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Criteria for assessing a sustainable hotel business

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ABSTRACT

Numerous events over the last six decades have made it necessary to reformulate the economic development models proposed by capitalism. In this context, sustainability has emerged with the aim of balancing corporate interests with stakeholders' needs. To facilitate this aim, organizations must build a productive management relationship with their stakeholders and thus understand the implications of their operations in all dimensions of sustainability. In this context, due to the potential negative environmental, cultural, and social impacts of tourism, hotels have a responsibility to act in a sustainable manner. Therefore, the objective of this research was to identify criteria against which hotels can measure their impacts. A quali-quantitative study was developed based on the following stages: (1) preparing a workshop that enabled the analysis of 66 possible criteria when designing sustainable hospitality; (2) understanding the degree of importance of each of these criteria based on a semi-structured questionnaire applied to 177 professionals linked to the hotel market and academia; and (3) using software R to run a confirmatory factor analysis that validated 39 criteria distributed with regard to the following dimensions: environmental (11), social (10), cultural (4), economic (8), and political (6). We conclude that using these criteria will allow hotel managers to develop more holistic, systemic, integrated, and participatory strategies and to play an active role in building economically profitable, socially just, culturally compatible, and environmentally responsible societies.

1. Introduction

Our planet has been affected by humanity in a negative and exponential way ever since the industrial revolution (Steffen et al., 2015). Degenerations have been accentuated over the last 40 years (OXFAM International, 2017) due to the rampant consumption of natural and cultural resources that support the needs of a society accustomed to immediatism and unmoved by its negative impacts on resources and on humanity's quality of life, well-being, and safety (Raworth, 2012).

In general, this immediatism encourages the maximizing of short-term economic advantages to obtain exponential profits "at all costs" while ignoring the environmental, social, economic, and cultural problems resulting from society's capitalist nature (Bocken et al., 2014; OXFAM International, 2017).

As a result, society faces the following challenges: abrupt climate change, loss of biodiversity, uncontrolled use of drinking water, and a change in territorial landscape resulting from extensive agricultural activity (Steffen et al., 2015; Abdel-Maksoud et al.,

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2016); and economic inequalities - 1% of the world's population has a wealth equal to the other 99% (OXFAM International, 2017). Meanwhile, we mask practices of forced labor and social iniquities that are deeply rooted in prejudices regarding gender, ethnicity, and sexual orientation (United Nations, 2015; OXFAM International, 2017).

Further, there are signs of an unsustainable society that uses the equivalent of 1.5 planets to satisfy human needs (Bocken et al., 2014). Additionally, rapid world population growth has occurred: from 3 billion in 1960 to 7.3 billion in 2016 (Emmott, 2013). In other words, the world population has more than doubled in just over 55 years. At this rate, the population forecasts (in billions) are as follows: by 2030, 8.5; by 2050, 9.7; and by 2100, over 11.2 (United Nations and DESA, 2015). This scenario certainly questions the foundations of our current economic system.

As a result, it is crucial to change paradigms. It is imperative that today's organizations understand that they are responsible for the negative impacts produced in the short, medium, and long term (Kasim et al., 2014; Galpin et al., 2015). To this end, it is necessary to establish the foundations of a human economy that will thrive within our planetary boundaries, ensuring a better world that is more sustainable for each new generation (Steffen et al., 2015; OXFAM International, 2017). Therefore, organizations should take the lead in building economically viable, socially just, culturally compatible, and environmentally responsible societies (Pérez and Del Bosque, 2014; Santos et al., 2017).

In harmony with these prerogatives, the resolution "Transforming our World: the 2030 Agenda for Sustainable Development" adopted by world leaders on September 25, 2015, launched sustainability criteria that considered economic, sociocultural, political, and environmental dimensions through 17 sustainable development goals that can be broken down into 169 targets (United Nations, 2015). Moreover, tourism is understood to be a vital instrument for sustainable development since, when well planned, it assists in "the fight against poverty, the protection of the environment, and the improvement of quality of life" (United Nations, 2016:03).

Tourism generated revenues of US$1.5 trillion in 2015, an amount equal to 10% of the international gross domestic product, which was responsible for 1 of every 11 jobs offered (UNWTO, 2016). Because of its socioeconomic importance, numerous tourist destinations envisage an opportunity to develop their local infrastructure and expand their revenue by opening companies and creating jobs (UNWTO, 2016). Among these companies, hotel businesses stand out due to their varied recreation, entertainment, conference, and meeting facilities, creating productive systems that stimulate local economies (Santos et al., 2017).

However, Rodríguez-Antón et al. (2012) and Abdel-Maksoud et al. (2016) point out that the hotel industry creates unprecedented negative impacts. After all, the sector is responsible for 21% of tourism's entire ecological footprint, with an expected 25% by 2035 (Melissen et al., 2016a). Additionally, this activity can promote real estate speculation, social exclusion (Melissen et al., 2016a), and noncompliance with labor standards (Prud'homme and Raymond, 2013). It can also introduce foreign ideologies that disfigure the local culture and material/immaterial heritage (Yasothornsrikul and Bowen, 2015) and create seasonal jobs that affect the pace of the local economy (Romagosa et al., 2013).

In this context, sustainable management is an important condition for ensuring the well-being, quality of life, safety, and empowerment of tourism stakeholders (Raworth, 2012; Stylos and Vassiliadis, 2015). Nevertheless, one must investigate the discourse of tourism professionals and scholars since much of it considers only the environmental dimension of sustainability, to the exclusion of the other dimensions (Segarra-Oña et al., 2012; Prud'homme and Raymond, 2013; Geerts, 2014; Melissen et al., 2016a; Melissen et al., 2016b; Santos et al., 2017).

