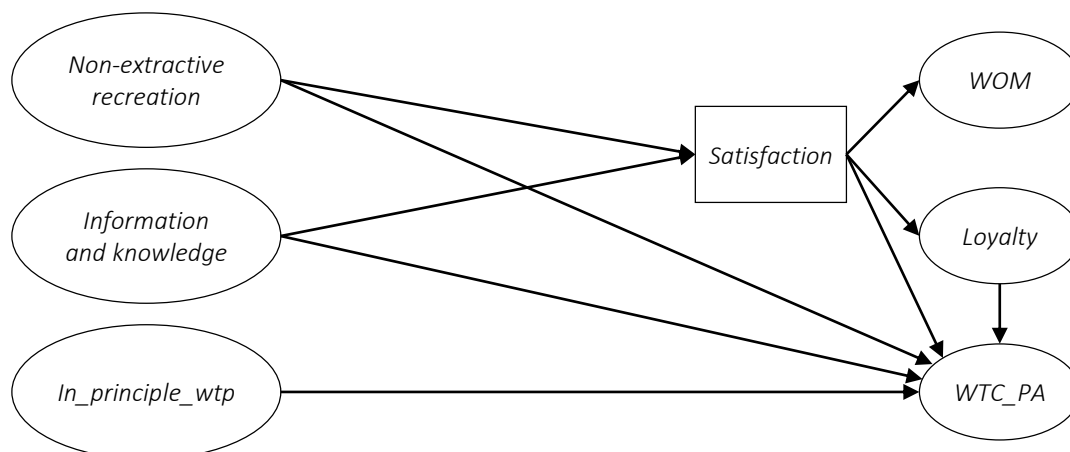
- H1: *Non-extractive recreation and information knowledge positively drive satisfaction and willingness to commit to the protected area.*
- H2: *In-principle willingness to pay, satisfaction, and loyalty positively drive satisfaction and willingness to commit to the protected area.*
- H3: *Satisfaction positively drives loyalty and word-of-mouth.*
- H4: *Motivations, ideal reasons, economic evaluation, internal actions, external actions drive entrepreneurs' willingness to commit to the protected area.*

Non-extractive recreation includes several indicators of potential activities in a destination characterized by environmentally high quality (e.g., visiting a national park, marine areas, an unspoiled nature) (Arcos-Aguilar et al., 2021). Non-extractive information knowledge includes indicators related to expanding cultural knowledge at the destination (e.g., learning about local flora and fauna; visiting historical and archaeological sites; photography) (Ressurreição et al., 2022). Hence, non-extractive recreation and non-extractive information knowledge are the latent constructs that measure the attitudes toward environmental-related factors regarding importance when deciding where to spend the holidays.

Willingness to pay considers the intention to pay more for a pro-environmental vacation. This dimension includes several items: willingness to pay more for holidays, knowing that revenues would be used to improve the environment, reduce pollution, or preserve fragile destinations. Besides, a further dimension is a willingness to pay more to enhance own or others' experience in the future (i.e., non-use value). These extra consumer costs are defined as earmarked taxation (Dixon & Clifford, 2007; Ryan et al., 2012; Hemel & Porter, 2022).

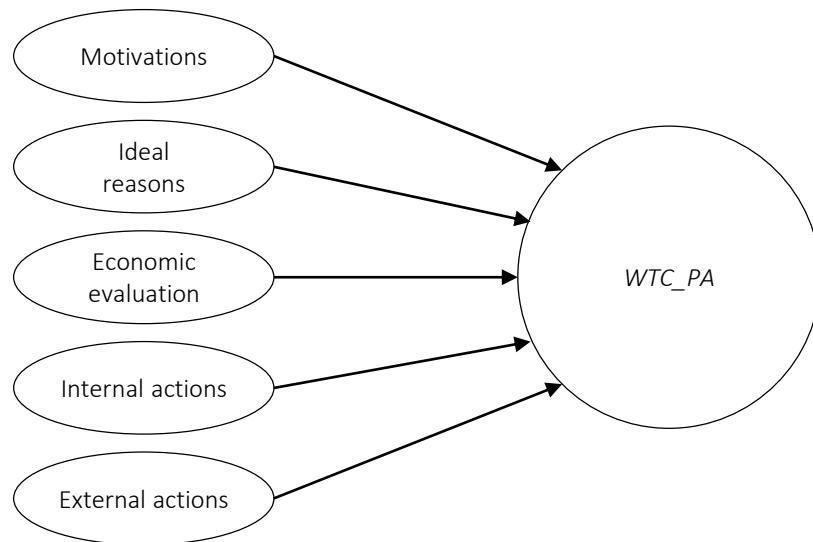
Satisfaction and word-of-mouth (WOM) measure the experience with the cultural ecosystem services in the protected area and become a potential channel to drive demand in the future. Satisfaction and willingness to commit to the protected area is the willingness to commit to the protected area, expressed in terms of the willingness to donate (one-off) to an association that deals with planting trees to reduce greenhouse gas emissions produced due to the visit to the protected area. Commitment can be viewed as a non-use value at time *t* but a synergic action that helps maximize the protected area's objective to protect and preserve common resources.

On the supply side, the latent predictors are motivations, ideal reasons, economic evaluation, and internal and external actions. Entrepreneurs' willingness to commit to the protected area (WTC\_PA) is the only endogenous latent variable (Figure 2).



Note: WTC\_PA = satisfaction and willingness to commit to the protected area; WOM = word-of-mouth; In\_principle\_wtp = willingness to pay.

Figure 1. Conceptual framework (on the demand side)



Note: WTC\_PA = satisfaction and willingness to commit to the protected area.

**Figure 2.** Conceptual framework (on the supply side)

From a theoretical perspective, these factors underpin economic drivers (i.e., *motivation\_egoistic*; *economics\_evaluation*; *external\_actions\_client\_oriented*) and ideal drivers (i.e., *motivation\_altruistic*; *ideal\_reasons*; *internal\_actions\_eco-practise*; *external\_actions\_promoting*) that relate to the individual values relevant to environmental context (Andrade et al., 2022).

Tables A1 and A2 (Appendix A) describe the items used to measure the constructs and how the related questions were worded for the demand and supply sides, respectively.

### 3. METHOD

The study was developed within the European project EcoSTRIM (‘Eco-Sustainable Tourism Investments to stimulate and promote the competitiveness and innovation of the Marine cross-border cooperation activities’) Programme 2014–2020 INTERREG V-A Italy-France (Maritime), a two-year project (2018–2021). The project builds a cross-border territorial strategy to develop and promote ecotourism and sports activities in protected areas associated with the marine and coastal environment. The paper explores the demand (i.e., domestic and international tourists and visitors, including residents) and supply in the protected area of Asinara, a national park located in the center of the Mediterranean Sea. The Asinara National Park institution in 1997 slowed

down the mass tourism phenomenon, stimulating the demand for quality environmental services, fostering better awareness about natural resources, and protecting rural ecosystems. The Asinara National Park obtained the European Charter for Sustainable Tourism in Protected Areas, and various strategies have been developed based on the site’s carrying capacity (Corbau et al., 2019).

The study administered surveys to both visitors and entrepreneurs. These surveys were designed to assess various aspects, including their level of awareness, attitudes, behaviors, and willingness to actively engage in environmental conservation. The demand side questionnaire was implemented via the online LimeSurvey platform and was administered to the Asinara National Park visitors on the social pages between September and October 2020. This timeframe elicits changes in the visitors’ segments because of the COVID-19 pandemic. Relevant information was gathered about their satisfaction and attitudes toward the environment and the challenges and issues around ecotourism. It consisted of six sections and 25 questions, with generally closed answers. After introducing the survey objectives, interviewees were asked about the type of visit, level of satisfaction, and attitudes toward ecotourism and the environment. The final section dealt with the interviewees’ socio-demographic profile (Tables A3 and A4 in Appendix A). The choice of a non-probabilistic snowball as a convenience sampling technique was motivated by

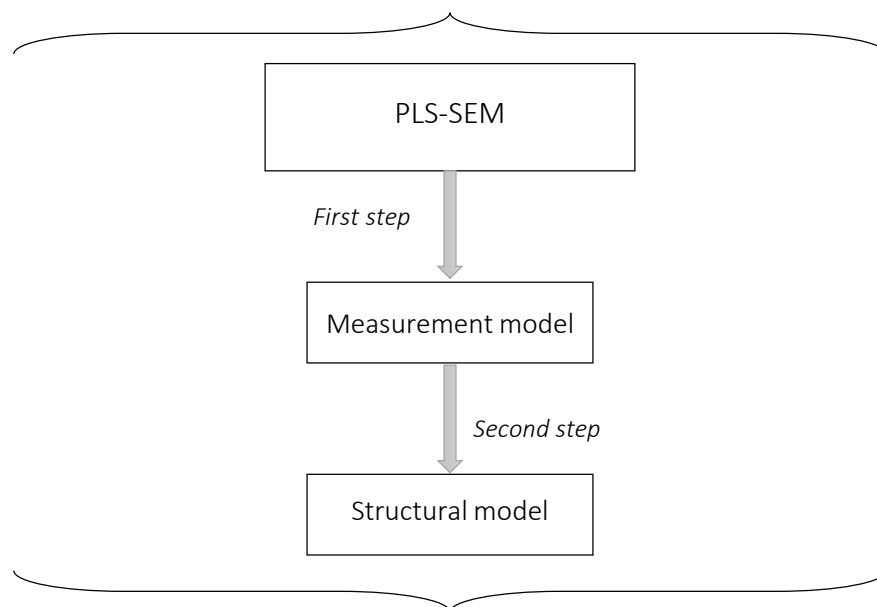
the need to extend the potential sample as much as possible to reach the highest possible number of respondents. Hence, the sample can be regarded as self-selected since these visitors demonstrated a specific interest in visiting a protected area and expanding their knowledge on this research topic. The number of completed questionnaires was 201.

