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The measurement of sustainable behaviour and satisfaction with services in cruise tourism experiences. An empirical analysis

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ABSTRACT

This paper aims to analyse cruise tourists' sustainable behaviour and their level of satisfaction at destinations. A semi-structured questionnaire was administered to a sample of 1180 cruise tourists at one major port of call in the Mediterranean region. This allowed us to group cruise tourists into clusters, according to their characteristics, and analyse all the elements of two alternate types of behaviour. One group answered the questionnaire just after living the experience in the destination city; a second group, that already lived the experience in the same city, answered the same survey online. We also identified the aspects that most influence the global level of satisfaction, using ordered logit models.

The findings, although drawn from only one destination, may be useful for practitioners and policy makers by allowing them to pinpoint and understand specific determinants of the socio-economic effects of cruise tourism on a destination, by taking into account the role of sustainable services. This study explores aspects overlooked by other studies by adopting a research model that goes beyond the traditional approach that has tended to focus on cruise tourists' satisfaction based on traditional services and facilities.

1. Introduction

For 30 years sustainability issues have been at the heart of scholars, practitioners and governmental debates aiming to strike a balance in accord with the triple bottom line (TBL) approach (Elkington, 1994).

These issues have high priority in the tourism context, due to the aim of meeting the 17 sustainable development goals (SDGs) included in the 2030 Agenda for Sustainable Development, that in 2015 was adopted by United Nations Member States (Hall, 2019; United Nations, 2015).

Within tourism, cruises have been the fast-growing sector and therefore a focus of attention because of its disruptive effects on global economic, social and environment assets (Hall, Wood, & Wilson, 2017; Pallis & Vaggelas, 2019; Ramoa, Flores, & Herle, 2019).

The Cruise Lines International Association' last report highlighted the impact of the cruise industry on occupancy in 2018, above 1,000,000 jobs equal to $50.24 billion in wages and salaries and $150 billion total output worldwide, of which $101 billion represented passengers' expenditure in ports during their visits (CLIA, 2020). Moreover, the same association underlined the commitment of the sector to adopt responsible tourism practices to meet the UN 2030 Agenda on environmental sustainability (SDG#7) and destination engagement, especially to guarantee sustainable consumption (SDG#12) and to make the cities with ports of call inclusive, safe, resilient and sustainable (SDG#11 and SDG#17)[1] (Di Vaio, Varriale, Lekakou, & Stefanidaki, 2020).

Most scholars, considering the brief duration of visit at destination, have addressed their research towards the economic impact of the cruise by focusing their attention on passengers' expenditures on-shore (Di Vaio, Lepore, & Varriale, 2018; Gouveia & Eusébio, 2019; Parola, Satta, Penco, & Persico, 2014; Pino & Tovar, 2019; Satta, Parola, Penco, & Persico, 2015). Specifically, academics have sought to explain the determinants of cruise tourists' expenditure at call ports by analysing the relationship between overall satisfaction and monetary expenditure (Di

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[1] For more details about the 17#SDGs included in UN 2030 Agenda please see https://sustainabledevelopment.un.org/?menu=1300.

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Vaio et al., 2018; Parola et al., 2014; Penco & Di Vaio, 2014; Sanz-Blas, Buzova, & Schlesinger, 2019; Satta et al., 2015).

Further, scholars have investigated the expenditure behaviour of' cruise tourists off ships, such as passenger's expectations, satisfaction, income, demographic characteristics, number of previous cruises, duration of time in the port, and intention to return (Blas, Buzova, & Schlesinger, 2019; Buzova, Sanz-Blas, & Cervera-Taulet, 2019; Di Vaio et al., 2018; Domènech, Gutiérrez, & Anton Clavé, 2020; Gouveia & Eusébio, 2019). Other researchers have focused on evaluating the social and environmental impact of the cruise industry (Font, Guix, & Bonilla-Priego, 2016; Grosbois, 2016).

Although studies about the measurement of cruise tourists' economic impact are not lacking, the social, economic and environmental sustainability issues represent the pillars of the TBL approach and are still in need of further research. Specifically, the relationship between the two issues here highlighted and the monetary value that is the expenditure on-shore by cruise tourists in the few hours that they visit the cities.

Some scholars have argued that the economic value of cruises is less than that of tourists who arrive at destinations by train, plane or road (Bresson & Logossah, 2011). Hence, although the advantages of the three pillars, economic, social and environmental, remain very high, cruise tourists cannot be considered creators of value for destinations (Di Vaio et al., 2018).

Our study aims to address this lack of analysis by measuring the relationship between cruise tourists' behaviour towards the environment and social sustainability and their level of sustainable services satisfaction (SSS) about the services used in one of the major Mediterranean ports: Naples (Italy). In order to achieve this aim, this study was conducted by administering a semi-structured questionnaire with an interview-based survey carried out directly on shore to 750 cruise tourists in 2019 (March-May) in the port of Naples. Furthermore, we also administered the same semi-structured questionnaire, by accessing Facebook social groups, to 430 cruise tourists that replied about their experiences in the same port during 2018.

The paper is structured as follows. Section 2 presents the theoretical background to the measurement of cruise tourists' satisfaction and the sustainable development goals (SDGs) in the cruise literature. Section 3 details the methodology, the data, and the clustering of the cruise tourists. Section 4 provides a deep analysis of cruise tourists' behaviour in relation to environmental and socio-economic factors. Section 5 summarises the findings relating to cruise tourists' satisfaction. Finally, Section 6 presents an in-depth discussion on the findings, conclusions, limitations of the paper, and future perspectives.

2. Literature review

2.1. Measurement of cruise tourists' satisfaction

This section describes research related to measuring satisfaction relating to cruise activities. Several approaches can be taken, and we summarise some of these different methods; from local population aversion to the cruise industry to the satisfaction level of cruise tourists with the attributes and activities at destination. The cruise industry has experienced exponential growth since the 1970s. Cruise ships have traditionally been seen as a source of new income for the cities that receive them, through employment generation and increased consumption, among others. But critics have increasingly questioned the benefits of this industry for cities (MacNeill & Wozniak, 2018). These authors argue that cruises also generate multiple negative impacts on cities, such as air pollution and/or overcrowding in public places. This is why cruise companies are increasingly reporting not only their economic impact, but also providing details on sustainability and corporate social responsibility (Carr & Corbett, 2017). These negative effects are aggravated in cities such as Barcelona or Venice, where a large number of tourists land every year and where the undesirable signs of saturation are already evident. Controlling these negative effects is important to prevent locals from growing ill-feeling and perhaps acting against these cruise tourists (Jordan & Vogt, 2017).

Jordan and Vogt (2017) studied the impact of a new port in Jamaica, thanks to which the island, and specifically the city of Falmouth, has become one of the main cruise destinations in the Caribbean. The authors conducted a survey on the stress or discontent suffered by the local population with this massive arrival of tourists, finding that as many as 78% felt themselves to be under stress. This situation can also occur through other indirect effects such as an increase in the cost of living, congestion, and pollution, among others. In addition, the authors performed a chi-square test to identify possible differences between the group that declared an increase in stress and found significant differences in the characteristics of the individuals in both groups.

In their study, Tovar, Espino, and López-del-Pino (2020) analysed the perceptions and attitudes of the local population, a factor that they consider important when regulating the cruise tourism industry and seeking to achieve a sustainable situation. These authors summarised articles that sought to analyse the factors that influence resident satisfaction and perceptions, and found that most of the researchers involved employed structured questionnaires. The second most common methodology used was that of semi-structured interviews, while structured interviews or semi-structured questionnaires were less frequent in this type of analysis.

In their own study, Tovar et al. (2020) employed a questionnaire in which residents were asked to assess, on a Likert scale of 1–5, the importance they attach to specific cruise tourist economic, environmental and social impacts. In order to analyse the answers, they estimated a binomial logit model based on variables created through factor analysis (analysis of the main components) and socioeconomic variables obtained directly from the survey.

Çetinkaya (2017) examined the relationships between the experiences of cruise tourists, their satisfaction, and their behaviour. The author drew on the results of a survey carried out in the port of Istanbul for cruise operators from several companies. The questionnaire identified the socio-economic characteristics of the cruise tourists, their demographics characteristics, variables related to the experience, level of general satisfaction and behavioural variables; which enabled the author to estimate a model that assumed a linear relationship between experience, general satisfaction and behavioural intentions. The dimensions of the experience are explained through an exploratory factorial analysis and later assessed in relation to general satisfaction through an analysis of correlations.

On the other hand, Huang and Hsu (2009) studied the effect of customer-to-costumer (C2C) interaction on the cruise experience and on vacation satisfaction, while Shahijan, Rezaei, and Amin (2018) analysed the influence of cruise tourists' experience, the convenience of the services and the perceived value on the satisfaction of cruise tourists and their intention to revisit. These authors conducted direct surveys to cruise operators from several nationalities and companies in Malaysia. In these surveys, tourists assessed, on a Likert scale, different aspects related to satisfaction and general satisfaction, as well as aspects of the service and the intention to return. To analyse the data obtained through the surveys, the authors used the technique of modelling structural equations, which allowed them to establish the relationship between different latent constructs. On the other hand, Meng, Liang, and Yang (2010) analysed the relationship between the image of cruise ships, perceived value, satisfaction and post-purchase behaviour. To this end, they carried out a survey in which they asked tourists to evaluate different aspects of the aforementioned variables.

Similarly, Wu, Cheng, and Ai (2018) studied perceived quality and the relationship between this quality, the value of the experience, the reputation of the company (trust), satisfaction and the intentions of the cruise tourists. The Hong Kong Cruisers' survey is divided into six sections. The first four deal with issues of quality of interaction, physical environment, outcome and access. The second section focuses on issues related to experience (quality, value, satisfaction, trust, company

reputation and intentions of importance), measured using a 7-point Likert scale. The final section includes sociodemographic data on individuals, and the authors perform a factorial analysis (exploratory factor analysis).