Thus, the originality of this study lies in promoting a hotel management model that balances the specificities of all the dimensions of sustainability in tandem with a company's interests and those of its stakeholders. Given the above, the goal of this paper is to establish criteria that will cover the environmental, social, cultural, political, and economic dimensions of sustainability and meet the needs of hotel industry stakeholders, promoting sustainable practices that are in line with the specific concerns of employees, customers, suppliers and other stakeholders (Pérez and Del Bosque, 2014).

2. Theoretical basis

2.1. Principles of the development of sustainable hotel management

Hotel expansion has significantly contributed to environmental degradation in certain territories. After all, their operations have a significant negative impact on the environment as they dramatically consume electricity and water for, for example, heating, cooling, lighting and laundry systems (Abdel-Maksoud et al., 2016; Dimara et al., 2017). However, this does not mean that all hotel companies are predatory. Depending on their management, their operations can promote the preservation of the environmental, thus improving the quality of life of the local community (Abdel-Maksoud et al., 2016).

These descriptions do not reflect the reality of all types of lodging as they differ in the type, size, heterogeneity, perishability, and seasonal influences that directly influence water and energy consumption (Prud'homme and Raymond, 2013; Kasim et al., 2014; Melissen et al., 2016). However, they do show that the environmental performance of these establishments should be widely discussed (Fraj et al., 2015) in view of their possible organizational returns. By way of example, a 150-room hotel with a high degree of control over its environmental performance can save up to 210,000 gallons of water and 143 gallons of detergent per year through a towel-and-line reuse program (Dimara et al., 2017).

In the hotel business in particular, using eco-efficient materials (Geerts, 2014; Melissen et al., 2016a) and launching energy savings, wastewater treatment, and towel and linen reuse programs (Kasim et al., 2014; Fraj et al., 2015) have generated significant savings for the following reasons: the global demand for water will increase by 30% and energy consumption by 50% by 2030, which will increase the price of these inputs (Raworth, 2012); the water consumption of the global hotel business reached 1.3 km^3 per year (Kasim et al., 2014), with each apartment being responsible for consuming from 200 to 400 L daily (Geerts, 2014) and power consumption ranges from 15 to 90 kW h per apartment (Geerts, 2014).

Thus, using this approach, hotel management could offer numerous benefits such as improving efficiency, reducing costs, and improving market positioning (Tyrrell et al., 2012). However, despite the importance of these environmentally correct measures, their inferences are not usually the most relevant to a hotel business (Santos et al., 2017). Lodging, however, ranging from international hotel chains to local companies, does have sociocultural, economic, and environmental links rooted at the local, regional, and global levels (Susskind, 2014). For this reason, should be comfortable making a significant contribution to sustainable development (Melissen et al., 2016a).

Nevertheless, numerous studies have proposed hotel sustainability based almost exclusively on the environmental dimension (Khairat and Maher, 2012; Segarra-Oña et al., 2012; Prud'homme and Raymond, 2013; Geerts, 2014; Fraj et al., 2015). This prerogative implies a delay in the full development of a sustainable

organizational culture (Melissen et al., 2016). The breakup of this paradigm is indispensable to the establishment of a sustainable management that will also achieve organizational results and develop more integrated and participatory organizational strategies (Pérez and Del Bosque, 2014; Melissen et al., 2016a; Santos et al., 2017).

To this end, it is necessary for hotel managers to establish guidelines enabling them to improve their economic, environmental, and social performances in an ethical and transparent manner (Santos et al., 2017); ensure that stakeholders have access to the necessary resources to meet their needs while still remaining within their limits (Raworth, 2012); and maximize social, cultural, and environmental benefits rather than prioritize economic results (Bocken et al., 2014). This is precisely why Bocken et al. (2014) mention that a sustainable management model, when well conceived, creates competitive advantages and contributes to the sustainable development of its organization and of society.

Through the above actions, hotel managers will be able to promote fair, ethical, transparent, participatory, and inclusive development (United Nations, 2016). Therefore, these professionals must understand their responsibilities regarding their stakeholder's needs and interests (Pérez and Del Bosque, 2014) and their role in preserving ecosystems, cultural heritage, and socioeconomic values, which can provide enriching experiences for tourists and enhance the destinations themselves.

Such prerogatives could culminate in the implementation of sustainability policies that would increase employee satisfaction and commitment and improve relationships with investors and suppliers (Geerts, 2014). Therefore, it would be essential to establish decision-making processes that seek to achieve economic, social, cultural and environmental objectives, based on integrated, participatory and transparent processes (Jarvis et al., 2010).

3. Methods

Given the numerous debates surrounding organizational sustainability, a quali-quantitative study was proposed here. This methodology has been gaining strength over the last 20 years (Robson, 2011) as it ensures more enlightening results (Hair Jr. et al., 2009).

Using this methodology, it was possible to structure and validate sustainability criteria that will enable hotel managers to take the following actions: incorporate a holistic, participatory, and integrated management that meets stakeholders' wishes (Pérez and Del Bosque, 2014) while adjusting them to the available resources and attractions (Melissen et al., 2016a; Melissen et al., 2016); and develop an interdisciplinary foundation that promotes an ethical, transparent, and accountable organization (Martínez and Del Bosque, 2015; Melissen et al., 2016b) that is aware of its temporal, territorial, social, cultural, political, environmental, and economic impacts (Romagosa et al., 2013; Susskind, 2014; Abdel-Maksoud et al., 2016).