The supply side questionnaire focused on the level of engagement of entrepreneurs, their attitudes, and management choices toward the environment and ecotourism. The target population was represented by all entrepreneurs who had requested authorization to operate in the area (i.e.,  $N = 68$ ). In October 2020, a LimeSurvey questionnaire was e-mailed to all the Asinara National Park managers. The survey comprised forty questions, divided into nine sections, featuring generally closed answers (Table A2 in Appendix A). The initial part of the questionnaire introduces the research objectives. The first two sections are general information about the entrepreneur, including ownership of the park brand, the main products and services offered, and their network. The third part relates to financing and assessing the consequences of the COVID-19 pandemic for their management and overall organization. Information was also collected regarding the economic performance (turnover, financial results), market dynamics, and the reasons that prompted the entrepreneur to undertake this activity (Sections 4 and 5, respectively).

The following section addresses several management practices, such as adopting strategic and operational planning; the definition of outcomes; the market competition analysis; policies for promoting ecotourism; and social media and website activities. Finally, Sections 7 and 8 assess entrepreneurs' perceptions of adopting sustainable and environmentally friendly practices. 57% of the population completed the questionnaire (i.e., 39 out of the 68 entrepreneurs contacted).

The partial least squares structural equation modeling (PLS-SEM) methodology has been employed to analyze demand and supply data, applying the theoretical framework. PLS-SEM has gained popularity due to its applicability in handling problematic models and its ability to analyze data with non-normal features or small sample sizes (Presenza et al., 2020). Specifically, PLS-SEM enables the assessment of causal relationships between indicators/items and other causal relationships between latent constructs (Gudergan et al., 2008). It is suitable for exploratory and confirmatory research, particularly when complex relationships involving multiple indicators and constructs must be assessed. This approach consists of two main stages: the measurement (or outer) model and the structural (or inner) model (Figure 3).

In the first step, the measurement model resembles a principal component analysis (PCA),



**Figure 3.** Methodological approach

where the latent variable combines  $X_i$  highly correlated with the observed variables. The latent variable scores are iteratively measured for each construct to ensure the validity of the constructs. The item reliability is inspected through the factor loadings that indicate the degree to which each indicator, which forms the construct, is correlated with its relevant latent variable. Cronbach's alpha (C.alpha) and Dillon-Goldstein's rho (DG Rho) are used to assess the internal consistency and the variance of the sum of the variables in a block (Presenza et al., 2020).

In the second step, as a confirmatory framework, a structural model provides the relationship between exogenous latent predictors and endogenous latent variables, estimated through an Ordinary Least Squares (OLS) estimation. Several measures assess the empirical goodness of the structural model:

- the statistical significance of the path coefficients;
- the  $R^2$  values of the dependent variable;
- the average variance extracted (AVE);
- the average redundancy, which is the amount of variance in the endogenous block predicted by the independent latent variables associated with the endogenous variables and expected to be higher than 0.50;
- the mean-communality, which is how much of the block variability is reproducible by the endogenous variable,
- the absolute Goodness of Fit (GoF) measures the global performance of the complex model (measurement and structural model) as the geometric mean of the average communality, and
- the average  $R^2$  for all the endogenous constructs and the relative GoF, where a value equal to or higher than 0.9 confirms a good performance of the model (Vinzi et al., 2010; Henseler & Sarstedt, 2013; Venturini & Mehmetoglu, 2019).

## 4. RESULTS

### 4.1. Sample characteristics

The demand side analysis relies on completed questionnaires (82% of all respondents). Most of the respondents are women (67%), employed (75%) with an average age of 47 years, and with a high school diploma (32%) or university degree (62%). 16% earn less than €15,000 gross per year, 58% between €15,001 and €55,000, while 13% declare an income of over €55,001 (Table A3 in Appendix A). Most of the visitors were residents of Sardinia (74%, especially from the province of Cagliari (17%) and Olbia-Tempio (6%)), followed by Lombardy (8%) and Lazio (5%). All the respondents were day-trippers. According to Ezza et al. (2021), in 2019, foreign visitors to Asinara were approximately 20% of the demand, while in 2020, the foreign quota was 5.5%. Hence, this analysis, run during the COVID-19 pandemic, shows even more significant substitution effects amongst destinations, as the foreign component is neglectable.

On the supply side, most entrepreneurs were men (67%) with an average age of 48 (Table A4 in Appendix A). 64% of the sample possess a high school degree, while 23% have a bachelor's or master's degree. 26% studied tourism subjects (e.g., economics and management). 57% of respondents have been doing ecotourism for more than ten years. Almost half of the sample (51%) consists of individual entrepreneurs, 15% are cooperatives, 3% are associations, and 18% are limited liability partnerships (LLPs) or limited liability companies (LLCs). 56% of them are family-run businesses. 87% of the entrepreneurs started their activity in the Asinara National Park after 2001, while 59% possess the park label. Regarding the businesses' opening period, 44% are open all year round, and 31% operate only during summer. More than half of the respondents adopt a seasonal pricing policy, and 23% apply dynamic prices based on demand. 25.64% of entrepreneurs use fixed prices (Table A5 in Appendix A).

Most of the entrepreneurs interact with an Asinara National Park network (Table A6 in Appendix A), such as accommodation (80%), transport services (38.5%), restaurants and bars (43.6%), and agencies/tour operators (15.4%). Regarding em-



ployment, two-thirds employ less than five units; 46% of the entrepreneurs declared that they have business partners, most of whom are close family members (56%). The primary social media used to promote their business are Facebook (92%), Instagram (72%), and WhatsApp (62%), while website is indicated only by 10% of the entrepreneurs. They offer several activities, such as transport and sports, ranging from diving courses to hiking, underwater, boat, bike, and off-road guided tours. There are also activities centered on environmental education and the dissemination of the cultural and natural heritage of the island.

79% of the sample declared that COVID-19 led to a minor reduction in their turnover, employees (15%) and a radical reorganization (36%). Besides, as demand shifted from the international to the domestic segment, some entrepreneurs re-oriented their activity and sometimes had to suspend their business. Only 3% mitigated the adverse effects caused by the pandemic thanks to the support of other entrepreneurs and suppliers, and 23% received aid from the government or banks. Over half of the sample used their savings, while most downsized and completely reorganized their business.

Between 2017–2019, more than 50% of the sample recorded a turnover of less than €25,000, while a quarter achieved a turnover higher than €75,000. Only two companies constantly recorded sales revenues exceeding €200,000. 60% of the respondents sustained annual personnel costs of less than €10,000 over the last three years, while 20% of the companies surveyed reported personnel costs of over €40,000. Net income data indicate that only one company in 2017–2018 recorded a loss, while two companies recorded a loss in 2019. Most companies had net profits ranging from €5,000 to €20,000, while only three exceeded € 20,000 in 2018.

## 4.2. Demand side

The PLS-SEM is run on 13 observed variables from the demand side survey. As reported in Table 1, the sample consists of 124 observations and can be regarded as medium-sized (Chin & Newsted, 1999). The average  $R^2$  effect of 0.15 aligns with the threshold value assessed by Cohen (1988). The average communality (0.75) is higher than the cut-

off value of 0.50, as Wetzels et al. (2009) suggested. Yet, the average redundancy, as the capacity of the model to predict its manifest variables, is relatively low (0.15). The absolute GoF is 0.32, while the relative GoF is 0.90; hence, the latter confirms the good performance of the model (Henseler & Sarstedt, 2013).

**Table 1.** Main statistics: PLS-SEM for the demand side

Number of observations	124
Average R-squared	0.14872
Average communality	0.74813
Absolute GoF	0.31581
Relative GoF	0.89798
Average redundancy	0.14872

All factor loadings are higher than 0.8, except archeo (Cronbach's alpha = 0.516; Table 2). Hence, the constructs measure the corresponding latent construct well. In addition, in all the cases, the DG Rho exceeds the critical threshold of 0.8, implying that the items in each factor measure the corresponding latent construct well. The variance (AVE) captured by the latent variables is always above the threshold of 0.5 (Figure A1 in Appendix A).

Table 3 (and Figure A2 in Appendix A) summarizes the results from the structural equation model. It reveals a positive and highly statistically significant relationship between non-extractive recreation and visitors' satisfaction (Path Coefficient, PC = 0.389\*\*\*; *H1*). This finding suggests that offering recreational activities that do not involve resource extraction can enhance visitors' experiences and overall satisfaction, thereby contributing to the economic value generated by the protected area.