This part of the literature review has identified the main elements of previous research in the field of cruise tourists' satisfaction. It has helped to identify the main survey techniques and methodologies applied in this field. We have seen that most authors employ a Likert scale from 1 to 7, where 1 is the lowest level of satisfaction and 7 the highest. One could also say that most researchers use OLS or logistic regressions for their analysis, as well as the *t*-test and chi-square to analyse the differences between individuals. Moreover, analyses, such as ANOVA or MANOVA, are widespread in the literature. A large proportion of these studies use techniques such as factor analysis or clustering to reduce the number of variables or to aggregate individuals by their characteristics. This review also confirms that both the structure of the survey and the data analysis techniques used in studies of cruise tourists' satisfaction fit into the general lines of academic research in this field.

2.2. Sustainable Development Goals (SDGs) in the cruise literature

In 2015, the UN introduced the global sustainable development agenda that included the adoption of 17 Sustainable Development Goals (SDGs) involving 193 UN Members States by 2030.[2] The 17 SDGs have taken into account the three pillars of Sustainable Development (SD), i.e., the social, economic and environmental dimensions (Glavič & Lukman, 2007; Quak & de Koster, 2007); also well known as 'the TBL approach for SD' (Elkington, 1994). However, a clear conceptual framework is still missing for these 'three-pillars'. A first introduction can be attributed to the Brundtland Report - Agenda 21 - and the 2002 World Summit on Sustainable Development (Moldan, Janoušková, & Hák, 2012) to support and explain the conceptualisation of SD (Sneddon, 2000). That is the realisation of sustainable development takes place through the needs satisfaction and well-being of people (the "social" pillar), thanks to the production of goods and services from business activities (the "economic" pillar) without depletion and/or damage to the marine and terrestrial environment (the "environmental" pillar) (Purvis, Mao, & Robinson, 2019). These concepts have been developed in the business and accounting literature thanks to Elkington (1997) employing a TBL approach as an accounting method. The three pillars have been introduced in the financial 'bottom line' of corporations to link traditional accounting with social and environmental performance - known as "people, planet, profit", – to encourage enterprises to plan in the longer-term.

National and local governments, policymakers, and cruise operators pay increasing attention to the social, economic and environmental sustainability of the cruise industry arguing that each player (e.g., cruise tourists, destination communities, and so forth) has social, economic and environment responsibilities (Cerveny, Miller, & Gende, 2020). On the other hand, the main social and environmental implications of cruise tourism have been been well-documented (Cerveny et al., 2020; Sislian, Jaegler, & Cariou, 2016; Winnes, Styhre, & Fridell, 2015).

Sustainable tourism development requires the informed participation of all stakeholders involved in the supply chain. Sustainable tourism development guidelines and management practices are applicable to all forms of tourism at all types of destinations, including mass tourism and the various niche tourism segments. This means that sustainable tourism should optimise environmental resources to conserve natural heritage and biodiversity, respect the socio-cultural characteristics of host communities at destinations, and provide socio-economic benefits to all stakeholders; including employment and social services to host communities. Furthermore, according to the UNEP and UNWTO (2005), sustainable tourism should maintain high levels of satisfaction and ensure a significant experience for each tourist, partly by raising their awareness about these issues and promoting sustainable tourism practices among them.

In the tourism industry, the sustainability concept translates into cooperation among players involved in the tourism supply chain based on sharing and reducing the use of resources. In fact, cooperation among stakeholders is a key mechanism to manage conflicts, especially at destinations (Olsen, 2016). In relation to tourism, SD, and related issues, a number of scholars have expressed themselves in diverse ways:

Adu-Ampong (2017), for example, highlighted the relevance of institutional collaboration to overcome resource gaps in the tourism industry, as well as its key role in engaging stakeholders to achieve diverse goals (Boluk, Cavaliere, & Higgins-Desbiolles, 2019). Other scholars have assumed that tourism is a strategic instrument to achieve SD (Saayman & Giampiccoli, 2016; Pratt and Harrison, 2015) and some have focused in on the increase in cruise tourism in the industry (CLIA, 2019a, 2019b). On the other hand, the World Bank identified support for increasing cruise tourism as one of four key strategies to generate sustainable economic growth in the Pacific region (World Bank, 2016a, 2016b). Indeed, until the onset of the COVID-19 pandemic in 2020, the year in which cruise companies had to halt their core business by stopping ships, cruise tourism was one of the fastest growing tourism segments, with increases in both passenger flows and vessel sizes (Andriotis & Agiomirgianakis, 2010; Blas & Carvajal-Trujillo, 2014; Chen, Lijesen, & Nijkamp, 2017; Di Vaio et al., 2018; Papathanassis & Beckmann, 2011). According to the Cruise Line International Association (CLIA), international demand for cruises increased from 17 to over 28 million cruise passengers between 2009 and 2018 (CLIA, 2019a, 2019b).

The continuous increase of the cruise segment in terms of passenger flows and vessel size (Andriotis & Agiomirgianakis, 2010; Blas & Carvajal-Trujillo, 2014; Chen et al., 2017; Di Vaio et al., 2018; Papathanassis & Beckmann, 2011) has had socio-economic and environmental impact on the destinations (Eijgelaar, Lamers, & Amelung, 2015; Larsen & Wolff, 2016; MacNeill & Wozniak, 2018).

Some scholars have emphasised the cruise industry's growth and economic benefits of this segment (Di Vaio et al., 2018; Domènech et al., 2020; Gouveia & Eusébio, 2019; Larsen & Wolff, 2016; MacNeill & Wozniak, 2018; Parola et al., 2014; Pino & Tovar, 2019; Satta et al., 2015). Other academics have compared the monetary expenditure of cruise tourists with that of land tourists (Brida, Bukstein, Garrido, & Tealde, 2012; Brida, Chiappa, Meleddu, & Pulina, 2012; Brida & Zapata, 2010a, 2010b; Larsen, Wolff, Marnburg, & Øgaard, 2013; Penco & Di Vaio, 2014) and highlighted the fact that cruise tourists spend less than land tourists at destination (Adams, 2010; Bresson & Logossah, 2011).

The enormous size of the cruise sector has led to a number of concerns regarding the environmental and social impacts, mainly at local level, and the SD issues, specifically relating to the individual pillars (Hall et al., 2017; Pallis & Vaggelas, 2019).

In this line, the cruise industry has promoted sustainability initiatives (Jones, Hillier, & Comfort, 2017), for instance, the reduction of greenhouse gas emissions from shipping and the introduction of new regulations, with the goal of meeting UN Agenda 2030 for Sustainable Development (De Almeida Ramoa, da Silva Flores, & Herle, 2019; Rasoolimanesh, Ramakrishna, Hall, Esfandiar, & Seyfi, 2020).

Consequently, cruise companies have been re-orienting their behaviour towards SDGs. For example, Di Vaio et al. (2020) highlighted the fact that Costa Crociere S.p.A. has adopted the Costa Sustainability Plan. This is Costa's roadmap to SD; defining the priority objectives to achieve a sustainable and responsible organisation. The plan included "Sea, You and Tomorrow" sections that address the pillars via "environmental and biodiversity", "human resources", "innovation", and "partnership", that characterise Costa's sustainability approach to meet the SDGs. In particular, regarding "environmental and biodiversity", the

[2] For more details about goals, targets and indicators see: http://www.un.org/sustainabledevelopment/sustainable-development-goals/ (Accessed on 30 November 2019).

cruise company adopts initiatives that seek to safeguard earth's biodiversity and ecosystems (SDGs#14 and SDG#15) including activities such as conserving and enhancing the natural environment at cruise destinations. Specifically this seeks to restore terrestrial heritage and marine environment to the Giglio island local community; and to minimise the impacts generated in and around the destinations (SDGs #7, #12, #13).

Hence, in this context it is possible to identify two critical issues. Firstly, that cruise tourism is among the main sectors seeking to facilitate SDGs, especially relating to the goals in which the destinations can be involved. Secondly, even if sustainable tourism initiatives include the concept of "meaningful experience" for each tourist along with the sustainable tourism practices (UNEP and UNWTO, 2005) to increase their satisfaction, we observe that sustainable tourism practices provided by the destinations for cruise tourists is a topic that is still under research. In order to address this gap, our main objectives consist in describing how sustainable the behaviour of cruise tourists is at our observed destination, and how this behaviour relates to the characteristics of this key tourist group.

3. The data and clusters of cruise tourists

De Leeuw's, 2005 article deals extensively with the benefits and consequences of using diverse methods in data collection (i.e. face-to-face, online, and telephone). The author extensively reviews studies that combine different collection methods and how this combination of techniques allows the costs associated with conducting the survey to be reduced, as well as minimising the bias created by non-response. The author analyses how specific data collection routes allow the bias caused by non-response to be reduced through, for example, greater intimacy when responding. De Leeuw argues that the main objective is to reduce coverage bias and still complete the survey at a reasonable cost. On the other hand, authors such as Japec (1995) have argued that the best strategy is to use the cheapest main route, while the most expensive route should be used to follow-up of respondents who have not replied, so that response rates can be improved. In this study we have also opted for a combination of methods; both face-to-face and online.

This study was conducted by administering a semi-structured questionnaire with an interview-based survey carried out directly on shore to 750 cruise tourists in 2019 (March-May) in the port of Naples, Italy, which is one of the major ports of call in the Mediterranean region. Additionally, we administered the same semi-structured questionnaire, accessing the cruise social groups on Facebook, to 430 cruise tourists, who replied about their experiences in the same port during 2018.