Once the qualitative approach clarified the most distinct complexities through the representativeness and meanings learned from individual and/or collective perceptions (Creswell, 2012), the aim was then to understand through this metric the acceptance rate of the 66 sustainability criteria developed by Santos et al. (2017) for hotel businesses. Moreover, knowing that this approach could expose technical or operational specificities (Hair Jr. et al., 2009) that would either make feasible or put at risk the execution of these criteria, a workshop was prepared for the XII CNEG and III INOVARSE 2016

The workshop gathered representatives from the market and from academia linked to the hospitality industry. A priori, the workshop's intention was to obtain the perceptions from this group about the importance of the proposition by Santos et al. (2017). The decision was made to use the world café technique, whose purpose is to gather experiences and professional perspectives through a receptive and hospitable environment that encourages everyone's participation, leaving participants more relaxed and comfortable to express their opinions (Brown et al., 2007). The workshop was conducted by observing some of the precepts of the "in-depth interview" technique to ensure that the participants presented their experiences and backgrounds so that any peculiarities and complexities around this theme could be clarified (Christou et al., 2019).

Thus, the initial challenge was to bring together the two target audiences in the same space. The support from the Rio Convention & Visitors Bureau was fundamental to issuing invitations to the market representatives. The hotel businesses in the metropolitan region of the city of Rio de Janeiro were invited via their mailing lists. Two actions were taken to fulfill the academic profile. The first is that the contacts of the authors of this paper were used, and the second is that the mailing list of ANPTUR, the National Association of Research and Post-Graduate Studies in Tourism of Brazil, was used. Notably, this association aims to improve the political-educational discourses and the research on touristic phenomena as they include professors and graduate students (ANPTUR, 2017).

As a result, there were 29 pre-enrollments for an activity with a maximum of 25 openings. Eighteen of all pre-enrolled participants attended the event. At that time, as the intention was not to promote generalizations but to elucidate the positioning of the participants (Creswell, 2012) in terms of the 66 initial criteria, the total number of openings was determined by the capacity of the location where this event was held. The activity was executed in five stages. An explanation was given in the first stage about the importance/urgency of the theme. From this perspective, there were three other moments for shared questions so that the participants could weave a collective discourse on the principles, values, and behaviors needed to build and strengthen sustainable hotel management. The questions were as follows: What is sustainable tourism? How is sustainable tourism management built? How is sustainable tourism management put into effect? In the end, the 66 criteria of Santos et al. (2017) were shared so that the participants could discuss their importance.

Four groups were established to ensure the participation of all participants. A leader was appointed in each group to later clarify the group's position on the questions and criteria. In addition to that leader, each group had a monitor whose function was to prepare a report to ensure the greatest impact of the perceptions collected. The leaders and monitors were charged with initiating participation by all members to ensure that everyone had a chance to voice their opinion. Furthermore, a rotation system was established to ensure a unified exchange of experiences thus providing a greater interaction among peers. As a result, at the end of these five stages, the conceptual characteristics of these 66 criteria were validated.

This brought up the need to determine the effective importance of individual criteria by validating them with a more representative sample. At that moment, the quantitative approach of this study became stronger. Data would have to be collected on the opinion of the population, a well-defined sample, and, through their results, we would propose more concrete inferences to the scientific research through a rigorous statistical analysis (Robson, 2011).

Therefore, this quantitative approach generated a semi-structured questionnaire with 66 closed questions and 1 open question. The purpose was to measure the degree of importance of each criterion and to understand the perception of the respondents. The questionnaire was distributed using Google Docs. This research instrument was structured using the 66 sustainability criteria

Table 1
Possible criteria for developing hotel sustainability.

DIMENSION	CRITERION	
ENVIRONMENTAL	**EC1**	Respect all the indispensable requirements for the consumption and use of water resources.
	EC2	Do not tolerate the contamination of any water resources by any type of garbage, residue, or waste.
	EC3	Promote environmental education actions at least 5 times per year to raise the awareness of tourists and other stakeholders of the limitations of natural resources and attractions.
	EC4	Produce explanatory instruments that enable the tourist and the other stakeholders to understand the specificities and fragility of the local flora and fauna.
	EC5	Prepare an environmental conduct code to be widely followed by managers, tourists, and other stakeholders who support local tourist activities.
	EC6	Establish an environmental commission comprising internal and external members and experts that will be responsible for measuring the extent of possible impacts that the tourist system may cause to local biodiversity.
	EC7	Comply with all requirements established by environmental legislation.
	EC8	Choose suppliers who are aware of their environmental responsibilities.
	EC9	Diminish, reuse, or mitigate the production of solid waste and liquid effluents.
	EC10	Conduct preventive maintenance programs that minimize the negative impacts on the environment.
	EC11	Create a cargo capacity plan that balances the relationship between resource consumption and natural attractions that support the tourist operation.
	EC12	Increase the use of eco-efficient technologies that enable a rational use of electric energy and water, and provide new ways to collect such inputs.
	EC13	Use biodegradable products in every action involving the cleaning of public and private spaces.
	EC14	Include participatory management as one of the premises that enable a wide range of environmental goals.
	EC15	Develop an architectural project integrated with climatic particularities and that also considers/respects the specificities of the local ecosystem.
	EC16	Refrain from diffusing odors, noises, and any gases that are harmful to the health and well-being of the stakeholders who support your productive system.
	EC17	Reduce the use of any materials that may deteriorate the characteristics of the local environment.
	EC18	Protect the characteristics, specificities, and fragilities of the local fauna and flora.
	EC19	Establish action plans to counter any environmental emergency.
	EC20	Attend events and join groups that seek to share experiences, knowledge, and techniques that contribute to building an environmentally friendly management.
SOCIAL	**SC1**	Establish organizational practices that are always ruled by the social equity proposition.
	SC2	Create a work policy that aims at an egalitarian organizational structure independent of beliefs, gender, ethnicity, and sexual orientation.
	SC3	Enable equipment, services, infrastructures, and products to also be enjoyed by the local population.
	SC4	Meet the needs of people with disabilities by complying with the law.
	SC5	Take part in or develop programs that seek to elevate the quality of life and well-being of the local population.
	SC6	Develop volunteer programs aimed at local needs.
	SC7	Carry out or support actions that favor the education and qualification of the local workforce.
	SC8	Introduce a committee comprising employees, external members, and experts in the area that aims to assess the extent of the tourist impact on local social issues.
	SC9	Ensure that the stakeholders involved in the operationalization of such activities have their rights and dignity respected.
	SC10	Create a work policy that provides vertical and horizontal progression for qualified employees.
	SC11	With your collaborators, stimulate the enhancement of knowledge, competencies, techniques, and abilities through internal and external training programs.
	SC12	Give voice to the local population by developing projects that affect their quality of life, well-being, and safety.
	SC13	Benefit local companies so they may become distributors or suppliers in your productive process.
	SC14	Ensure the following rights for employees: life insurance, healthcare plans, social security for work accidents and people with special needs, maternity/paternity benefits, and employee stock purchase plans, among others.
	SC15	Establish minimum notice periods prior to any operational changes.
	SC16	Create committees responsible for disseminating the relevance of such themes as health and safety at work and human and work rights.
	SC17	Develop continuous and uninterrupted qualification programs through learning management.
	SC18	Promote efficient mechanisms so that complaints from collaborators are heard and handled.
	SC19	Condemn every practice that includes child or slave work, whether directly or indirectly related to the operation.
	SC20	Make salary payments that comply with local regulations.
	SC21	Implement organizational strategies that acknowledge fair trade principles.
	SC22	Provide spaces for small and medium producers to sell their products or services in the organization.
	SC23	Develop an organizational culture that fights against the commercial and sexual exploitation of children, adolescents, women, and minority groups