The willingness to commit to the protected area (WTC\_PA) depends on non-extractive recreation (PC = 0.196\*) and in-principle willingness to pay (PC = 0.254\*\*\*), as assumed by *H1* and *H2*, respectively. By providing engaging, non-extractive recreational opportunities, stakeholders can increase visitors' commitment and willingness to support and invest in the area's preservation and sustainable management, as non-use value also for future generations.

Information knowledge does not exert any statistically significant effect on the willingness to commit to the protected area. This finding challenges

**Table 2.** Measurement model (demand side)

Constructs	Items	Loading	C. Alpha	DG Rho	AVE
Non-extractive recreation	flora	0.911	0.867	0.909	0.717
	wildnature	0.890	–	–	–
	nationalparks	0.870	–	–	–
	marineareas	0.699	–	–	–
Information_ knowledge	unesco	0.884	0.751	0.821	0.543
	learn	0.812	–	–	–
	prisons	0.681	–	–	–
In_principle_wtp	archo	0.516	–	–	–
	wtp_higher_costs	0.895	0.910	0.933	0.736
	wtp_improve_env	0.888	–	–	–
	wtp_future_experiences	0.872	–	–	–
	wtp_reduce_pollution	0.818	–	–	–
Satisfaction	wtp_tax	0.813	–	–	–
	satisfaction	1	1	1	1
WTC_PA	wtp_trees	1	1	1	1
Loyalty	revisit	1	1	1	1
Recommend	Wom	1	1	1	1

Note: WTP = willingness to pay.

the initial hypothesis and suggests that alternative factors may substantially influence visitors’ commitment to the protected area. Further research and investigation are needed for effective policy and management decisions.

Loyalty and word-of-mouth are positively driven by visitors’ satisfaction (PC = 0.444\*\*\* and PC = 0.351\*\*, respectively), as assumed in H3. This outcome aligns with previous studies on green practices and reinforces the economic significance of providing high-quality experiences and services in protected areas. Satisfied visitors are more likely to become loyal and promoters. Hence, visitors contribute to a positive reputation and

economic benefits through (electronic) word-of-mouth marketing (Lee et al., 2019; Moise et al., 2021; Xu et al., 2023).

### 4.3. Supply side

The PLS-SEM is run on 31 variables retrieved from the supply side survey (software R Studio, 1.4.1106 version, “plsmp” package). Overall, the sample consists of 39 observations and can be regarded as medium-sized (Chin & Newsted, 1999). The average R<sup>2</sup> effect of 0.54 aligns with the threshold value assessed by Cohen (1988). The absolute GoF is 0.62, while the average redundancy is 0.46, hence only marginally equal to the threshold of 0.50 (Table 4).

**Table 3.** Structural model – Standardized path coefficients (Bootstrap)

Constructs	Satisfaction	WTC_PA	Loyalty	WOM
Non-extractive recreation	0.389	0.196	–	–
	(0.003)***	(0.056)*		
Information_ knowledge	–0.023	–0.014	–	–
	(0.852)	(0.890)		
In_principle_wtp	–	0.254	–	–
		(0.001)***		
Satisfaction	–	–0.050	0.444***	0.351**
		(0.567)	(0.000)	(0.011)
Loyalty	–	0.006	–	–
		(0.920)		
R <sup>2</sup> _a	0.126	0.098	0.190	0.116

Note: p-values in parenthesis; \*\*\*, \*\*, \* statistical significance at the 1%, 5%, and 10%, respectively. WTP = willingness to pay; WTC\_PA = willingness to commit to the protected area; WOM = word-of-mouth.

**Table 4.** Main statistics: PLS-SEM for the supply side

Number of observations	39
Average R-squared	0.5426
Absolute GoF	0.6187
Average redundancy	0.4644

As shown in Table 5 (and Figure A3 in Appendix A), all the factor loadings are higher than the minimum threshold (0.5) recommended in the literature. Theoretically, these factors underpin the economic drivers (i.e., motivation\_egoistic; economics\_evaluation; external\_actions\_client\_oriented) and ideal drivers (i.e., motivation\_altruistic; ideal\_reasons; internal\_actions\_eco-practise; external\_actions\_promoting) that support the theoretical framework addressed in the methodology section. Most of the constructs were employed to measure the corresponding latent construct. The only exception is altruistic motivation, with a Cronbach's alpha of 0.56, but retained as theoretically reliable. The last column of Table 5 shows that the DG Rho exceeds the critical threshold of 0.7 for all constructs. Hence, the items contained measure the same latent construct to a reasonable extent.

The second step of the analysis assesses the extent to which exogenous factors influence entrepreneurs' willingness to commit to the protected area (*WTC\_PA*) as an outcome related to the economic performance of their company (the endogenous factor) (Figure A4 in Appendix A). Table 6 shows a positive and statistically significant relationship between the economic\_evaluation attitude (path coefficient,  $PC = 0.465^*$ ), altruistic motivations to adopt sustainable production practices ( $PC = 0.377^{**}$ ), and the impact of implementing internal\_actions-eco-practices ( $PC = 0.509^{***}$ ), respectively, and willingness to commit to the protected area. Furthermore, egoistic motivations ( $PC = -0.262^*$ ) and external\_actions\_promoting sustainability and environmental issues with customers ( $PC = -0.596^{***}$ ) are negatively related to willingness to commit to the protected area. The remaining relationships, ideal\_reasons and external\_actions\_client\_oriented, have no statistically significant effects.

These findings provide further economic justification for incorporating sustainable practices, highlighting the economic benefits of environmentally

**Table 5.** Measurement model (supply side)

Constructs	Items	Loading	C. Alpha	DG Rho	AVE
Motivation_egoistic	Mot_Costs	1	0.822	0.837	0.727
	Mot_Law	0.675	–	–	–
Motivation_altruistic	Mot_Environment	0.809	0.562	0.758	0.515
	Mot_Customers	0.726	–	–	–
	Mot_Lifestyle	0.603	–	–	–
Ideal_reasons	Reasons_Autonomy	0.891	0.903	0.921	0.627
	Reasons_Environment	0.875	–	–	–
	Reasons_Hobbies	0.819	–	–	–
	Reasons_People	0.795	–	–	–
	Reasons_Lifestyle	0.746	–	–	–
	Reasons_Challenge	0.700	–	–	–
	Reasons_Opportunity	0.691	–	–	–
Economic_evaluation	Set_Goals	0.969	0.907	0.955	0.913
	Results_Analysis	0.942	–	–	–
Internal_actions_eco-practise	Organic_Inputs	0.956	0.862	0.874	0.7
	Recycling	0.779	–	–	–
	Reduce_Waste_Production	0.760	–	–	–
External_actions_promoting	Promoting_Sustainability	1	1	1	1
External_actions_client_oriented	Web_Promotion	0.920	0.770	0.896	0.812
	Market_Analysis	0.882	–	–	–
WTC_PA	Net_Income_Satisfaction	0.957	0.915	0.947	0.856
	Turnover_Satisfaction	0.932	–	–	–
	Customer_Growth_Satisfaction	0.885	–	–	–

Note: WTC\_PA = willingness to commit to the protected area.

friendly actions in business operations. By aligning economic interests with sustainable practices, entrepreneurs can enhance their commitment to the protected area and contribute to its economic and environmental sustainability (Cohen & Winn, 2007; Dixon & Clifford, 2007; Hemel & Porter, 2022).

**Table 6.** Structural model relationships (supply side)

Constructs	WTC_PA
Motivations_egoistic	-0.2620823* (0.151)
Motivations_altruistic	0.3775094 (0.182)
Ideal_reasons	0.1611449 (0.226)
Economic_evaluation	0.4652232* (0.271)
Internal_actions_eco_practices	0.5091459*** (0.156)
External_actions_promoting	-0.5961868*** (0.163)
External_actions_client_oriented	-0.16076720 (0.200)

Note: p-values in parenthesis; \*\*\*, \*\*, \* statistical significance at the 1%, 5%, and 10%, respectively. WTC\_PA = willingness to commit to the protected area.

## 5. DISCUSSION

Overall, the analysis unveiled the key role natural ecosystems, landscapes, and habitats have and demonstrated a convergence between demand and supply-side behaviors and attitudes. The most relevant motivations to visit the protected area are the importance of contact with the local flora, the attraction of a wild and unpolluted island, and being in a national park. Hence, the empirical outcome revealed visitors' connectedness to nature (Restall & Conrad, 2015; Restall et al., 2021) in line with the first hypothesis (*H1*).

Furthermore, this analysis confirmed that loyalty and word-of-mouth are driven by positive satisfaction with the visit (Moise et al., 2021; Xu et al., 2023), as in *H2* and *H3*. As a novel outcome, the analysis highlighted that visitors' non-extractive recreation drives the willingness to commit to a protected area (Haines-Yong & Potschin, 2012). Indeed, the most important motivation for visitors was the opportunity to experience cul-

tural ecosystem services in the protected area. However, the costs would be higher than those for traditional holidays. Nevertheless, visitors are willing to pay higher prices if this revenue is devoted to improving the environment and/or these extra costs will augment their future experience, as use-value, or those of others, as a non-use and shared value (Liebe et al., 2011; Hultman et al., 2015; Kazeminia et al., 2016; Meleddu & Pulina, 2016; Garcia et al., 2019; Aseres & Sira, 2020; Piñeiro-Chousa et al., 2021).