The questionnaires were administered face to face by a group of 8 interviewers, appropriately trained by the authors. The questionnaires were administered in the spaces adjacent to the cruise terminal (e.g. entrance to the port; the main square, which is called "piazza municipio"; the main shopping street which is called "via Toledo"). The interviews lasted a maximum of 10 min. The interviewees were stopped after the city tour and before boarding the ship to leave.

We followed the arrival calendar of the big ships. Naples is mainly a transit port and the cruise terminal concessionaire, that is Terminal Napoli SpA, is owned by three main cruise companies that is Costa Crociere SpA, MSC Crociere SpA, and Royal Carribbean, which together own about 90% of the capital. MSC and Costa guaranteed berths for large ships in 2018 and 2019.

We choose to collect data both directly on Naples port and through a social network, specifically Facebook, through cruise social groups. Considering that the offer of services in the city of Naples has not changed between 2018 and 2019, we have chosen these two methods of administering the questionnaires because we have looked for cruise passengers who were not at their first cruise experience and therefore we have assumed that their behaviour towards sustainable destinations, and more generally towards the concept of sustainability, was one of higher awareness. For example, the cruise passenger who does not throw papers on the street will be more attentive to city cleaning services. Previous cruise experiences will allow the cruise passenger to compare Naples with cities already visited.

Considering the period researched, our sample is composed by tourists that have chosen to spend a few hours in the services offered by the areas near the port. It is representative. Additionally, according to the previous literature (Penco & Di Vaio, 2014) our sample is representative for this type of analysis. The cruise tourists interviewed were on board of 17 different cruise ships. Moreover, 45% of tourists were on board of MSC Bellissima, 30% on Costa Fascinosa, 25% Norwegian Spirit, and the rest on other ships.

Table 1 describes the main elements of the questionnaire, which was separated into five blocks; and the specific questions have been included in Annex 1.

Our analysis is structured in two parts. The first focuses in on blocks 2, and 4, while the second concentrates on the last block of variables. The analysis of these blocks will be covered in Sections 4 and 5 of this work, respectively. In order to be able to better adapt ourselves to the information available in this case study, we decided not to directly use the clustering structure of previous works. Instead, we undertook the identification of clusters of cruise tourists using the variables included in Table 2 which includes the description of the main variables used. The first two columns of this table show the observation counts for each of the categories and each of the samples. Columns three and four present the proportions for each element in both samples, which do not show significant differences. The last column shows the same proportion for

Table 1
Structure of the questionnaire.

Block	Variables
1.- Cruise tourists' characteristics	Gender, nationality, occupation, education level, the name of the ship that the cruise passenger is traveling on, income, marital status, previous knowledge of Naples and travel experience on cruises.
2.- Means of transport used	Not only traditional means of transport, but also new more sustainable means such as bicycles, electric motorcycles, etc. were included in the questionnaire. The survey also asked about the level of satisfaction with the medium used, by employing a Likert scale from 1 to 7.
3.- Visits and tours carried out	Only tours close to the port were considered, with the exception of the tour to the Amalfi coast. In fact, all tours can be made on foot, by tube, by taxi, by bus, or by a mix of transport services. The survey also asked about the level of satisfaction with the visit undertaken, on a Likert scale from 1 to 7.
4.- Cruise tourists' behaviour	Variables related to environmental, social and expenditure sustainability aspects were included in the survey. The first group includes aspects such as attitudes towards recycling, water saving, litter etc. The second group sought to identify levels of contact with local food, community and crafts. It also values the importance of congestion for tourists. In relation to these two groups, respondents could indicate the degree to which they followed particular behaviours, on a Likert scale from 1 to 7. With respect to spending behaviour, the main items considered were bars and restaurants, transportation and shopping.
5.- Importance/ satisfaction	The level of importance and satisfaction for the visitors in relation to the physical and the socioeconomic environments are included in this block. The physical environment included aspects such as congestion, pollution, noise, level of preservation of monuments, state of maintenance, and cleanliness of the city, among others. The socio-economic environment relates to personal safety, friendliness of local residents, Wi-Fi services, local crafts and gastronomy etc. Respondents could indicate both the degree of satisfaction and importance attached to each of these aspects, and in global terms, on a Likert scale from 1 to 7. Respondents were also able to indicate whether they were interested in returning to Naples on a cruise or not.

Table 2
Cruise tourists' characteristics.

	Face to face	Online	Face to face	Online	Total
Gender					
Female	378	205	50%	48%	49%
Male	372	225	50%	52%	51%
Income level					
a) <25	205	75	27%	17%	24%
b) 25–50	477	318	64%	74%	67%
c) >50	68	36	9%	8%	9%
Age groups					
a) < 34	149	134	20%	31%	24%
b) 34–43	200	99	27%	23%	25%
c) 44–53	188	110	25%	26%	25%
d) > 53	213	87	28%	20%	25%
Country of origin group					
a) North EU	223	87	30%	20%	27%
b) Rest EU	337	307	45%	71%	55%
c) America	128	22	17%	5%	13%
d) ROW	50	13	7%	3%	5%
First time on a cruise?					
No	249	152	33%	35%	34%
Yes	501	278	67%	65%	66%
First time in Naples?					
No	135	95	18%	22%	19%
Yes	615	335	82%	78%	81%
Studies					
a) Primary	25	14	3%	3%	3%
b) Secondary	516	263	69%	61%	66%
c) University	209	153	28%	36%	31%
Civil status					
a) Single	186	85	25%	20%	23%
b) Fiancé	30		4%	0%	3%
c) Married	457	250	61%	58%	60%
d) Cohabiting	35		5%	0%	3%
e) Divorced	1		0%	0%	0%
f) Widower	31		4%	0%	3%
g) Other	10	92	1%	21%	9%
Travel companions					
a) Friends	179	91	24%	21%	23%
b) Alone	30	16	4%	4%	4%
c) Family	220	121	29%	28%	29%
d) Partner	318	192	42%	45%	44%
e) Other	3		0%	0%	0%

Source: Own elaboration.

the total sample.

The first issue to consider in this clustering process relies on the fact that most variables are categorical, which reduces the possibilities of using standard non-supervised clustering techniques, such as *k*-means. We decided instead to use *k*-medoids, which is a clustering method closely related to *k*-means. Like *k*-means, *k*-medoids minimises the distance between the cluster centroids and the data points. However, in contrast to k-means, *k*-medoids uses data points as centroids and can therefore be used for all type of data for which a distance can be calculated. Therefore, *k*-medoids can be employed with data that cannot be represented in a vector space, as long as a distance matrix can be computed. With *k*-medoids we can use categorical variables that cannot be averaged out, but for which a distance matrix can still be calculated (Bauckhage, 2015). For the identification of these clusters, we used the Scikit-learn library of Python (Pedregosa et al., 2011).

This clustering process used the following variables as features: gender, age, country of origin, level of income, civil status, level of studies, travel companion, first cruise and first time in Naples, number of previous cruises, and number of previous visits to Naples. The latter two variables are the only ones that are not categorical. The variable 'country of origin' was aggregated into four categories: Northern Europe, rest of Europe, America, and the rest of the world. The age values were reclassified into four groups following the quartiles thresholds of the variable age: below 34, between 34 and 43, between 44 and 53 and older than 53. Since our objective is not a comparison between metrics, we decided to use the Euclidean distance as the standard distance.

We selected the number of clusters by calculating the sum of distances of samples to their closest cluster centre. In the case of the Euclidean distance, after considering four clusters the gain of this metric was imperceptible, so we chose this number of medoids as our benchmark. Once the clusters were identified we proceeded to characterise them in terms of the different variables used in the clustering process. As an example, Fig. 1 shows the gender structure of the clusters.

The "Total" bar shows the structure by gender of the whole sample. The first cluster is the most equilibrated, while clusters 2 and 3 clearly have a higher proportion of men. Cluster 4 only composes women. Applying this same procedure to the remaining categories allowed us to develop Table 3. In this table, we highlight only those aspects that best allow us to distinguish certain clusters from others.

The first cluster can best be described as constituting the oldest group of cruise tourists who had already been on a cruise but had not previously visited Naples. Clusters 2 and 3 are the most homogenous but for the previous cruising experience. The main characteristics of the tourists assigned to the fourth cluster are that they are women, with age and income at the extremes (youngest and oldest age groups; lowest and highest level of income). These clusters are useful sample descriptions and will be used below to describe cruise tourists' behaviour. An example can be observed in Fig. 2, which shows a scatterplot of the total expenditure values of all the data points by cluster.

We can observe a similar structure for clusters 1, 2 and 4. Cluster 2 shows a greater dispersion in expenditure even though Cluster 4 is the most numerous and shows a greater concentration in small levels of expenditure. Cluster 3 shows the lowest disposition to spend higher amounts of money during their visit while members of the first cluster have a lesser concentration in small expenditure amounts.

4. Cruise tourists' behaviour in relation with environmental, socio-economic features and transport modes

Cruise tourists' behaviour has been observed through three groups of data, related to environmentally, socially, and economically sustainable practices. The first, related to environmental sustainability, collects behaviours related to environmentally friendly habits such as saving water, using recyclable plastic, treatment of trash, reusing and recycling paper, glass, and plastic. Cruise tourists were asked about the degree of sustainability of their behaviour, with 7 being the highest value achievable. The results of the questionnaire are summarised in Table 4.