Table 1 (*continued*)

DIMENSION	CRITERION	
CULTURAL	**CC1**	Encourage and preserve local cultural identity.
	CC2	Ensure that the architectural project is compatible with cultural, urban, and rural identities.
	CC3	Consult with the local community every time some type of product or service is based on their identities, memories, assets, or heritage to ensure the authenticity of the tourist experience.
	CC4	Establish codes of conduct for tourists by observing the cultural specificities of the tourist location visited.
	CC5	Sell no material or immaterial artifacts without the approval of pertinent legislation.
	CC6	Create informative systems that provide data about the esteemed culture, its identity, memory, and heritage by explaining the local people's representativeness, symbology, behavior, and conduct to tourists.
ECONOMIC	**EcC1**	Guarantee the long-term economic-financial viability of the project and its organizational competitiveness so that all stakeholders can benefit from this process.
	EcC2	Intensify the benefits that the tourist company can bring to your locality by observing issues such as tax evasion, the establishment of partnership systems that benefit local tourism, and the types of tourist expenses, including their ramifications throughout the local economy.
	EcC3	Maximize the generation, distribution, and retention of money in the locality.
	EcC4	Develop projects that ensure an investment in infrastructure and local services.
	EcC5	Develop budgets for purchasing raw materials produced/manufactured in the locality.
	EcC6	Try not to influence the pace of the local economy.
	EcC7	Create products or services commensurate with the logic of excellence and to promptly satisfy consumer needs.
	EcC8	Continuously identify threats, risks, and dangers to your market status so that your production rates can be stabilized.
	EcC9	Close financing contracts with institutions that have signed the Equator Principles.
	EcC10	Have contingency measures that enable minimizing the negative impacts of threats verified in your market.
POLITICAL	**PC1**	Promote the commitment and strength of stakeholders in decision-making processes.
	PC2	Consolidate participative management in the organizational culture.
	PC3	Make sure that the values guiding organizational sustainability are evidenced in the mission, vision, and principles of the business.
	PC4	Constantly control the organization's operational, management, and financial results.
	PC5	Develop a transparency policy based on ethical and moral principles.
	PC6	Build an organizational culture concerned with a long-term view that is in harmony with your market.
	PC7	Develop a qualification policy that exalts the cultural, social, economic, and environmental role of the members of this tourist organization.

Source: Santos, Méxas and Meiriño (2017).

designed by Santos et al. (2017). Each of these criteria was assessed on a five-point Likert-type ordinal scale: 5 = Extremely Important (EI); 4 = Very Important (VI); 3 = Important (I); 2 = Minor Issue (MI); 1 = Unimportant (UN). This type of ordinal scale is recommended for surveys that seek to obtain degrees of importance through factor analyses that include interval data between levels that range from little (scale 1) to greater expressiveness (scale 5) (Yusoff and Mohd Janor, 2014; Sadhukhan et al., 2015). The instrument was answered by 177 professionals linked to the segments highlighted above.

Both national (153) and international (24) respondents comprised this sample. The former respondents were chosen through the ANPTUR mailing list, while the latter were chosen according to the non-probabilistic judgment sampling established via contact with the 31 main authors listed in the results of the bibliometric analyses conducted by Santos et al. (2017). The responses came from 24 of the respondents. It was suggested that both national and international respondents indicate the maximum degree of importance for each criterion measuring its possible inference with hotel operations. There was no possibility of selecting more than one option.

Using the results presented by the 177 respondents, a confirmatory factor analysis (CFA), which is widely adopted in the modern literature (Mineo and Pontilo, 2006), was carried out using R software to promote a better understanding of the underlying structures of the criteria analyzed and to reduce redundancy among the criteria and dimensions assessed, thus improving the reliability and assertiveness of the criteria (Babyak and Green, 2010). The 66 criteria were reduced to 39 with the following distribution of dimensions: environmental (11), social (10), cultural (4), economic (8), and political (6).