Managing protected areas, undoubtedly, involves trade-offs between competing interests and ecosystem services, which can complicate decision-making (Muñoz-Santos & Benayas, 2012; Abadi et al., 2020). Building upon the rationale and findings of this study, the implementation of earmarked taxation and/or entrance fees can offer local stakeholders valuable opportunities for micro-financing. These mechanisms can enable the allocation of funds toward targeted conservation initiatives, thus fostering sustainable financial resources at the local level. As for the supply side, the empirical analysis also showed that entrepreneurs' expertise is the main strength of cultural ecosystem services linked to protected areas. They tend to pay particular attention to the environment, have been working in the sector for some time, mainly as a family business, and carry out adequate planning of activities. Without these factors, ecotourism projects are at risk of failure.

The supply side has a crucial role in adopting sustainable practices: first, they contribute to improving the quality of life and well-being of society, and simultaneously they safeguard the biodiversity of the ecosystem/environment/protected area (Ferreira et al., 2022). Second, thanks to their attitude and lifestyle, these entrepreneurs can anticipate the needs of a clientele that is increasingly attentive to the challenges posed by environmental protection. Corroborating *H4*, the study demonstrated that working within a protected area is a satisfactory economic and attitudinal activity for entrepreneurs. This outcome is particularly true for ideal drivers and, especially, when internal eco-practices are pursued (i.e., the use of organic products and waste recycling) and because of altruistic motivations (i.e., to protect the environ-

ment, responding to clients' needs). This finding aligns with a particular aspect of sustainable entrepreneurship that has transformed self-interest and the pursuit of profit maximization to a focus on non-financial incentives and intrinsic motivations (Cohen & Winn, 2007; Andrade et al., 2022).

Indeed, the management implications can benefit the development of modern ecotourism activity and promote the implementation of the government's sustainable development policies, specifically targeting sustainable entrepreneurs in protected areas. Recent studies indicate that protected area attraction increased during the pandemic shock as people looked for open spaces to escape lockdowns (Spenceley, 2021; Moya Calderón et al., 2022). In this scenario, all stakeholders' within- and cross-collaborations are crucial to implementing pro-environment policies, strategies, and action planning to support ecotourism activities and socio-economic progress (Porter & Kramer, 2019; Shasha et al., 2020).

## 6. LIMITATIONS AND FUTURE RESEARCH

This study has limitations as it focused on a specific protected area, which may limit the findings' generalizability. Replication in other areas would validate the theoretical framework. The survey was conducted in Italy during the COVID-19 outbreak, which may have biased sample selection. The small sample size limited the analyses. Nonetheless, this paper extended the literature with a more comprehensive framework by exploring demand and supply commitment to a protected area. Satisfaction, loyalty, and in-principle willingness to pay are pivotal drivers in protecting fragile settings. Hence, consistent monitoring of ecotourism's impact on natural resources is required to guarantee the protected areas' sustainability (Shasha et al., 2020). Monitoring efforts should focus on two distinct levels: natural resources and visitors. Lack of these actions risks diminishing demand and reducing income from ecotourism in protected areas. Nevertheless, it is important to acknowledge that ecotourism is neither a 'panacea nor Pandora's box' and must be evaluated considering various multidimensional factors (Krueger, 2005; Das & Chatterjee, 2015).

## CONCLUSION

This paper examined the pro-environmental commitment of the demand and supply sides, in line with the mission of conserving common resources in a protected area and mediating cultural ecosystem services. The analysis focused on factors influencing satisfaction, willingness to commit, and behaviors of visitors and entrepreneurs in the Asinara National Park, a marine and land-protected area in the Mediterranean Sea.

The findings of this study underlined the role of evaluating pro-environmental behaviors to assess the effectiveness of protection efforts and facilitate informed decision-making concerning environmental management and visitor engagement in protected areas. The outcomes unveiled a crucial alignment between providing services and facilities with visitors' preferences and behaviors and the central mission of the protected area to achieve sustainable utilization of common resources.

A balance between demand and supply becomes possible to generate revenue through visitor fees, concession contracts, and the development of sustainable tourism businesses. These financial resources can then be reinvested in conservation initiatives, infrastructure development, community involvement, and the overall management of the protected area.

This study emphasized the need for a holistic approach that integrates ecological preservation, visitor satisfaction, and economic viability for entrepreneurs. By considering these interrelated aspects, decision-makers can foster the sustainable utilization of protected areas, ensuring the conservation of natu-

ral resources while also providing positive experiences for visitors. Such an approach contributes to the preservation of cultural ecosystem services, supports local communities, and safeguards the long-term feasibility of protected areas.

## AUTHOR CONTRIBUTIONS

Conceptualization: Marta Meleddu, Manuela Pulina, Marco Vannini, Marilena Vecco.

Data curation: Marta Meleddu, Manuela Pulina.

Formal analysis: Marta Meleddu, Manuela Pulina.

Funding acquisition: Marta Meleddu, Marco Vannini.

Investigation: Manuela Pulina.

Methodology: Marta Meleddu, Manuela Pulina.

Project administration: Marta Meleddu, Marco Vannini.

Supervision: Manuela Pulina, Marco Vannini.

Validation: Marco Vannini, Marilena Vecco.

Visualization: Marilena Vecco.

Writing – original draft: Marta Meleddu, Manuela Pulina, Marco Vannini, Marilena Vecco.

## ACKNOWLEDGMENTS

We would like to thank the participants of the XI Workshop on Institutions, Individual Behavior and Economic Outcomes, Session Environmental and Ecological Economics, Corte (France) and at the Research Meeting Seminar, Burgundy School of Business, Dijon (France) for their helpful comments. We also thank Fondazione di Sardegna (*Economia e Benessere tra Società e Istituzioni*), grant 2022–2023, Programme 2014–2020 INTERREG V-A Italy – France Maritime (grant EcoSTRIM), and Fondo di Ateneo UNISS 2020 for financial support.

## REFERENCES

1. Abadi, T. W., Balahmar, A. R. U., & Choiriyah, I. U. (2020). The nexus of local government involvement and marine sustainable ecotourism development: Mediating role of supply chain management. *International Journal of Supply Chain Management*, 9(3), 642–648. Retrieved from <https://ojs.excelingtech.co.uk/index.php/IJSCM/article/view/4968>
2. Ahtola, O. T. (1975). The vector model of preferences: An alternative to the Fishbein model. *Journal of Marketing Research*, 12(1), 52–59. <https://doi.org/10.1177/002224377501200108>
3. Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
4. Andrade, R., van Riper, C. J., Goodson, D., Johnson, D. N., & Stewart, W. (2022). Learning pathways for engagement: Understanding drivers of pro-environmental behavior in the context of protected area management. *Journal of Environmental Management*, 323, 116204. <https://doi.org/10.1016/j.jenvman.2022.116204>
5. Arcos-Aguilar, R., Favoretto, F., Kumagai, J. A., Jiménez-Esquivel, V., Martínez-Cruz, A. L., & Aburto-Oropeza, O. (2021). Diving tourism in Mexico – Economic and conservation importance. *Marine Policy*, 126, 104410. <https://doi.org/10.1016/j.marpol.2021.104410>
6. Aseres, S. A., & Sira, R. K. (2020). Estimating travelers' willingness to pay for a conservation fund: sustainable financing approach in protected areas in Ethiopia. *Heliyon*, 6(8), e04500. <https://doi.org/10.1016/j.heliyon.2020.e04500>
7. Bravo-Vargas, V., García, R. A., Pizarro, J. C., & Pauchard, A. (2019). Do people care about pine invasions? Visitor perceptions and willingness to pay for pine control in a protected area. *Journal of Environmental Management*, 229, 57–66. <https://doi.org/10.1016/j.jenvman.2018.07.018>
8. Cheng, X., Van Damme, S., & Uyttendhove, P. (2021). A review of empirical studies of cultural ecosystem services in urban green infrastructure. *Journal of Environmental Management*, 293, 112895. <https://doi.org/10.1016/j.jenvman.2021.112895>
9. Chin, W. W., & Newsted, P. R. (1999). Structural equation modeling analysis with small samples using partial least