The results show great awareness in relation to litter, as over 80% of the visitors declared themselves to be highly aware of the need to

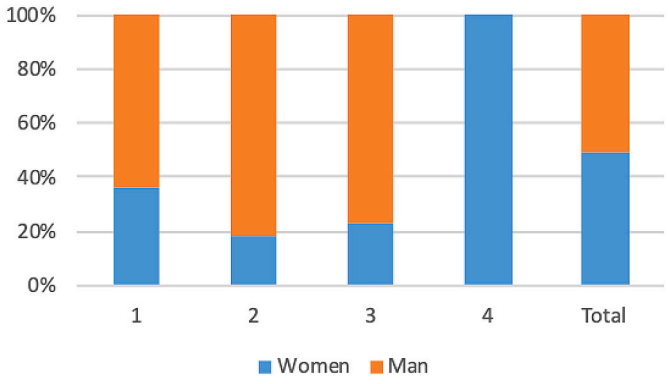

Fig. 1. Gender structure of clusters.
Source: Own elaboration.

Table 3
Characterisation of clusters of cruisers.

Variable/ Cluster	Cluster-1	Cluster-2	Cluster-3	Cluster-4
Size (% of total sample)	22.3%	26.0%	19.7%	32.0%
Gender	More in consonance with the total sample	Mainly men		Only women
Age	Higher proportion of cruiser tourists over 53 years old	Higher proportion of cruiser tourists between 44 and 53 years old		No cruise tourists between 44 and 53 years old
Annual income	Lower proportion of annual income group 2 (between 25 and 50 thousand €)	Higher proportion of annual income group 2 (between 25 and 50 thousand €)		Lower proportion of annual income group 2 (between 25 and 50 thousand €)
Previous cruise experience	All members have been previously on a cruise	All members had no previous cruise experience	Same proportion of prior cruise experience as in the total sample	
Portion of visitors who already knew Naples	Highest proportion of visitors who have not visited Naples before	Normal proportion of visitors who have not visited Naples before		

Source: Own elaboration.

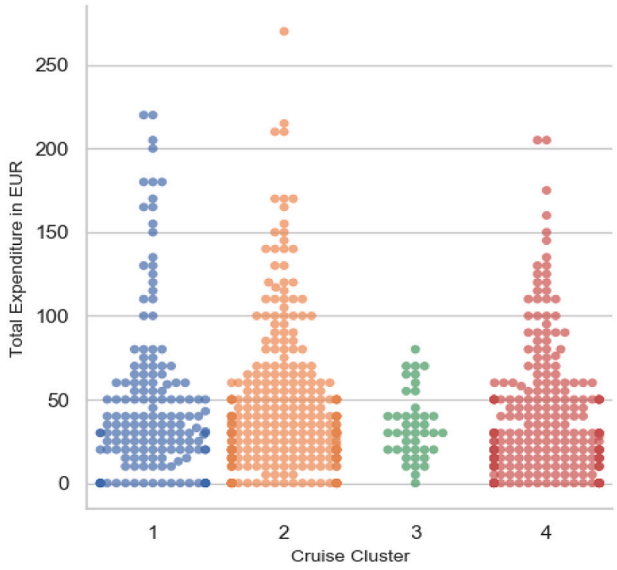

Fig. 2. Total expenditure by cluster.
Source: Own elaboration.

dispose of trash in a sustainable way. However, for other items, results are somewhat more scattered and less positive. Further research is needed to confirm whether this response is due to tourists' lack of interest in recycling or to the need for more municipal resources that encourage sustainable behaviour, such as the provision of recycling bins.

The second group of data refers to social sustainability. This group addresses issues such as the local community's degree of socialisation and compliance with local regulations, the degree of rejection of congested areas, and interest in local food, souvenirs, and local craft products. The results of the questionnaire are summarised in Table 5.

The results show visitors appreciate interaction with locals and respect local rules. Around half prefer to avoid crowded areas and do not show great interest in souvenirs, and most like to try local food. In the values referring to crowded areas, respondents reflect on how they dealt with them; the lower the value given to their response, the less ready are they to support crowded areas.

For each visitor, and simply for descriptive purposes, we calculated the average of all the evaluations made in the two groups, namely the environmental and social sustainability measures, and obtained two sustainability indicators. In Fig. 3, we can observe the values of these average values for the different clusters of visitors. Again, there are no big differences in the structure of the values by cluster. It is obvious, however, that the average values for the environmental sustainability measures are more concentrated in the higher values of the distribution than those for social sustainability measures, showing a greater sensitivity towards environmental issues.

In order to analyse the level of sustainability of cruise tourists' transport modes used during their visit to Naples, a new variable is generated. The survey asks tourists which transport mode they have used during their visit to Naples and how satisfied they are with it. We consider sustainable transport to be the train, bus, underground and the electric bicycle. In the 'non-sustainable transport group', on the other hand, we include private transport, taxi, rental cars, motorbikes, and ferries. Finally, tourists have the option of not using any means of transport at all, namely walking, which is not strictly a mode of transport but is sustainable.

Many tourists use more than one transport mode, and even combine sustainable and unsustainable modes. Thus, several cases or combinations of transport modes used by tourists can be generated. We have considered that the cruise tourists use sustainable transport modes if they only used sustainable transport or only walked or did a combination of both. Any tourist not belonging to one of these three groups is considered not to have used a sustainable transport mode. Following this classification criteria, 56% of all visitors can be considered to use a sustainable means of transport. In numerical terms, visitors used 38 different combinations of modes of transport. However, the 12 most numerous categories alone represent around 96% of the total. Fig. 4 reflects the number of visitors using each of these 12 combinations of modes of transport.

Visitors were also asked to evaluate their satisfaction with respect to the transport modes utilised, using a Likert scale from 1 to 7. Following our strict definition of non-sustainable behaviour, tourists are associated to this category if they only use one single means of transport that is not considered sustainable, even if they use other sustainable transport modes. For these types of cruise tourists, we may have information about how they value both sustainable and non-sustainable transportation. However, for tourists considered to be following sustainable behaviour, only their satisfaction with sustainable transportation can be actually presented. Table 6 shows these results. The level of satisfaction at the extremes is quite similar, but tourists with non-sustainable transport behaviour give a near to average value to the satisfaction attached to the use of sustainable transportation. This lower satisfaction with the use of sustainable transport may signal the need for promotional policies in favour of this type of more sustainable transport modes.

5. Cruise tourists' satisfaction

Next, we take into consideration the variables contained in the fifth block of Table 1, which involved a combination of questions on the importance and relevance of physical and socioeconomic environments that cruise tourists faced during their visit to Naples.

Importance-performance analysis (IPA) was initially developed as a technique for evaluating different marketing programmes. In these analyses, the characteristics of the product/destination are first identified. Secondly, the customer/tourist is asked how important they consider these attributes to be, and how satisfied they are with the performance of each of them. Then the results are presented in diagrams that reflect together levels (high or low) of importance and satisfaction (Meng,

Table 4
Environmental sustainability behaviour.

	1	2	3	4	5	6	7	1–3	4	5–7
Residuals	13	10	14	49	177	166	744	3%	4%	93%
ff	10	5	6	29	101	110	487	3%	4%	93%
online	3	5	8	20	76	56	257	4%	5%	92%
Use of plastic	111	48	110	187	278	128	309	23%	16%	61%
ff	74	24	62	97	171	79	239	21%	13%	66%
online	37	24	48	90	107	49	70	26%	21%	53%
Recycling	47	30	91	176	346	139	344	14%	15%	71%
Ff	29	13	52	112	198	84	259	13%	15%	72%
online	18	17	39	64	148	55	85	17%	15%	68%
Reusing	50	32	77	191	405	120	296	14%	16%	70%
Ff	33	14	41	109	263	71	215	12%	15%	74%
online	17	18	36	82	142	49	81	17%	19%	64%
Water savings	25	13	51	132	347	156	442	8%	11%	81%
ff	18	5	36	94	230	75	286	8%	13%	79%
online	7	8	15	38	117	81	156	7%	9%	84%
Avge-total	49.2	26.6	68.6	147	310.6	141.8	427	12%	13%	75%
Avge-ff	32.8	12.2	39.4	88.2	192.6	83.8	297.2	11%	12%	77%
Avge-online	16.4	14.4	29.2	58.8	118	58	129,8	14%	14%	72%
CV-total	0.77	0.58	0.54	0.41	0.28	0.13	0.44	0.61	0.41	0.16
CV-ff	0.75	0.64	0.54	0.39	0.32	0.18	0.37	0.61	0.39	0.14
CV-online	0.80	0.54	0.58	0.50	0.25	0.23	0.61	0.62	0.50	0.22

Source: Own elaboration.

Table 5
Social sustainability behaviour.

	1	2	3	4	5	6	7	1–3	4	5–7
Comtact with Local community	163	11	103	128	330	194	241	24%	11%	65%
Ff	141	10	78	91	200	94	131	31%	12%	57%
Online	22	1	25	37	130	100	110	11%	9%	80%
Avoided crowding areas	209	76	262	102	91	71	358	47%	9%	44%
Ff	149	43	166	63	53	40	229	48%	8%	43%
Online	60	33	96	39	38	31	129	44%	9%	46%
Tried local food	257	12	26	51	96	126	600	25%	4%	70%
Ff	208	8	15	35	53	60	366	31%	5%	64%
Online	49	4	11	16	43	66	234	15%	4%	81%
Ignored local rules	34	35	63	29	64	89	854	11%	2%	86%
ff	26	25	30	12	38	40	571	11%	2%	87%
online	8	10	33	17	26	49	283	12%	4%	84%
Buyed souvenirs	413	14	42	49	171	109	361	40%	4%	55%
ff	292	7	22	36	87	47	244	44%	5%	51%
online	121	7	20	13	84	62	117	35%	3%	62%
Avge-total	215.2	29.6	99.2	71.8	150.4	117.8	482.8	29%	6%	64%
Avge-ff	163.2	18.6	62.2	47.4	86.2	56.2	308.2	33%	6%	61%
Avge-online	52	11	37	24.4	64.2	61.6	174.6	24%	6%	71%
CV-total	0.64	0.94	0.96	0.58	0.72	0.40	0.51	0.48	0.57	0.24
CV-ff	0.60	0.83	1.01	0.64	0.77	0.40	0.55	0.44	0.64	0.28
CV-online	0.84	1.16	0.92	0.51	0.67	0.41	0.45	0.64	0.51	0.23

Source: Own elaboration.