4. Results

Given the specifics of its operations, the hotel sector produces large negative impacts that must be mitigated in tourism (Stylos and Vassiliadis, 2015). Precisely for this reason, the 66 criteria created by Santos et al. (2017) (see Table 1) were employed to promote an operationalization that transcends the eco-friendly measures proposed by a large number of contemporary hotel companies (Segarra-Oña et al., 2012; Prud'homme and Raymond, 2013; Geerts, 2014; Santos et al., 2017).

Therefore, to have these criteria assessed by members of the academic and market communities related to the tourism and hospitality areas, 18 individuals (Table 2 lists their profiles) participated in a workshop held at the XII National Congress of Excellence in Management and III INOVARSE 2016.

During this workshop, all participants affirmed that the implementation of these criteria would require overcoming certain organizational barriers. In this context, the points of view presented were similar to the main obstacles identified by Khairat and Maher (2012) who list the main obstacles met by tourism managers as being the complexity of a system comprising countless stakeholders, the weak support of shareholders and investors, and the scarce financial contribution to such practices.

Two other barriers were also identified by the workshop participants: the fact that the hotel business is guided by short-term economic results and the distance between academic and organizational realities. Regarding the first barrier, additional costs for improving production processes are inherent in promoting organizational sustainability (Geerts, 2014; Martínez and Del Bosque, 2015; Melissen et al., 2016b); this cannot be denied. However,

Table 2
Professional and educational profiles of the participants and their place of origin – Workshop at the XII National Congress of Excellence in Management and III INOVARSE 2016.

Professional Profile			Jobs in Hotel Industry		
Undergraduate Student	3	16.67%	Reception Manager	2	40%
Master's Student	3	16.67%	Maintenance Manager	1	20%
Social Entrepreneur	1	5.55%	Training and Quality Manager	1	20%
Hotel Industry	5	27.78%	General Manager	1	20%
Nongovernmental organization	1	5.55%		**5**	**100%**
University Professor	4	22.23%			
Public Sector	1	5.55%			
	18	**100%**			

Academic Profile			Place of Origin		
Incompleted Bachelor's Degree	3	16.67%	Cachoeiras do Macacu, RJ – Brazil	1	5.55%
Completed Bachelor's Degree	3	16.67%	Fernando de Noronha, PE – Brazil	1	5.55%
Specialist	6	33.34%	Recife, PE – Brazil	1	5.55%
Master's	3	16.67%	Foz do Iguaçu, PR – Brazil	1	5.55%
Doctorate	2	11.1%	Rio de Janeiro, RJ – Brazil	12	66.67%
Post-Doctorate	1	5.55%	Villetaneuse, France	2	11.1%
	18	**100%**		**18**	**100%**

Table 3
Educational and professional profiles of respondents.

Educational Profile			Professional Profile		
High School	1	**0.56%**	College student in Tourism	15	**8.47%**
Undergraduate	31	**17.51%**	Economist	3	**1.68%**
College Degree	17	**9.60%**	Undergraduate Student	23	**13.00%**
Specialization	17	**9.60%**	Master's Student	1	**0.56%**
Master's	51	**28.82%**	Hospitality	35	**19.79%**
Doctorate	45	**25.43%**	Researcher	2	**1.12%**
Post-Doctorate	15	**8.48%**	University Professor	84	**47.47%**
	177	**100%**	Diverse Professions	14	**7.91%**
				177	**100%**

this point of view weakens the notion of the organizational responsibility of these enterprises, disregarding the numerous benefits that could be achieved in the medium and long term through measures that could reduce the costs of, for example, electricity, water, and zero waste proposals (Susskind, 2014; Stylos and Vassiliadis, 2015).

Regarding the second barrier, a paradigm shift is in progress caused by scientific studies that achieved success by adding reality to science (Latour, 1999). Every theory must be built as an abstraction of this reality. Thus, tourism researchers should recognize the specificities inherent in their production chain. A continuous dialog with tourist organizations and their stakeholders should therefore be established enabling representative discussions focusing on a tourism market that is polysemic and dynamic. To do so, tourism managers must establish dialogs with contemporary researchers, promoting a cooperation that connects "academic knowledge" with "merchandising."

As we noticed a general predilection for the content of the 66 criteria, they needed to be organized by a linear structure according to relevance to ensure a more holistic organizational positioning that would fit the reality of hotel companies. For this purpose, from January to March 2017, 177 respondents (see Table 3 for their profiles) answered a semistructured questionnaire on the degrees of relevance of the 66 criteria.

Most of the respondents (47.47%) worked as university professors and taught tourism and/or hospitality courses followed by hospitality professionals (19.79%). Of the first group, 70 respondents were Brazilian (83.33%), and 14 were international (16.67%). Moreover, it is important to highlight that, due to the particularities of that profession, the participants possessed a high critical capacity regarding the variables that produced the sustainability criteria proposed in this study.

In addition, as noted above, in the Brazilian context, the respondents were members of ANPTUR, the National Association of Research and Post-Graduate Studies in Tourism of Brazil. The international respondents were distinguished by important publications related to the investigated theme.

A CFA was employed to analyze these perceptions using R software. To do so, a significance level of 0.05 was assumed for all the measurements performed as the margin of error (Type I) adopted for the hypothesis tests carried out for this analysis. In addition, the parameters of this CFA were calculated using maximum likelihood and were based on a variance-covariance matrix that determined the strength of correlations (Searle et al., 1992) between the 66 criteria and their sustainability dimensions.

Consequently, we had to verify, by means of the perceptions presented, the strength of the associations among the criteria. This analysis is shown in Table 4 and presents a measurement that ranges from 0 to 1. The closer to 1 the measurement is, the greater the strength of the criterion regarding the dimension in which it is correlated (Tabachnick and Fidell, 2007; Babyak and Green, 2010).

Based on Table 4, some criteria did not obtain significant association strengths, thus compromising their assertiveness, they were therefore excluded. In the environmental dimension, the criteria

Table 4
CFA of sustainability criteria.