- squares. In R. Hoyle (Ed.), *Statistical Strategies for Small Sample Research* (pp. 307-341). Thousand Oaks, CA: Sage Publications. Retrieved from [https://www.researchgate.net/profile/Wynne-Chin/publication/242370645\\_Structural\\_Equation\\_Modeling\\_Analysis\\_with\\_Small\\_Samples\\_Using\\_Partial\\_Least\\_Square/links/00b7d53306dbf27d25000000/Structural-Equation-Modeling-Analysis-with-Small-Samples-Using-Partial-Least-Square.pdf](https://www.researchgate.net/profile/Wynne-Chin/publication/242370645_Structural_Equation_Modeling_Analysis_with_Small_Samples_Using_Partial_Least_Square/links/00b7d53306dbf27d25000000/Structural-Equation-Modeling-Analysis-with-Small-Samples-Using-Partial-Least-Square.pdf)
10. Cohen, B., & Winn, M. I. (2007). Market imperfections, opportunity and sustainable entrepreneurship. *Journal of Business Venturing*, 22(1), 29-49. <https://doi.org/10.1016/j.jbusvent.2004.12.001>
  11. Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Lawrence Erlbaum.
  12. Corbau, C., Benedetto, G., Congiatu, P. P., Simeoni, U., & Carboni, D. (2019). Tourism analysis at Asinara Island (Italy): Carrying capacity and web evaluations in two pocket beaches. *Ocean & Coastal Management*, 169, 27-36. <https://doi.org/10.1016/j.ocecoaman.2018.12.004>
  13. Das, M., & Chatterjee, B. (2015). Ecotourism: A panacea or a predicament? *Tourism Management Perspectives*, 14, 3-16. <https://doi.org/10.1016/j.tmp.2015.01.002>
  14. Dixon, S., & Clifford, A. (2007). Ecopreneurship – A new approach to managing the triple bottom line. *Journal of Organizational Change Management*, 20(3), 326-345. <https://doi.org/10.1108/09534810710740164>
  15. Esfandiari, K., Pearce, J., Dowling, R., & Goh, E. (2022). Pro-environmental behaviours in protected areas: A systematic literature review and future research directions. *Tourism Management Perspectives*, 41, 100943. <https://doi.org/10.1016/j.tmp.2022.100943>
  16. Ezza, A., Fadda, N., Sale, I., Meleddu, M., Pulina, M., & Vannini, M. (2021). *Ecoturismo e ecoturismi nel parco nazionale dell'Asinara* (Final Report). Sassari: Progetto EcoStrim. Project Internal Report.
  17. Ferreira, H. M., Magris, R. A., Floeter, S. R., & Ferreira, C. E. (2022). Drivers of ecological effectiveness of marine protected areas: A meta-analytic approach from the Southwestern Atlantic Ocean (Brazil). *Journal of Environmental Management*, 301, 113889. <https://doi.org/10.1016/j.jenvman.2021.113889>
  18. Fishbein, M., & Cappella, J. (2006). The role of theory in developing effective health communications. *Journal of Communication*, 56(suppl\_1), S1-S17. <https://doi.org/10.1111/j.1460-2466.2006.00280.x>
  19. Garcia, C. M., Ranay, A. A., Apdohan, J. R. D., Amarille, M. C., Lador, R. P., & Seronay, R. A. (2019). Tourists perception and willingness to pay for the conservation of ecotourism resources in Sohoton Cove, Surigao del Norte, Philippines. *Journal of Ecosystem Science and Eco-Governance*, 1(1), 7-14.
  20. Gudergan, S. P., Ringle, C. M., Wende, S., & Will, A. (2008). Confirmatory tetrad analysis in PLS path modeling. *Journal of Business Research*, 61(12), 1238-1249. <https://doi.org/10.1016/j.jbusres.2008.01.012>
  21. Gupta, P., Chauhan, S., Paul, J., & Jaiswal, M. P. (2020). Social entrepreneurship research: A review and future research agenda. *Journal of Business Research*, 113, 209-229. <https://doi.org/10.1016/j.jbusres.2020.03.032>
  22. Haines-Yong, R., & Potschin, M. (2012). *CICES Version 4: Response to consultation*. Centre for Environmental Management, University of Nottingham. Retrieved from [https://cices.eu/content/uploads/sites/8/2012/09/CICES-V4\\_Final\\_26092012.pdf](https://cices.eu/content/uploads/sites/8/2012/09/CICES-V4_Final_26092012.pdf)
  23. Haines-Young, R., & Potschin, M. (2018). *Common international classification of ecosystem services (CICES) V5.1 and guidance on the application of the revised structure*. Fabis Consulting Ltd. Retrieved from <https://cices.eu/content/uploads/sites/8/2018/01/Guidance-V51-01012018.pdf>
  24. Hemel, D., & Porter, E. (2022). Aligning taxes and spending: Theory and experimental evidence. *Behavioural Public Policy*, 6(3), 464-484. <https://doi.org/10.1017/bpp.2019.20>
  25. Henseler, J., & Sarstedt, M. (2013). Goodness-of-fit indices for partial least squares path modeling. *Computational Statistics*, 28(2), 565-580. <https://doi.org/10.1007/s00180-012-0317-1>
  26. Hultman, M., Kazemina, A., & Ghasemi, V. (2015). Intention to visit and willingness to pay premium for ecotourism: The impact of attitude, materialism, and motivation. *Journal of Business Research*, 68(9), 1854-1861. <https://doi.org/10.1016/j.jbusres.2015.01.013>
  27. Hwang, K., & Lee, J. (2018). Antecedents and consequences of ecotourism behavior: Independent and interdependent self-construals, ecological belief, willingness to pay for ecotourism services and satisfaction with life. *Sustainability*, 10(3), 789. <https://doi.org/10.3390/su10030789>
  28. Imran, S., Alam, K., & Beaumont, N. (2014). Environmental orientations and environmental behaviour: Perceptions of protected area tourism stakeholders. *Tourism Management*, 40, 290-299. <https://doi.org/10.1016/j.tourman.2013.07.003>
  29. Kaiser, F. G., Wolfing, S., & Fuhrer, U. (1999). Environmental attitude and ecological behaviour. *Journal of Environmental Psychology*, 19(1), 1-19. <https://doi.org/10.1006/jevp.1998.0107>
  30. Kazemina, A., Hultman, M., & Mostaghel, R. (2016). Why pay more for sustainable services? The case of ecotourism. *Journal of Business Research*, 69(11), 4992-4997. <https://doi.org/10.1016/j.jbusres.2016.04.069>
  31. Kirkwood, J., & Walton, S. (2010). What motivates ecopreneurs to start businesses? *International*