Tepanon, & Uysal, 2008). Since the publication of Martilla and James' study (1977), IPA analyses have grown in popularity in different fields such as the quality of services, travel and tourism, leisure and recreation, education and even health marketing (Oh, 2001).

Before introducing the models, we have undertaken in relation to the importance/satisfaction variables a number of heat maps that describe the connection between these two perspectives of the analysed variables. Fig. 5 collects the heat maps of all the items considered in the importance/satisfaction variables considered in our data base. The first 9 heat maps correspond to the importance/satisfaction levels for the socio-economic environment, while the rest reflect the data for environmental sustainability. Each cell of these heat maps reflects, with the intensity of the colours, the number of cruise tourists who have indicated their corresponding 'satisfaction and importance' level.

Ideally, most tourists would be placed at the top of each heat map. This would mean that, independently of the importance they attach to a certain issue, the satisfaction level is the highest possible. As we can observe, in general, cruise tourists tend to positively value the importance of all the aspects considered, locating themselves in the right half of the heatmaps, which reflects the relevance of the attributes chosen in the survey. Cruise tourists tend to generalise the final product, giving greater weight to their satisfaction with those attributes they consider more important. This explains the lack of answers located in the left/top of the heat maps.

On a number of variables, tourists locate themselves in the top right of the maps. They are thereby signalling the equal value of issues that are important to them and levels of satisfaction. This is the case in relation to resident's affability, cordiality in shops, language communication, availability of shops, local food, local goods and crafts, and infrastructure. A second group of items - security, city cleaning, noise, air quality, traffic and people congestion, monuments, pedestrian and bike areas, and signage - show that tourists value them significantly, but they are not particularly satisfied with them in Naples. Lastly, Forex and Wi-Fi services show the worst results (see Fig. 5).

This descriptive analysis is just a first step in identifying priorities for the local authorities if they want their cruise visitors' assessments to

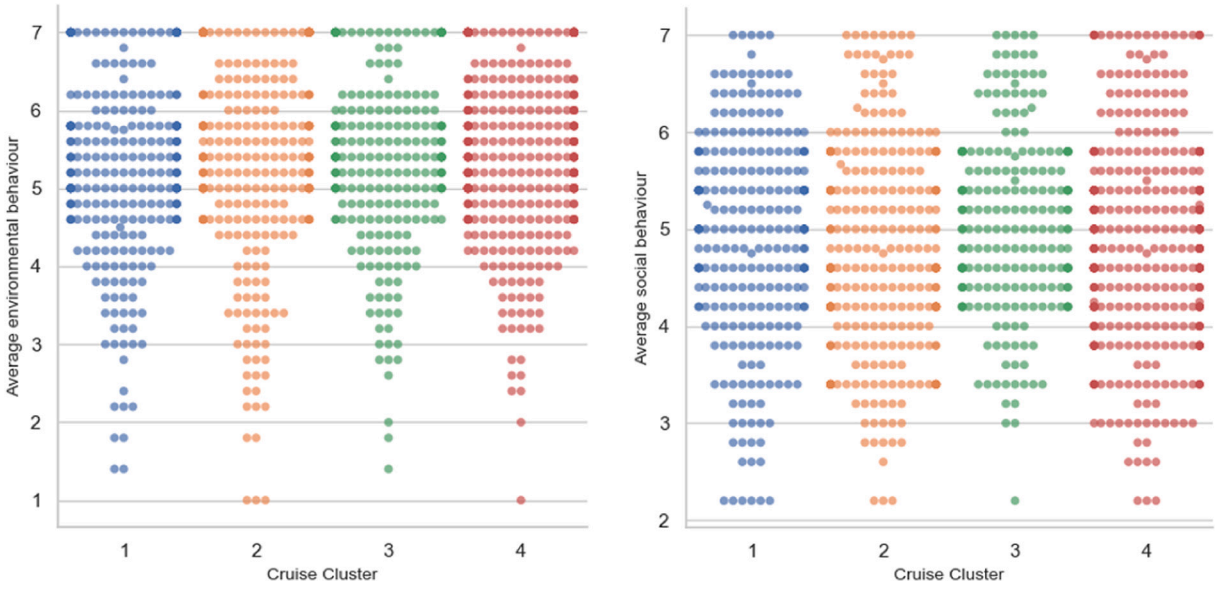

Fig. 3. Environmental and social sustainability behaviour by clusters.
Source: Own elaboration.

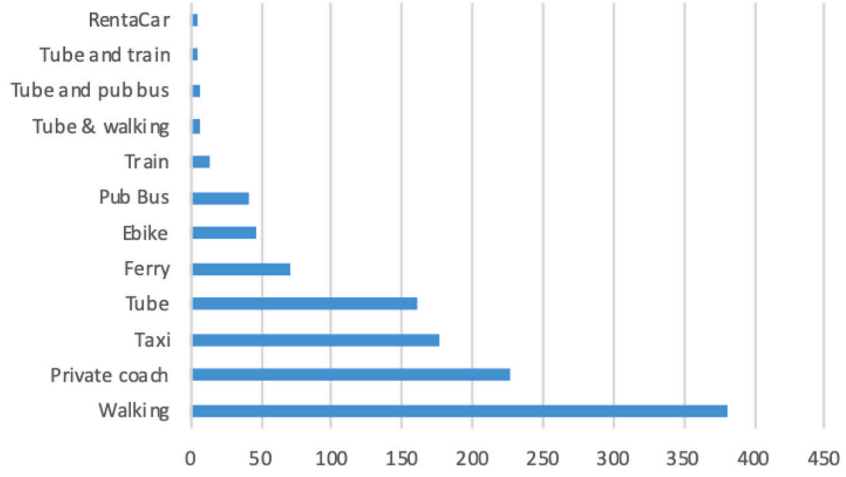

Fig. 4. Number of cruise tourists in each mode of transport.
Source: Own elaboration.

Table 6
Satisfaction levels with transport modes.

	Satisfaction on the use of sustainable transport modes	Satisfaction on the use of non- sustainable transport modes
Non-Sustainable behaviour in transport	4.8	6.0
Sustainable behaviour in transport	5.9	

Source: Own elaboration.

improve. Further analysis should explore satisfaction levels further by using all the information available in the surveys using econometric models.

Before studying how the different environmental and socioeconomic elements considered influence global satisfaction, we next describe the relationship between these two groups of elements. This relationship can be identified as positive in Fig. 6. Most of the data points are below the diagonal, which demonstrates that the level of socioeconomic satisfaction is normally associated with a lower level of environmental satisfaction. No clear relationship between these variables and the level of expenditure is depicted in this graph, and the nature of this relationship needs further research.

With the purpose of analysing which of the individual satisfaction elements considered (of Naples' physical and socioeconomic environment) has a greater influence on final global satisfaction, we have estimated some ordered logit models. We have reduced the measurement range of all variables from 7 to 3, by dividing them into three quantiles. We decided to reduce the range because of the poor results and the lack of significance found in the models. We thought that the lack of significance of the model might be related to an excess of cut-off points, which would cause the results to be very dispersed, so that there might be many individuals who answered for example 5, and very few who answered 3. By means of basic descriptive statistics and tables it was found that the ranks 5, 6 and 7 concentrated a greater number of answers than the lowest ranks (see Fig. 4), so it was decided to reduce the number of cut-