ENVIRONMENTAL CRITERIA (EC)

	EC1	EC2	EC3	EC4	EC5	EC6	EC7	EC8	EC9	EC10	EC11	EC12	EC13	EC14	EC15	EC16	EC17	EC18	EC19	EC20
EC1	1	0.26	0.16	0.11	0.2	0.06	0.15	0.09	0.26	0.15	0.15	0.19	0.19	0	0.04	0.18	0.15	0.2	0.2	0.12
EC2	0.26	1	0.22	0.2	0.27	0.22	0.27	0.22	0.15	0.23	0.13	0.19	0.3	0.33	0.06	0.17	0.12	0.31	0.24	0.34
EC3	0.16	0.22	1	0.58	0.57	0.5	0.17	0.27	0.31	0.22	0.39	0.42	0.3	0.56	0.29	0.32	0.22	0.45	0.49	0.42
EC4	0.11	0.2	0.58	1	0.5	0.42	0.17	0.37	0.2	0.34	0.28	0.25	0.32	0.33	0.3	0.39	0.29	0.37	0.39	0.36
EC5	0.2	0.27	0.57	0.5	1	0.52	0.26	0.36	0.38	0.37	0.37	0.42	0.37	0.52	0.34	0.4	0.35	0.47	0.54	0.45
EC6	0.06	0.22	0.5	0.42	0.52	1	0.21	0.36	0.25	0.26	0.43	0.38	0.27	0.59	0.22	0.33	0.21	0.42	0.43	0.4
EC7	0.15	0.27	0.17	0.17	0.26	0.21	1	0.36	0.26	0.35	0.11	0.18	0.24	0.22	0.37	0.29	0.32	0.22	0.2	0.2
EC8	0.09	0.22	0.27	0.37	0.36	0.36	0.36	1	0.39	0.43	0.34	0.26	0.47	0.37	0.45	0.52	0.45	0.25	0.34	0.3
EC9	0.26	0.15	0.31	0.2	0.38	0.25	0.26	0.39	1	0.43	0.25	0.41	0.37	0.28	0.32	0.39	0.4	0.31	0.27	0.22
EC10	0.15	0.23	0.22	0.34	0.37	0.26	0.35	0.43	0.43	1	0.41	0.45	0.4	0.31	0.33	0.47	0.48	0.32	0.32	0.35
EC11	0.15	0.13	0.39	0.28	0.37	0.43	0.11	0.34	0.25	0.41	1	0.38	0.25	0.37	0.2	0.39	0.33	0.35	0.37	0.34
EC12	0.19	0.19	0.42	0.25	0.42	0.38	0.18	0.26	0.41	0.45	0.38	1	0.43	0.43	0.28	0.47	0.43	0.45	0.47	0.39
EC13	0.19	0.3	0.3	0.32	0.37	0.27	0.24	0.47	0.37	0.4	0.25	0.43	1	0.39	0.38	0.49	0.48	0.35	0.28	0.36
EC14	0	0.33	0.56	0.33	0.52	0.59	0.22	0.37	0.28	0.31	0.37	0.43	0.39	1	0.38	0.46	0.39	0.48	0.49	0.41
EC15	0.04	0.06	0.29	0.3	0.34	0.22	0.37	0.45	0.32	0.33	0.2	0.28	0.38	0.38	1	0.52	0.47	0.18	0.26	0.21
EC16	0.18	0.17	0.32	0.39	0.4	0.33	0.29	0.52	0.39	0.47	0.39	0.47	0.49	0.46	0.52	1	0.67	0.49	0.46	0.27
EC17	0.15	0.12	0.22	0.29	0.35	0.21	0.32	0.45	0.4	0.48	0.33	0.43	0.48	0.39	0.47	0.67	1	0.5	0.43	0.37
EC18	0.2	0.31	0.45	0.37	0.47	0.42	0.22	0.25	0.31	0.32	0.35	0.45	0.35	0.48	0.18	0.49	0.5	1	0.63	0.46
EC19	0.2	0.24	0.49	0.39	0.54	0.43	0.2	0.34	0.27	0.32	0.37	0.47	0.28	0.49	0.26	0.46	0.43	0.63	1	0.48
EC20	0.12	0.34	0.42	0.36	0.45	0.4	0.2	0.3	0.22	0.35	0.34	0.39	0.36	0.41	0.21	0.27	0.37	0.46	0.48	1

SOCIAL CRITERIA (SC)