- Journal of Entrepreneurial Behavior and Research*, 16(3), 204-228. <https://doi.org/10.1108/13552551011042799>
32. Koellner, T., Sell, J., & Navarro, G. (2010). Why and how much are firms willing to invest in ecosystem services from tropical forests? A comparison of international and Costa Rican firms. *Ecological Economics*, 69(11), 2127-2139. <https://doi.org/10.1016/j.ecolecon.2010.05.010>
  33. Krueger, O. (2005). The role of ecotourism in conservation: Panacea or Pandora's box? *Biodiversity & Conservation*, 14(3), 579-600. <https://doi.org/10.1007/s10531-004-3917-4>
  34. Lee, Y. K., Pei, F., Ryu, K. S., & Choi, S. (2019). Why the tripartite relationship of place attachment, loyalty, and pro-environmental behaviour matter? *Asia Pacific Journal of Tourism Research*, 24(3), 250-267. <https://doi.org/10.1080/10941665.2018.1564344>
  35. Liebe, U., Preisendörfer, P., & Meyerhoff, J. (2011). To pay or not to pay: Competing theories to explain individuals' willingness to pay for public environmental goods. *Environment and Behavior*, 43(1), 106-130. <https://doi.org/10.1177/0013916509346229>
  36. López-Mosquera, N., & Sánchez, M. (2012). Theory of planned behavior and the value-belief-norm theory explaining willingness to pay for a suburban park. *Journal of Environmental Management*, 113, 251-262. <https://doi.org/10.1016/j.jenvman.2012.08.029>
  37. Mekawy, M. A. (2012). Responsible slum tourism: Egyptian experience. *Annals of Tourism Research*, 39(4), 2092-2113. <https://doi.org/10.1016/j.annals.2012.07.006>
  38. Meleddu, M., & Pulina, M. (2016). Evaluation of individual's intention to pay a premium price for ecotourism: An exploratory study. *Journal of Behavioral and Experimental Economics*, 65, 67-78. <https://doi.org/10.1016/j.socec.2016.08.006>
  39. Meleddu, M., Paci, R., & Pulina, M. (2015). Repeated behaviour and destination loyalty. *Tourism Management*, 50, 159-171. <https://doi.org/10.1016/j.tourman.2015.01.032>
  40. Moise, M. S., Gil-Saura, I., & Ruiz-Molina, M. E. (2021). Green practices as antecedents of functional value, guest satisfaction and loyalty. *Journal of Hospitality and Tourism Insights*, 4(5), 722-738. <https://doi.org/10.1108/JHTI-07-2020-0130>
  41. Mottiar, Z., Boluk, K., & Kline, C. (2018). The roles of social entrepreneurs in rural destination development. *Annals of Tourism Research*, 68, 77-88. <https://doi.org/10.1016/j.annals.2017.12.001>
  42. Moya Calderón, M., Chavarría Esquivel, K., Arrieta García, M. M., & Lozano, C. B. (2022). Tourist behaviour and dynamics of domestic tourism in times of COVID-19. *Current Issues in Tourism*, 25(14), 2207-2211. <https://doi.org/10.1080/13683500.2021.1947993>
  43. Muñoz-Santos, M., & Benayas, J. (2012). A proposed methodology to assess the quality of public use management in protected areas. *Environmental Management*, 50, 106-122. <https://doi.org/10.1007/s00267-012-9863-0>
  44. Panta, S. K., & Thapa, B. (2018). Entrepreneurship and women's empowerment in gateway communities of Bardia National Park, Nepal. *Journal of Ecotourism*, 17(1), 20-42. <https://doi.org/10.1080/14724049.2017.1299743>
  45. Passafaro, P. (2020). Attitudes and tourists' sustainable behavior: An overview of the literature and discussion of some theoretical and methodological issues. *Journal of Travel Research*, 59(4), 579-601. <https://doi.org/10.1177/0047287519851171>
  46. Piñeiro-Chousa, J., López-Cabarcos, M. Á., Romero-Castro, N., & Vázquez-Rodríguez, P. (2021). Sustainable tourism entrepreneurship in protected areas. A real options assessment of alternative management options. *Entrepreneurship and Regional Development*, 33(3-4), 249-272. <https://doi.org/10.1080/08985626.2021.1872937>
  47. Porter, M. E., & Kramer, M. R. (2019). Creating shared value. In G. G. Lenssen, & N. C. Smith (Eds.), *Managing Sustainable Business* (pp. 323-346). Dordrecht: Springer. [https://doi.org/10.1007/978-94-024-1144-7\\_16](https://doi.org/10.1007/978-94-024-1144-7_16)
  48. Presenza A., Abbate, T., Meleddu, M., & Sheehan, L. (2020). Start-up entrepreneurs' personality traits. An exploratory analysis of the Italian tourism industry. *Current Issues in Tourism*, 23(17), 2146-2164. <https://doi.org/10.1080/13683500.2019.1677572>
  49. Pulina, M., & Meleddu, M. (2012). Defining a marine protected area strategy: A stakeholder perspective. *Ocean & Coastal Management*, 66, 46-55. <https://doi.org/10.1016/j.ocecoaman.2012.05.003>
  50. Ressurreição, A., Cardigos, F., Giacomello, E., Leite, N., Oliveira, F., Kaiser, M. J., Gonçalves, J., & Santos, R. S. (2022). The value of marine ecotourism for an European outermost region. *Ocean & Coastal Management*, 222, 106129. <https://doi.org/10.1016/j.ocecoaman.2022.106129>
  51. Restall, B., & Conrad, E. (2015). A literature review of connectedness to nature and its potential for environmental management. *Journal of Environmental Management*, 159, 264-278. <https://doi.org/10.1016/j.jenvman.2015.05.022>
  52. Restall, B., Conrad, E., & Cop, C. (2021). Connectedness to nature: Mapping the role of protected areas. *Journal of Environmental Management*, 293, 112771. <https://doi.org/10.1016/j.jenvman.2021.112771>
  53. Ryan, T., Mottiar, Z., & Quinn, B. (2012). The dynamic role of entrepreneurs in destination development. *Tourism Planning & Development*, 9(2), 119-131. <https://doi.org/10.1080/21568316.2011.630747>



54. Shasha, Z. T., Geng, Y., Sun, H., Musakwas, W., & Sun, L. (2020). Past, current, and future perspectives on ecotourism: A bibliometric review between 2001 and 2018. *Environmental Science and Pollution Research*, 27(19), 23514-23528. <https://doi.org/10.1007/s11356-020-08584-9>
55. Shepherd, D. A., & Patzelt, H. (2011). Entrepreneurship: Studying entrepreneurial action linking “What is to be sustained” with “What is to be developed”. *Entrepreneurship Theory and Practice*, 35(1), 137-163. <https://doi.org/10.1111/j.1540-6520.2010.00426.x>
56. Spenceley, A. (2021). *The future of nature-based tourism: Impacts of COVID-19 and paths to sustainability*. Luc Hoffmann Institute. Retrieved from <https://luchoffmanninstitute.org/wp-content/uploads/2021/04/luchoffmanninstitute-future-nature-based-tourism-report-2021.pdf>
57. Spenceley, A., McCool, S., Newsome, D., Báez, A., Barborak, J. R., Blye, C.-J., Bricker, K., Sigit Cahyadi, H., Corrigan, K., Halpenny, E., Hvenegaard, G., Malleret King, D., Leung, Y.-F., Mandić, A., Naidoo, R., Rüede, D., Sano, J., Sarhan, M., Santamaria, V., ... Zschiegner, A. K. (2021). Tourism in protected and conserved areas amid the COVID-19 pandemic. *Parks*, 27, 103-118. <https://doi.org/10.2305/IUCN.CH.2021.PARKS-27-SIAS.en>
58. Stern, P. C., Dietz, T., Abel, T., Guagnano, G., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 6(2), 81-97. Retrieved from <https://www.humanecologyreview.org/pastissues/her62/62sternetal.pdf>
59. Thapa, B., & Parent, G. (2020). Tourists' willingness to accept/pay increased entry fees for park improvement projects. *Current Issues in Tourism*, 23(3), 265-269. <https://doi.org/10.1080/13683500.2018.1533928>
60. Tilley, F., & Parrish, B. D. (2006). Introduction: Sustainability entrepreneurship research. *Greener Management International*, 55, 5-12. Retrieved from <https://www.jstor.org/stable/greema-nainte.55.5>
61. Van Riper, C. J., & Kyle, G. T. (2014). Understanding the internal processes of behavioral engagement in a national park: A latent variable path analysis of the value-belief-norm theory. *Journal of Environmental Psychology*, 38, 288-297. <https://doi.org/10.1016/j.jenvp.2014.03.002>
62. Vecco, M. (2019). Value and values of cultural heritage. In A. Campelo, L. Reynolds, A. Lindgreen, & M. L. Beverland (Eds.), *Cultural Heritage: A Research Anthology* (pp. 23-38). Oxfordshire: Routledge.
63. Venturini, S., & Mehmetoglu, M. (2019). PLSSEM: A Stata package for structural equation modeling with partial least squares. *Journal of Statistical Software*, 88(8), 1-34. <https://doi.org/10.18637/jss.v088.i08>
64. Vinzi, V. E., Trinchera, L., & Amato, S. (2010). PLS path modeling: from foundations to recent developments and open issues for model assessment and improvement. In V. E. Vinzi, W. W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of partial least squares* (pp. 47-82). Berlin, Heidelberg: Springer. [https://doi.org/10.1007/978-3-540-32827-8\\_3](https://doi.org/10.1007/978-3-540-32827-8_3)
65. Wetzels, M., Odekerken-Schröder, G., & van Oppen, C. (2009). Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration. *MIS Quarterly*, 33(1), 177-195. <https://doi.org/10.2307/20650284>
66. Xu, H., Cheung, L. T., Lovett, J., Duan, X., Pei, Q., & Liang, D. (2023). Understanding the influence of user-generated content on tourist loyalty behavior in a cultural World Heritage Site. *Tourism Recreation Research*, 48(2), 173-187. <https://doi.org/10.1080/02508281.2021.1913022>
67. Zhang, H., Zhang, J., & Cai, L. (2023). Effects of cultural ecosystem services on travelers' subjective well-being: Evidence from China's national park and flower expo. *Journal of Travel Research*, 62(4), 768-781. <https://doi.org/10.1177/00472875221095219>

## APPENDIX A

**Table A1.** Description of the items employed in the model specification (demand side)

Constructs	Items	Description
Non-extractive recreation	Flora	The importance on a scale of 1 to 5 (1 = not at all, 5 = very much) of the possibility of being in contact with the local flora
	Wild nature	The importance on a scale of 1 to 5 (1 = not at all, 5 = very much) of the opportunity to visit a wild place and unspoiled nature
	National parks	The importance on a scale of 1 to 5 (1 = not at all, 5 = very much) of the opportunity to visit national parks
	Marine areas	The importance on a scale of 1 to 5 (1 = not at all, 5 = very much) of the opportunity to visit oceanic/marine areas
Information_knowledge	Unesco	How important do you consider on a scale of 1 to 5 (1 = not at all, 5 = very much) the opportunity to visit places recognized as World Heritage Site (UNESCO)
	Learn	How important do you consider on a scale of 1 to 5 (1 = not at all, 5 = very much) the opportunity to learn about the local natural environment
	Prisons	How important do you consider on a scale of 1 to 5 (1 = not at all, 5 = very much) the possibility of visiting prison areas
	Archeo	How important do you consider on a scale of 1 to 5 (1 = not at all, 5 = very much) the opportunity to visit archaeological areas
In_principle_wtp	wtp_higher_costs	I would be willing to pay for ecotourism even if this would lead to higher costs than an ordinary holiday
	wtp_improve_env	I would be willing to pay more for my holidays knowing that the higher costs would be used to improve the environment
	wtp_future_experiences	I would be willing to pay more for the holidays knowing that this would improve my experiences or others in the future
	wtp_reduce_pollution	I would be willing to spend more to make a holiday that helps to reduce pollution (hotels with environmental certification, low impact transports, etc.)
	wtp_tax	I would be willing to pay a fee, knowing that the money would be used for environmental preservation
Satisfaction	–	Compared to your expectations, how satisfied are you with the experience of visiting Asinara on a scale of 1 to 5 (1 = nothing at all, 5 = very much)?
Loyalty	–	Do you plan to revisit Asinara in the future?