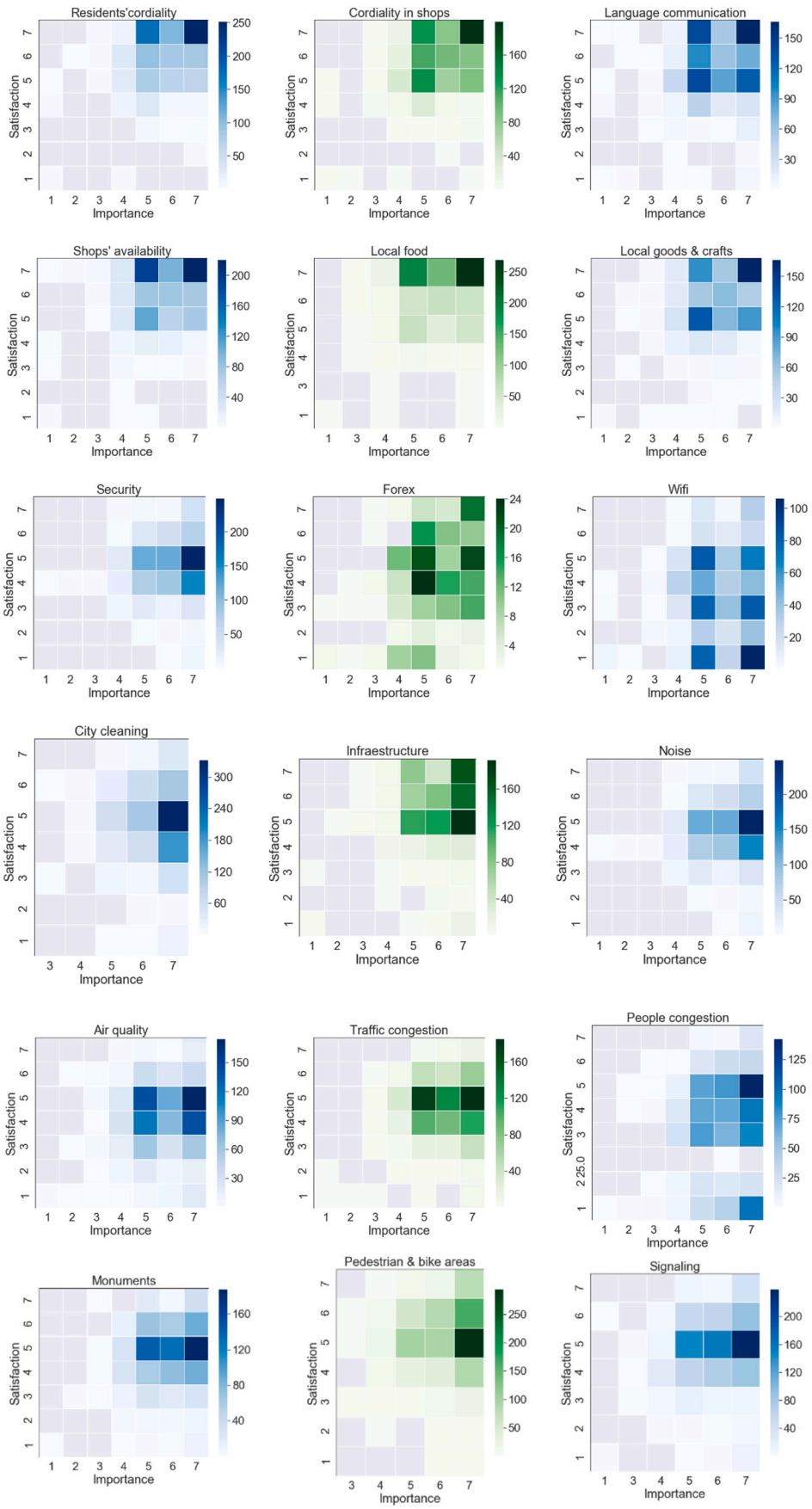

Fig. 5. Importance/satisfaction heatmaps.
Source: Own elaboration.

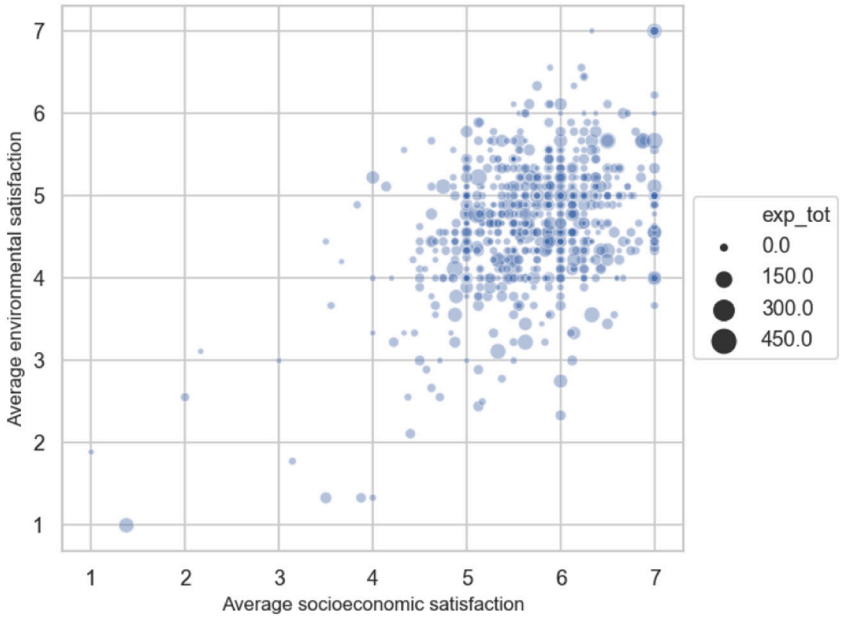

Fig. 6. Environmental and socioeconomic satisfaction.
Source: Own elaboration.

off points of the ordered logit.

The results obtained with the ordered logit models are summarised in Table 7 and Table 8. We observe that, for the entire sample, satisfaction relating to infrastructure security, people traffic and the maintenance of bikes' and pedestrians' areas are relevant variables in explaining the level of general satisfaction, with 99% significance. The satisfaction level with the conservation of local monuments and traditional buildings show a significance level of 95%. We can observe that infrastructure security is also a significant variable for people in cluster 1 and cluster 4, who have a lower proportion of annual income than group 2 (between 25 and 50 thousand euros). Moreover, people in cluster 1 contain the highest proportion of visitors who have not visited Naples before. People traffic is a significant variable for clusters 3 and 4, which are characterised by mainly including men, have a higher proportion of cruise tourists between 44 and 53 years old and a higher proportion of people with an annual income between 25 and 50 thousand euros. On the other hand, monuments and traditional buildings are significant variables that explain people's satisfaction in clusters 1 and 3, whose members have completely different socioeconomic characteristics.

Pedestrian areas and bike loans are only significant for cruise tourists in cluster 1, which can be explained by the higher proportion of people who have never been in Naples before; so they will logically enjoy walking around the city more and taking in the views, monuments, daily environment and chatting with local people. It is worthwhile highlighting that noise is a significant aspect for cruise tourists in cluster 4, and not for the sample as a whole, nor the other clusters. This cluster is formed only by women and has a lower proportion of people with an annual income between 25 and 50 thousand euros. Air quality is only significant for Cluster 2, and it is the only significant variable for this group, whose main characteristic is that they have never been on a cruise before, are mainly men between 44 and 53 years old, and have a higher proportion of annual income between 25 and 50 thousand euros. Finally, we want to highlight that signage is only a significant variable for the entire sample, but not for any particular cluster.

An analogous analysis is made for the socioeconomic environment characteristics, finding that, for the entire sample, with 99% significance, satisfaction with the level of linguistic communication, the availability of shops and currency exchange, and Wi-Fi services, have a positive impact on total general satisfaction. With 95% significance, we also find that security perception is positive. Again, all these significant coefficients are positive. Next we find that security perception is only significant for cluster 2, whose main characteristic is that the members have never been on a cruise before. Moreover, the level of linguistic communication is significant for clusters 2 and 3, whose members are mainly men between 44 and 53 years old and with an annual income between 25 and 50 thousand euros. The availability of shops is significant for cluster 4, formed by women, with no one in the 44 to 53-age range and with a lower proportion of cruise tourists with an annual income between 25 and 50 thousand euros. The availability of Forex is significant for cluster 1, whose members are mainly over 53, with a lower proportion of cruise tourists with an annual income between 25 and 50 thousand euros.

Table 7
Ordered Logit for general satisfaction depending on physical environment satisfaction.

	General satisfaction (Physical environment characteristics)				
	Entire sample	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Cleaning	0.0691	0.1982	−0.0449	−0.0303	0.1561
Infrastructure security	0.3483***	0.4153*	0.3014	0.3129	0.4281**
Noise	0.1005	0.1398	−0.0242	−0.1953	0.3591**
Air Quality	0.1088	−0.3313	0.3524*	0.3556	0.0318
Cars traffic	−0.0262	0.1809	−0.1253	−0.2358	−0.0621
People traffic	0.3342***	0.0799	0.2977	0.4726**	0.5260***
Monuments and traditional buildings conservation	0.2568**	0.4320**	0.2091	0.4815**	0.1016
Pedestrian areas and bike loans maintenance	0.4527***	1.0076***	0.3175	0.4017	0.1943
Information (signage)	0.1775*	−0.0114	0.2985	−0.0001	0.3115

Source: Own elaboration.
*** $p \leq 1\%$.
** $p \leq 5\%$.
* $p \leq 10\%$.

Table 8
Ordered Logit for general satisfaction depending on socioeconomic environmental satisfaction.

	General satisfaction (Socioeconomic environment characteristics)				
	Entire sample	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Security perception	0.5237**	0.6784	1.0638*	0.9367	0.2444
Cordiality of the residents	0.2820	0.6466	−0.1350	−0.4839	0.6829
Attitude of traders and local staff	−0.0384	−0.1982	−0.1590	1.2840	−0.2168
Level of linguistic communication	0.7916***	0.3855	1.0642*	2.9517**	0.7578.
Availability of shops	0.7023***	0.3274	0.8554	0.1894	1.2099**
Currency exchange (if you used it)	0.6291***	0.9883**	0.6958	0.7089	0.5849
Local cuisine	0.0722	1.3006**	−0.1832	−0.0115	−0.5058
Local products and handicrafts	0.2148	−0.9743*	−0.3220	−0.4247	0.3285
Wi-Fi	0.6324***	0.2234	0.9965*	0.5810	1.1224**

Source: Own elaboration.
*** $p < 1\%$.
** $p < 5\%$.
* $p < 10\%$

Furthermore, all its members have been on a cruise previously and most of its members have never been to Naples before. The Wi-Fi signal is only significant for cluster 4, whose members are only women, none between 44 and 53 years old, and with a lower proportion of people with an annual income between 25 and 50 thousand euros. Finally, it is worthwhile highlighting that local cuisine and local products and handicraft variables are significant for explaining the general satisfaction of cruise tourists belonging to cluster 1.

We also calculated for each model the probability for each individual to show a low, medium or high level of global satisfaction and then calculated the mean of these probabilities for the whole sample and for each cluster (see Table 9). Each mean shows the average probability for a tourist's general satisfaction to be low, moderate, or high. We find very similar results between all models (entire sample and each cluster). Cluster 2 has the greatest difference with respect to the overall sample results.

Since only the sign of the coefficients in Table 7 and Table 8 can be considered, only the direction of the relationship can be established. Therefore, we have obtained the marginal effect for the entire sample of each variable in both models, which are included in Table 10. These marginal effects measure the probability of general satisfaction to be low, medium, or high, given each physical and socioeconomic environment characteristic satisfaction level. In the case of security, if the level of satisfaction for a cruise tourist is moderate (2), with everything else constant, the probability for this visitor to have a low general satisfaction level is 21.54%; medium general satisfaction 63%; and high general satisfaction 15.45%.