	SC1	SC2	SC3	SC4	SC5	SC6	SC7	SC8	SC9	SC10	SC11	SC12	SC13	SC14	SC15	SC16	SC17	SC18	SC19	SC20	SC21	SC22	SC23
SC1	1	0.55	0.52	0.36	0.44	0.45	0.37	0.42	0.51	0.52	0.51	0.37	0.48	0.32	0.39	0.45	0.52	0.54	0.36	0.4	0.38	0.33	0.33
SC2	0.55	1	0.5	0.3	0.43	0.41	0.48	0.39	0.42	0.53	0.48	0.45	0.45	0.49	0.41	0.46	0.49	0.5	0.3	0.43	0.35	0.33	0.4
SC3	0.52	0.5	1	0.33	0.53	0.41	0.41	0.46	0.29	0.31	0.43	0.58	0.38	0.2	0.35	0.47	0.37	0.37	0.14	0.34	0.39	0.45	0.33
SC4	0.36	0.3	0.33	1	0.37	0.34	0.43	0.35	0.52	0.43	0.43	0.36	0.25	0.35	0.27	0.31	0.32	0.32	0.39	0.45	0.42	0.21	0.3
SC5	0.44	0.43	0.53	0.37	1	0.54	0.46	0.45	0.38	0.5	0.51	0.51	0.3	0.41	0.48	0.44	0.28	0.39	0.22	0.34	0.32	0.32	0.29
SC6	0.45	0.41	0.41	0.34	0.54	1	0.52	0.51	0.34	0.46	0.54	0.32	0.32	0.35	0.38	0.47	0.48	0.49	0.17	0.37	0.44	0.35	0.21
SC7	0.37	0.48	0.41	0.43	0.46	0.52	1	0.47	0.54	0.52	0.56	0.43	0.49	0.45	0.3	0.41	0.44	0.5	0.33	0.49	0.43	0.39	0.38
SC8	0.42	0.39	0.46	0.35	0.45	0.51	0.47	1	0.47	0.46	0.45	0.56	0.4	0.29	0.37	0.65	0.5	0.57	0.17	0.35	0.4	0.37	0.29
SC9	0.51	0.42	0.29	0.52	0.38	0.34	0.54	0.47	1	0.66	0.54	0.42	0.44	0.44	0.43	0.4	0.47	0.56	0.46	0.47	0.42	0.26	0.34
SC10	0.52	0.53	0.31	0.43	0.5	0.46	0.52	0.46	0.66	1	0.69	0.47	0.4	0.53	0.47	0.47	0.5	0.51	0.27	0.47	0.44	0.39	0.35
SC11	0.51	0.48	0.43	0.43	0.51	0.54	0.56	0.45	0.54	0.69	1	0.48	0.44	0.46	0.46	0.47	0.51	0.53	0.32	0.47	0.52	0.51	0.35
SC12	0.37	0.45	0.58	0.36	0.51	0.32	0.43	0.56	0.42	0.47	0.48	1	0.44	0.29	0.47	0.5	0.38	0.51	0.22	0.37	0.33	0.43	0.37
SC13	0.48	0.45	0.38	0.25	0.3	0.32	0.49	0.4	0.44	0.4	0.44	0.44	1	0.44	0.38	0.33	0.38	0.53	0.23	0.44	0.4	0.46	0.35
SC14	0.32	0.49	0.2	0.35	0.41	0.35	0.45	0.29	0.44	0.53	0.46	0.29	0.44	1	0.5	0.36	0.38	0.42	0.25	0.55	0.35	0.31	0.47
SC15	0.39	0.41	0.35	0.27	0.48	0.38	0.3	0.37	0.43	0.47	0.46	0.47	0.38	0.5	1	0.55	0.46	0.55	0.22	0.46	0.33	0.36	0.25
SC16	0.45	0.46	0.47	0.31	0.44	0.47	0.41	0.65	0.4	0.47	0.47	0.5	0.33	0.36	0.55	1	0.65	0.66	0.23	0.43	0.42	0.36	0.22
SC17	0.52	0.49	0.37	0.32	0.28	0.48	0.44	0.5	0.47	0.5	0.51	0.38	0.38	0.38	0.46	0.65	1	0.68	0.3	0.53	0.46	0.37	0.27
SC18	0.54	0.5	0.37	0.32	0.39	0.49	0.5	0.57	0.56	0.51	0.53	0.51	0.53	0.42	0.55	0.66	0.68	1	0.35	0.5	0.43	0.46	0.31
SC19	0.36	0.3	0.14	0.39	0.22	0.17	0.33	0.17	0.46	0.27	0.32	0.22	0.23	0.25	0.22	0.23	0.3	0.35	1	0.41	0.29	0.12	0.44
SC20	0.4	0.43	0.34	0.45	0.34	0.37	0.49	0.35	0.47	0.47	0.47	0.37	0.44	0.55	0.46	0.43	0.53	0.5	0.41	1	0.59	0.47	0.37
SC21	0.38	0.35	0.39	0.42	0.32	0.44	0.43	0.4	0.42	0.44	0.52	0.33	0.4	0.35	0.33	0.42	0.46	0.43	0.29	0.59	1	0.5	0.29
SC22	0.33	0.33	0.45	0.21	0.32	0.35	0.39	0.37	0.26	0.39	0.51	0.43	0.46	0.31	0.36	0.36	0.37	0.46	0.12	0.47	0.5	1	0.32
SC23	0.33	0.4	0.33	0.3	0.29	0.21	0.38	0.29	0.34	0.35	0.35	0.37	0.35	0.47	0.25	0.22	0.27	0.31	0.44	0.37	0.29	0.32	1

CULTURAL CRITERIA (CC)

	CC1	CC2	CC3	CC4	CC5	CC6
CC1	0.45	0.46	0.47	0.31	0.44	0.47
CC2	0.52	0.49	0.37	0.32	0.28	0.48
CC3	0.54	0.5	0.37	0.32	0.39	0.49
CC4	0.36	0.3	0.14	0.39	0.22	0.17
CC5	0.4	0.43	0.34	0.45	0.34	0.37
CC6	0.38	0.35	0.39	0.42	0.32	0.44

ECONOMIC CRITERIA (EcC)

	EcC1	EcC2	EcC3	EcC4	EcC5	EcC6	EcC7	EcC8	EcC9	EcC10
EcC1	1	0.41	0.44	0.39	0.25	0.29	0.37	0.34	0.29	0.3
EcC2	0.41	1	0.57	0.42	0.31	0.24	0.36	0.46	0.23	0.35
EcC3	0.44	0.57	1	0.62	0.53	0.29	0.41	0.46	0.26	0.46
EcC4	0.39	0.42	0.62	1	0.55	0.34	0.26	0.39	0.28	0.36
EcC5	0.25	0.31	0.53	0.55	1	0.3	0.32	0.33	0.24	0.39
EcC6	0.29	0.24	0.29	0.34	0.3	1	0.12	0.19	0.42	0.23
EcC7	0.37	0.36	0.41	0.26	0.32	0.12	1	0.51	0.2	0.45
EcC8	0.34	0.46	0.46	0.39	0.33	0.19	0.51	1	0.38	0.46
EcC9	0.29	0.23	0.26	0.28	0.24	0.42	0.2	0.38	1	0.31
EcC10	0.3	0.35	0.46	0.36	0.39	0.23	0.45	0.46	0.31	1