**Table A2.** Description of the items employed in the model specification (supply side)

Constructs	Items	Description
Motivation_egoistic	Mot_Costs	The reasons for adopting sustainable and environmentally friendly production practices are saving and reducing costs
	Mot_Law	The reasons for adopting sustainable and environmentally friendly production practices are to comply with legal obligations
Motivation_altruistic	Mot_Environment	The reasons for adopting sustainable and environmentally friendly production practices are to protect the environment
	Mot_Customers	The reasons for adopting sustainable and environmentally friendly production practices are meeting the needs of my customers
	Mot_Lifestyle	The reasons for adopting sustainable and environmentally friendly production practices are respecting my orientation and lifestyle
Ideal_reasons	Reasons_Autonomy	The reason that led you to undertake this type of activity was to be autonomous in my business decisions
	Reasons_Environment	The reason that led you to undertake this type of activity was to live close to a certain type of environment
	Reasons_Hobbies	The reason that led you to undertake this type of activity was to follow hobbies and/or passions
	Reasons_People	The reason that led you to undertake this type of activity was to meet interesting people
	Reasons_Lifestyle	The reason that led you to undertake this type of activity was the lifestyle
	Reasons_Challenge	The reason that led you to undertake this type of activity was to look for a particular lifestyle
Economic_evaluation	Reasons_Opportunity	The reason that led you to undertake this type of activity was to take advantage of a business opportunity that you had identified
	Set_Goals	In managing the activity, I constantly set goals
	Results_Analysis	At the end of the year/season, I analyze the results obtained

**Table A2 (cont.).** Description of the items employed in the model specification (supply side)

Constructs	Items	Description
Internal_actions_eco-practise	Organic_Inputs	I use organic and /or environmentally friendly inputs (organic food, biodegradable material, non-polluting detergents, etc.)
	Recycling	I do correct recycling of trash
	Reduce_Waste_Production	I reduce waste production
External_actions_promoting	Promoting_Sustainability	I promote sustainability and environmental issues with my customers
External_actions_client_oriented	Web_Promotion	I regularly use a website, social network, or other to promote my activity
	Market_Analysis	I constantly make a market analysis (potential customers and competitors, both local and foreign)
WTC_PA	Net_Income_Satisfaction	How satisfied are you with your company's economic performance (net income) in the last three years?
	Turnover_Satisfaction	How satisfied are you with your company's turnover over the last three years?
	Customer_Growth_Satisfaction	How satisfied are you with your company's customer growth over the past three years?

**Table A3.** Descriptive statistics demand side – Socio-demographic characteristics

Characteristics	No.	%	Characteristics	No.	%
<b>Gender</b>			<b>Year of birth</b>		
Female	110	67	1930–1939	0	0
Male	52	31	1940–1949	6	4
N/A	3	2	1950–1959	11	7
<b>Education</b>			1960–1969	45	27
Primary School (6-10yrs old)	2	1	1970–1979	45	27
Secondary School (11-13yrs old)	5	3	1980–1989	38	23
High School (14-18yrs old)	52	32	1990–1999	17	10
Bachelor's/Master's Degree	63	38	2000–2010	1	1
Postgraduate	40	24	N/A	2	1
N/A	3	2	–	–	–
<b>Gross annual income</b>			<b>Occupation</b>		
< 15.000 €	27	16	Employed	123	75
15.001 € – 28.000 €	46	28	Student	5	3
28.001 € – 55.000 €	50	30	Unemployed	15	9
55.001 € – 75.000 €	15	9	Retiree	11	7
> 75.000 €	7	5	Household	7	4
N/A	20	12	N/A	4	2

Note: 40% of respondents declared they visited the Asinara National Park at least once in the last three years, 51% in the previous 12 months, mainly during the summer.

**Table A4.** Descriptive statistics supply side – Socio-demographic characteristics

Gender	%	Age	%	Education	%	Years of involvement with the Park activity	%
No answer	3%	21-30	3%	Primary, secondary, high school	74%	< 5 years	10%
Female	33%	31-40	26%	Bachelor's degree	8%	5-10 years	33%
Male	64%	41-50	41%	Master's degree	10%	11-20 years	31%
		51-60	8%	Postgraduate	5%	> 20 years	26%
–	–	61-70	23%	Other	3%	–	–

**Table A5.** Descriptive statistics supply side – Business information

<b>Legal form</b>	<b>%</b>	<b>Start of business</b>	<b>%</b>
Cooperative society	15.30	1981–1990	5.20
Individual entrepreneur	51.30	1991–2000	12.80
LLP	10.30	2001–2010	28.20
Limited Partnership	2.60	2011–2020	53.80
LLC	7.70		
General Partnership	5.10		
Other	7.70		
<b>Opening period</b>	<b>%</b>	<b>Start of business in the park</b>	<b>%</b>
12 months	43.60	1981–1990	0.00
9 months	7.70	1991–2000	12.80
Summer season	30.80	2001–2010	35.90
Other	17.90	2011–2020	51.30
<b>Park label</b>	<b>%</b>	<b>Year of label</b>	<b>%</b>
Yes	59.00	< 2016	4.40
No	41.00	2016	0.00
		2017	8.70
		2018	17.40
		2019	47.80
		2020	21.70
<b>Pricing policies</b>	<b>%</b>	<b>Family business</b>	<b>%</b>
Fixed	25.64	Yes	56.00
Seasonal	56.41	No	44.00
Demand-based	23.08		
Other	2.6		

**Table A6.** Descriptive statistics supply sample – Activities

<b>Cooperation with other companies</b>	<b>%</b>	<b>Partners of the companies</b>	<b>%</b>
Yes, continuously	56.4%	Family	33%
Yes, occasionally	33.3%	Not family	56%
No	10.3%	Non-financial entrepreneurs	0%
		Financial entrepreneurs	0%
		Other	11%
<b>Entrepreneur type</b>	<b>%</b>	<b>Total employees</b>	<b>%</b>
Accommodation	79.5%	0	15.4%
Bars	12.8%	1	30.8%
Restaurants	30.8%	2	15.4%
Transports	38.5%	3	7.7%
Other types of attraction	15.4%	4	12.8%
Other (Agencies/tour operators)	15.4%	5	2.6%
		6	5.1%
		7	5.1%
		8	2.6%
		9	0.0%
		10	0.0%
		> 10	2.6%
<b>Main social media used</b>	<b>%</b>		
Facebook	92%		
Instagram	72%		
WhatsApp	62%		
Web site	10%		
Google	13%		
TripAdvisor	3%		
Twitter	3%		