One can appreciate that marginal effects are always around 60% for the medium general satisfaction level, independently of what people declare about their physical or socioeconomic characteristics, while for low and high general satisfaction this probability varies more.

Regarding the comparative results for the two groups of interviewees (face-to-face and online), we observed some differences in the estimates of the model with physical environment variables. The variables air quality and monuments and traditional buildings are significant for individuals interviewed online, but not for those who did the face-to-face survey; while the variable infrastructure security is significant for interviewees face-to-face, but not for online interviewees. Pedestrian areas and bikes loans and people traffic are significant in both models, and

Table 10
Marginal effects of physical and socioeconomic environmental characteristics.

Variable	Value	Low general satisfaction	Moderate general satisfaction	High general satisfaction
Security	1	0.2272	0.6272	0.1455
	2	0.2154	0.6300	0.1545
	3	0.1076	0.6015	0.2908
People traffic level	1	0.2507	0.6187	0.1304
	2	0.1901	0.6341	0.1756
	3	0.1456	0.6297	0.2246
Maintenance of monuments and historic buildings	1	0.2394	0.6190	0.1415
	2	0.2069	0.6272	0.1658
	3	0.1697	0.6288	0.2014
Maintenance of bike and pedestrian areas	1	0.2684	0.6165	0.1149
	2	0.1813	0.6418	0.1767
	3	0.1410	0.6362	0.2227
Information	1	0.2096	0.6239	0.1663
	2	0.2171	0.6226	0.1602
	3	0.1462	0.6187	0.2350
Socioeconomic security	1	0.3243	0.6370	0.0386
	2	0.1805	0.7289	0.0905
	3	0.2159	0.7117	0.0722
Language communication	1	0.3407	0.6304	0.0288
	2	0.1788	0.7421	0.0790
	3	0.1287	0.7550	0.1161
Availability of shops	1	0.3569	0.6106	0.0323
	2	0.2628	0.6821	0.055
	3	0.1536	0.7369	0.1094
Money exchange	1	0.3791	0.5913	0.0295
	2	0.2523	0.6878	0.0598
	3	0.1970	0.7194	0.0834
Wi-Fi	1	0.3670	0.5952	0.0376
	2	0.3134	0.6356	0.0508
	3	0.1948	0.7033	0.1017

Source: Own elaboration.

Table 9
Probability of general satisfaction to be low, medium or high.

Average probability						
		Entire sample	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Physical environment satisfaction model (Table 7)	Low general satisfaction (group 1)	0.2056	0.2338	0.1919	0.2328	0.1856
	Medium general satisfaction (group 2)	0.6138	0.5480	0.6209	0.6613	0.6198
	High general satisfaction (group 3)	0.1804	0.2181	0.1870	0.1058	0.1944
Socioeconomic environment satisfaction model (Table 8)	Low general satisfaction (group 1)	0.2741	0.3713	0.3237	0.2501	0.2425
	Medium general satisfaction (group 2)	0.6578	0.5619	0.6108	0.7115	0.6676
	High general satisfaction (group 3)	0.0680	0.0667	0.06535	0.0382	0.0897

Source: Own elaboration.

both are positive. Similar results can be found in the cluster models. On the other hand, the models estimating satisfaction with socioeconomic characteristics have in common the significant variables 'level of linguistic communication' and 'availability of shops' and a positive sign. In addition, the Wi-Fi variable is significant in the estimated model for online respondents but not for face-to-face interviewees. On the other hand, local products and handicrafts are significant for face-to-face interviewees, but not for online respondents.

According to Vale, Silcock, and Rawles (1997) when elements are used to form a scale, they need to have internal coherence. All elements must measure the same thing, so they must correlate with each other. To check this internal coherence one of the most widespread measures employed is the Cronbach alpha. The Cronbach alpha takes values between 0 and 1, where 0 indicates the lack of correlation between the items and, as the variables are positively related, the alpha value approaches 1, a value that indicates a perfect correlation. Several authors, such as Carmines and Zeller (1979), consider that an optimal minimum value to consider the model as reliable is 0.80. Others, such as Tavakol and Dennick (2011), affirm that acceptable values of the alpha range are between 0.7 and 0.95. We have decided to establish the limit at 0.8, finding that our Physical environment characteristics' model has an alpha of 0.8 and our socioeconomic characteristics' model has an alpha of 0.82. This means that both models' items have internal coherence.

Regarding the goodness of fit, we have compared our two logit models. Some of the more common goodness of fit indicators are the McFadden adjusted R2 (see Table 11) and the chi-square likelihood ratio (LR). The LR is a likelihood ratio test of the hypothesis that all coefficients (except the intercept) can be computed by comparing the log-likelihoods (Long & Freese, 2003). This measure tests that at least one of the predictors' regression coefficient is not equal to zero in the model. Therefore, this measure shows us if the dependent variable has a significant effect on the independent variables.

We see that the Chi2 test, with 0-freedom degree (as both models have the same number of parameters) is significant for both models, but coefficient LR is higher for the physical model. On the other hand, McFadden adjusted R2 is higher for the socioeconomic characteristics model than for the physical characteristics' one. However, this coefficient is low in both models (15% and 8.5%, respectively).

Several linear regression models have been estimated with the aim of analysing which factors have a greater influence on total expenditure per day and person. To do this, a model was estimated - in which total expenditure per day and person is explained with respect to socioeconomic variables such as age, gender, income level, marital status, nationality or company of the trip and sustainable behaviour variables -, in which we obtained an adjusted coefficient R equal to 0.0344, which is quite low. Only the annual income, age, and behaviour with respect to plastic are significant in this model. The constant is not significant.

Table 11
Goodness of fit and comparison between ordered logit models.

	Socioeconomic model	Physical model
Likelihood		
Model	−134.089	−961.254
Intercept only	−171.314	−1063.143
Chi-square		
D(df = 201/1129/−928)	268.179	1922.509
LR (df = 9/9/0)	74.449	203.777
p-value	0.000	0.000
R2		
McFadden	0.217	0.095
McFadden(adjusted)	0.153	0.085
Cox-Uhler/Nagelkerke	0.296	0.164
Variances		
E	3.290	3.290
y-star	5.602	4.122

Source: Own elaboration.

However, by eliminating some no significant socioeconomic variables, we obtain that the age, size of the group in which one travels, income, European nationality and behaviour regarding plastics are significant, as well as the constant, with an adjusted-R of 0.03742.

On the other hand, another econometric model was prepared in which total expenditure per person per day is estimated with respect to socioeconomic variables, sustainable behaviour and importance. In this model the socioeconomic variables age, size of the group in which one travels, income, sustainable behaviours are included, as well as all the variables of importance and general satisfaction. This produced an adjusted-R equal to 0.0789. As significant variables we have the age, size of the group in which they travel, annual rent, the importance of cleaning, the safety of equipment and infrastructure, the importance of vehicle traffic management, the importance of the conservation of traditional monuments and buildings, as well as the maintenance of pedestrian areas and cycle paths. Also significant is the variable importance of sense of safety and security and the importance of the kindness of locals. On the other hand, the variable importance of local gastronomy and Wi-Fi is significant. None of the sustainable behaviour variables were found to be significant.

In addition, the last econometric mode tested to explain total expenditure per person per day used socio-economic variables, sustainable behaviour, and satisfaction, as explanatory variables. This model includes the variables: age, size of the group in which one travels, gender, annual income, marital status, nationality, with whom one travels, sustainable behaviour and all the variables of satisfaction with the socioeconomic, the environmental and the general environment. The adjusted-R is 0.1082, and the only significant variables are European nationality, satisfaction with the conservation of monuments and traditional buildings, satisfaction with the level of linguistic communication and satisfaction with local gastronomy. In this model, we eliminated the variables related to gender, marital status and who travels. We found that the adjusted-R falls to 0.0857, with the variables of European nationality, satisfaction with the safety of equipment and infrastructure, and satisfaction with the local gastronomy, local products and Wi-Fi being significant.

6. Discussion and policy recommendations

The study assembled a dataset of 1180 tourists who visited the destination of Naples during their cruise. This sample included information about key characteristics (e.g. gender, age, nationality, income, etc.), tourists' previous knowledge about Naples, as well as previous experiences of cruise trips.

This information is relevant to better understand the responses of the cruise tourists because previous experiences, especially of cruises, sharpen the attention and sensitivity of the traveller towards other aspects that influence the level of satisfaction, such as electronic services and sustainable services provided at destinations (Di Vaio et al., 2018).

Researchers have found that high satisfaction is connected with a greater propensity to spend (Di Vaio et al., 2018; Parola et al., 2014; Satta et al., 2015). Further, the UNEP and UNWTO (2005) have identified the previous experiences of visitors as a key factor in sustainable tourism because past experiences increase tourists' awareness of sustainable practices at destinations.

Our study highlights the importance of sustainable service satisfaction for cruise tourists who visit a destination for just a few hours. Specifically, level of satisfaction has a positive impact on the level of monetary expenditure on-shore, which also relate to the physical (e.g. congestion, pollution, noise, level of preservation of monuments, state of maintenance and cleanliness of the city, among others) and socioeconomic (e.g. personal safety, friendliness of local residents, Wi-Fi services, local crafts and gastronomy, and so forth) environments.