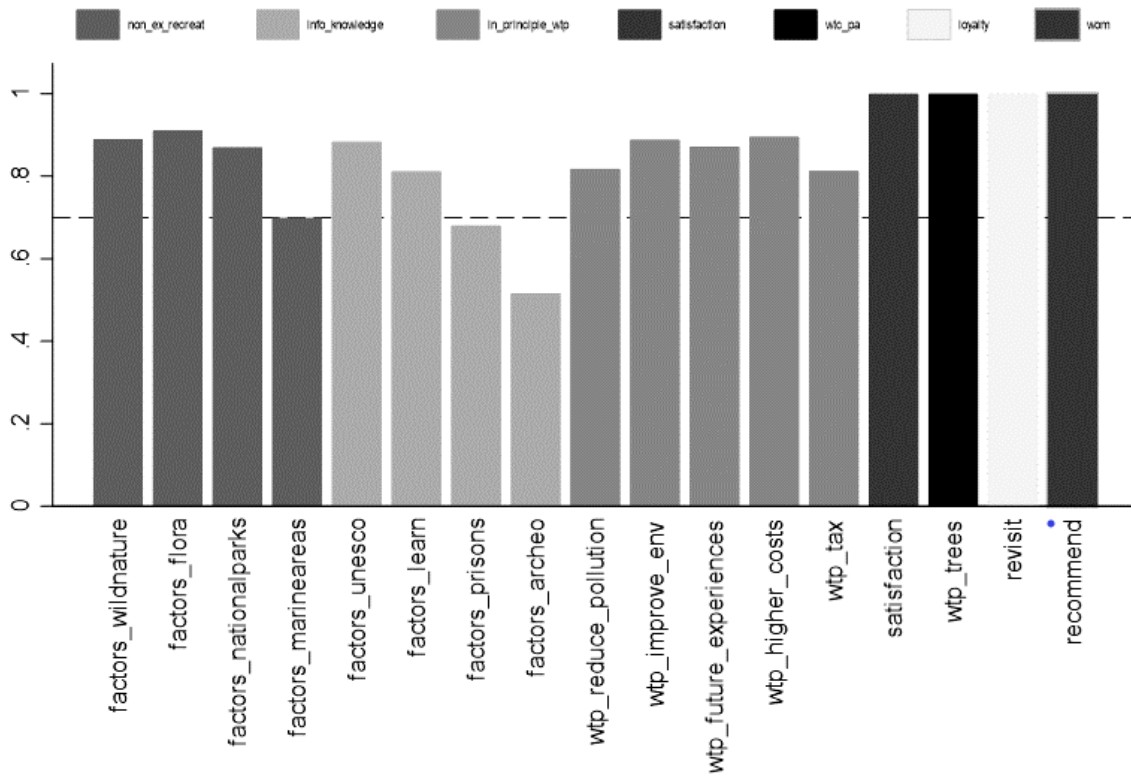


Figure A1. Bar chart of loadings of demand items

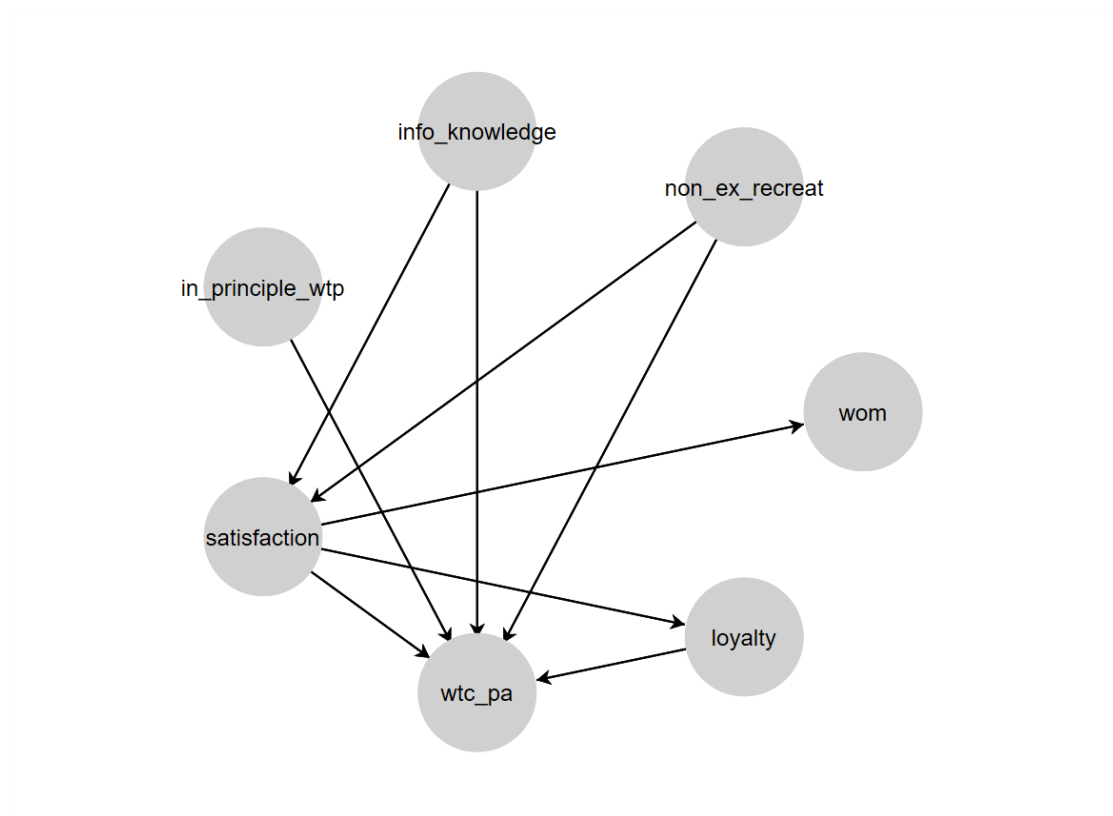


Figure A2. Demand structural model

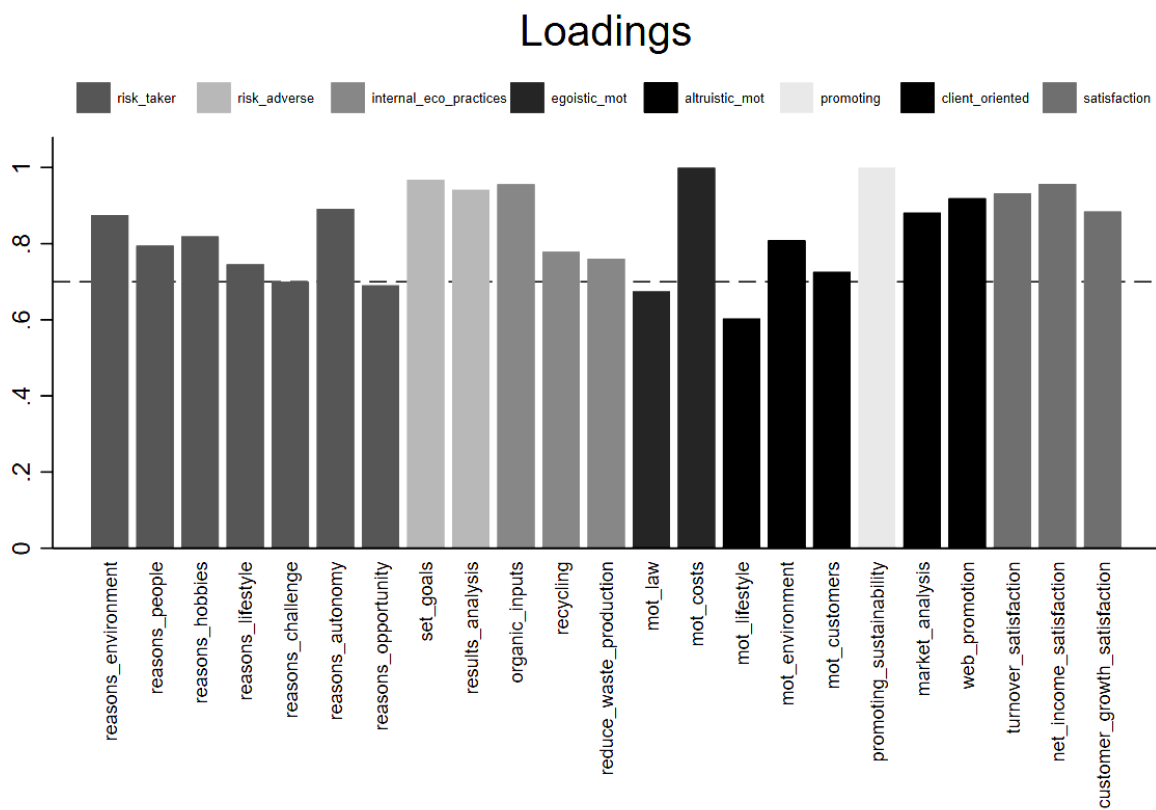


Figure A3. Bar chart of loading supply items

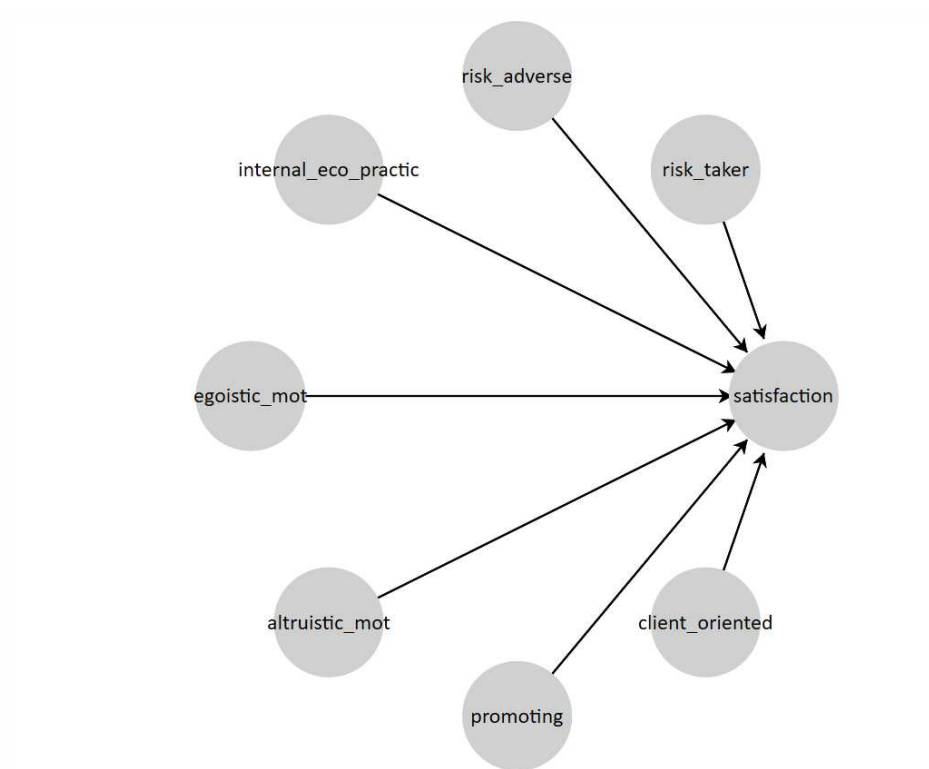


Figure A4. Supply structural model