This study provides interesting results for practitioners and policy-makers. Specifically, it highlights the critical dimension of sustainable service satisfaction for cruise tourists that visit a destination for only a

few hours. For companies it is important to know their level of satisfaction because it is part of the "overall satisfaction" of cruise tourists. This then affects the future choices of cruise tourists about the purchase of new "cruise products and itineraries". Indeed, level of satisfaction has a positive impact on the level of monetary expenditure on-shore and relates to the physical (e.g. congestion, pollution, noise and so forth) and socioeconomic (e.g. personal safety, friendliness of local residents, Wi-Fi services, and so forth) environments. Satisfaction and monetary expenditure onshore represent key factors for companies to manage, but also for local governments. More specifically, this study proposes that policymakers (e.g., local government, port authorities and so forth) pay their attention on the sustainable dimension for cruise tourists, providing them sustainable physical and socioeconomic services. Our model provides a sustainable services framework that influences cruise tourists' behaviour, but in turn appears to be influenced by the type of cruise passenger appropriately identified in our clusters. Hence, this study invites local governments and organisations, as well as cruise companies, to develop pragmatic strategies to educate on sustainability at the cruise destination.

7. Conclusions

This research confirms our hypothesis, namely that there is a positive relationship between satisfaction with sustainable services (environmental and social sustainability) and global satisfaction.

Our findings also highlight that although there is a significant sensitivity of cruise passengers towards the quality of all services - and all physical conditions - provided by the destination, cruise tourists pay more attention to the environmental dimension. Indeed, on the environment sustainability of destinations the results stand out, along with the great awareness of cruise tourists. In fact, over 80% of visitors indicated that they are highly aware of the need to dispose of trash in a sustainable way.

Sensitivity towards environmental issues is probably due to the fact that they only spend a few hours at their destination. On the other hand, the social dimension onshore is less because cruise passengers do not travel or visit destinations alone but are generally in pairs and/or with friends, as shown by our results. On the other hand, the social dimension plays a key role on-board the ship.

Finally, regarding the economic dimension, specifically the monetary profile, cruise tourists have addressed their expenditure choices for bars and restaurants, transportation, and shopping. That is, the monetary expenditure of cruise passengers was for the purchase of goods and services at these providers. This study confirms that of previous research, that onshore expenditure at Naples destination,] is around € 50.00 per tourist (Di Vaio et al., 2018).

The main limitation of this study is that it is merely a snapshot of cruise tourists' sustainable behaviour over a limited period and for a single, although major, destination in the Mediterranean region. Nevertheless, these results provide important information to local governments and to cruise companies. Firstly, monetary expenditure onshore at the same destination does not increase; although in the period analysed the number of cruise tourists and the size of ships has increased compared to the previous analysis (Di Vaio et al., 2018). Secondly, thanks to these findings, cruise companies can be more aware about the importance of the social dimension onshore for cruise tourists. Hence, for those companies that are oriented towards achieving the SDGs, it is important to develop more partnerships at destinations that also involve the local communities. In this way, it will be possible to develop an effective architecture to achieve specific goals on the UN 2030 Agenda, especially SDG#11, SDG#12 and SDG#17.

Finally, this study contributes to the existent literature by providing a research design and innovative findings that analyse the relationship between sustainable services satisfaction and cruise tourists' expenditure according to the TBL approach and reading the cruise tourists' behaviour as "mediator" in the achievement of SDGs for cruise companies.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Annex 1

Informations

Male ☐ Female ☐ Age ___ Nationality_____ Ship_____ _____.

Occupation _____ Annual Salary € 25.000 ☐ € 25.000 - € 50.000 ☐ over € 50.000 ☐.

Status: Single ☐ Married ☐ other_____ Education level_____.

Who are traveling with you on this cruise? Partner ☐ Family and children ☐ With friends ☐ Alone ☐ other_____ Is your first cruise? Yes No ☐ How many times have you been cruise? _____ Is it your first cruise? Yes ☐ No ☐ How many times have you visited Naples? _____How many times have you visited Naples on cruise? _____.

Sustainable tourist behaviour evaluations.

Time spent visit the city_____.

Indicate which transport use and your level of satisfaction (From 1 extremely dissatisfied to 7 very satisfied).

Train	1	2	3	4	5	6	7
Public bus	1	2	3	4	5	6	7
Metro	1	2	3	4	5	6	7
Private coach	1	2	3	4	5	6	7
Taxi	1	2	3	4	5	6	7
Rented car	1	2	3	4	5	6	7
Rented moto	1	2	3	4	5	6	7

(continued on next page)

(*continued*)

Eletric bicycle	1	2	3	4	5	6	7
Ferry/Hydrofoil	1	2	3	4	5	6	7
I don't use ant transport	1	2	3	4	5	6	7
Other (specific)	1	2	3	4	5	6	7

Sustainable consumer behaviour during the visit (From 1 strongly disagree to 7 strongly agree).

Environmental Sustainability							
I saved water	1	2	3	4	5	6	7
I paid attention to the use of disposable plastic	1	2	3	4	5	6	7
I paid attention to not leave litter on the street, in the woods or on the beach	1	2	3	4	5	6	7
I reused what can be reused	1	2	3	4	5	6	7
I recycled news paper, plastic and glass	1	2	3	4	5	6	7
Other (specific)	1	2	3	4	5	6	7
Social Sustainability							
I socialized with local community	1	2	3	4	5	6	7
I ignored local rules	1	2	3	4	5	6	7
I avoided crowded areas	1	2	3	4	5	6	7
I ate local foods	1	2	3	4	5	6	7
I bought souvenirs/local craft products	1	2	3	4	5	6	7
Other (specific)	1	2	3	4	5	6	7

Specific how much you spend in following activities.

Economic Sustainability	
Restaurants/Taverns/Pizzeria	€
Bar (coffee and drinks)	€
Ground transportation (taxis, metro, buses, etc.)	€
Shopping (clothing, jewelry, souvenir, etc)	€
Other (specific)	€
Total expenditure incurred	€

Please indicate the activities you participated during your visit and your level of satisfaction (From 1 extremely dissatisfied to 7 very satisfied).

Visit historic town center	1	2	3	4	5	6	7
Visit the castles	1	2	3	4	5	6	7
Gastronomic tour	1	2	3	4	5	6	7
Shopping tour	1	2	3	4	5	6	7
Visit Amalfi Coast	1	2	3	4	5	6	7
Visit island(Capri, Ischia, etc.)	1	2	3	4	5	6	7
Walking path "From Pedamentina to Spaccanapoli"	1	2	3	4	5	6	7
Walking path "From Via Foria to Capodimonte"	1	2	3	4	5	6	7
Archaeological park Pausilypon	1	2	3	4	5	6	7
"Naples Undergroung"	1	2	3	4	5	6	7
Chapel of San Severo – Chapel of Santa Chiara	1	2	3	4	5	6	7
Monumental Complex of the Annunziata "Ruota"	1	2	3	4	5	6	7
Municipio Square – Plebiscito Square – Royal Palace – Teatro San Carlo – Galleria Umberto I – Shopping Streets	1	2	3	4	5	6	7
Other (specific)	1	2	3	4	5	6	7

Evaluation of service offered by the city

Please indicate your level of physical environment satisfaction (From 1 extremely dissatisfied to 7 very satisfied).

State of maintenance and cleanliness	1	2	3	4	5	6	7
Equipment and infrastructure safety	1	2	3	4	5	6	7
Level of noise	1	2	3	4	5	6	7
Air quality	1	2	3	4	5	6	7
Traffic congestion	1	2	3	4	5	6	7
People congestion	1	2	3	4	5	6	7
Preservation of monuments and traditional buildings	1	2	3	4	5	6	7
State of maintenance of pedestrian areas cycle paths	1	2	3	4	5	6	7
Information (signage)	1	2	3	4	5	6	7
Other (specific)	1	2	3	4	5	6	7

Please indicate your level of socio - economic environment satisfaction (From 1 extremely dissatisfied to 7 very satisfied).

Feelings of personal safety and security	1	2	3	4	5	6	7
Friendliness of local residents	1	2	3	4	5	6	7
Attitude of local shopkeepers and staff	1	2	3	4	5	6	7
Level of language communication	1	2	3	4	5	6	7
Availability of shopping facilities	1	2	3	4	5	6	7
Currency exchange	1	2	3	4	5	6	7
Local gastronomy	1	2	3	4	5	6	7
Local products and crafts	1	2	3	4	5	6	7
Wi -Fi	1	2	3	4	5	6	7
Other (specific)	1	2	3	4	5	6	7

What is essential for you that a city offers to give you a sustainable tourist experience? (From 1 nothing important to 7 very important).

Environmental Sustainability							
State of maintenance and cleanliness	1	2	3	4	5	6	7
Equipment and infrastructure safety	1	2	3	4	5	6	7
Level of noise	1	2	3	4	5	6	7
Air quality	1	2	3	4	5	6	7
Traffic congestion	1	2	3	4	5	6	7
People congestion	1	2	3	4	5	6	7
Preservation of monuments and traditional buildings	1	2	3	4	5	6	7
State of maintenance of pedestrian areas cycle paths	1	2	3	4	5	6	7
Information (signage)	1	2	3	4	5	6	7
Other (specific)	1	2	3	4	5	6	7
Socio – Economic Sustainability							
Feelings of personal safety and security	1	2	3	4	5	6	7
Friendliness of local residents	1	2	3	4	5	6	7
Attitude of local shopkeepers and staff	1	2	3	4	5	6	7
Level of language communication	1	2	3	4	5	6	7
Availability of shopping facilities	1	2	3	4	5	6	7
Currency exchange	1	2	3	4	5	6	7
Local gastronomy	1	2	3	4	5	6	7
Local products and crafts	1	2	3	4	5	6	7
Wi -Fi	1	2	3	4	5	6	7
Other (specific)	1	2	3	4	5	6	7

How overall are you satisfied about your experience in Naples? (From 1 extremely dissatisfied to 7 very satisfied).

Overall rating (noisiness, informations, cleaning, seller, etc.)	1	2	3	4	5	6	7

Would you return to Naples?		**Would you return to Naples on a cruise?**	
YES	NO	YES	NO

In your opinion, what Naples should offer to give you a sustainable tourist experience?

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