POLITICAL CRITERIA (PC)

	PC1	PC2	PC3	PC4	PC5	PC6	PC7
PC1	1	0.64	0.4	0.24	0.48	0.5	0.43
PC2	0.64	1	0.43	0.2	0.44	0.41	0.43
PC3	0.4	0.43	1	0.48	0.55	0.52	0.49
PC4	0.24	0.2	0.48	1	0.59	0.58	0.5
PC5	0.48	0.44	0.55	0.59	1	0.63	0.62
PC6	0.5	0.41	0.52	0.58	0.63	1	0.63
PC7	0.43	0.43	0.49	0.5	0.62	0.63	1

Table 5
Quality indices obtained from the 39 sustainability criteria.

Statistic	d.f.	p-value	GFI	CFI	RMSEA
4129.6	741	<0.001	0.92	0.91	0.05

Source: Statistical Software R.

Table 6
Coefficient, default error (DE), standard deviation (Z), and significance (sig) values – sustainable hospitality management criteria.

Dimension (latent)	Criterion	Coefficient	DE	Z	sig
ENVIRONMENTAL	EC16	0.707	0.050	10.420	***[1]
	EC12	0.698	0.053	10.120	***
	EC10	0.660	0.040	9.450	***
	EC5	0.648	0.055	9.201	***
	EC13	0.636	0.050	9.065	***
	EC8	0.615	0.051	8.542	***
	EC19	0.615	0.054	8.755	***
	EC18	0.606	0.047	8.491	***
	EC9	0.567	0.040	7.847	***
	EC3	0.559	0.063	7.591	***
	EC11	0.548	0.056	7.517	***
SOCIAL	SC18	0.741	0.058	11.062	***
	SC11	0.722	0.054	10.693	***
	SC10	0.715	0.058	10.510	***
	SC2	0.690	0.056	10.091	***
	SC9	0.690	0.056	10.020	***
	SC20	0.685	0.054	9.965	***
	SC13	0.624	0.059	8.837	***
	SC16	0.623	0.068	8.820	***
	SC4	0.530	0.053	7.214	***
	SC23	0.472	0.048	6.335	***
CULTURAL	CC1	0.716	0.049	10.357	***
	CC6	0.685	0.053	9.762	***
	CC3	0.683	0.055	9.679	***
	CC2	0.557	0.072	7.397	***
ECONOMIC	EcC3	0.797	0.051	12.318	***
	EcC4	0.694	0.051	10.232	***
	EcC5	0.646	0.055	9.279	***
	EcC2	0.641	0.056	9.131	***
	EcC8	0.625	0.055	9.016	***
	EcC10	0.600	0.060	8.415	***
	EcC1	0.538	0.055	7.389	***
	EcC7	0.534	0.057	7.338	***
POLITICAL	PC5	0.840	0.047	13.325	***
	PC7	0.763	0.050	11.587	***
	PC3	0.664	0.057	9.543	***
	PC4	0.651	0.049	9.320	***
	PC1	0.574	0.061	7.954	***
	PC2	0.568	0.062	7.787	***

LEGEND: EC = Environmental Criterion/**SC** = Social Criterion/**CC** = Cultural Criterion/**EcC** = Economic Criterion/**PC** = Political Criterion.
1*** p-valor<0.001.
Source: Statistical Software R.

eliminated were EC1, EC2, EC4, EC6, EC7, EC14, EC15, EC17, and EC20. In addition to the factorial prerogative, the positioning of some respondents also influenced these exclusions. In the respondents' comments, they pointed out overlaps or complementarities among most of the environmental criteria excluded by the CFA. In keeping with this logic, the following criteria were also removed: Social: SC1, SC3, SC5, SC6, SC7, SC8, SC12, SC14, SC15, SC17, SC19, SC21 and SC22; Cultural: CC4 and CC5; and Economic: EcC6 and EcC9. No criterion was rejected in the political dimension.

Therefore, the proposal comprised 39 criteria. Table 5 reveals the indices attesting to their qualities and displaying the following data: test statistic, degrees of freedom, p-value of the comparison of the hypothetical model with the null model, goodness-of-fit index (GFI), comparative fit index (CFI), and the root mean square error of approximation (RMSEA).

According to Byrne (1994), the GFI must exceed 0.9. In this case, the GFI is 0.92. Tabachnick and Fidell (2007) state that the CFI must be greater than 0.9. The CFI reached here is 0.91. For RMSEA, Browne and Cudeck (1993) point out that its value should be less than 0.8 to determine the acceptability of the data. However, Stieger (1990) argues that the model becomes ideal when this value is less than 0.05. The RMSEA is 0.05 for the 39 criteria, which borders on the ideal margin proposed by Stieger.

Last, a p-value of <0.001 indicates that the final set of criteria has a good data representation (Tabachnick and Fidell, 2007). According to these results, the final set of criteria shows a good adjustment. Table 6 lists the respective criteria with their default error (DE), standard deviation (Z), and significance (sig) values.

The factorial loads in Table 6 must be interpreted as regression coefficients, and the following analysis must be carried out: Environmental Dimension – the most influential criterion is EC16 (coefficient of 0.707), and the smallest one is EC11 (coefficient of 0.548); Social Dimension – SC18 is the most relevant (coefficient of 0.741), and SC23 holds less representativeness (coefficient of 0.472); Cultural Dimension – CC1 is the most influential (coefficient of 0.716), to the detriment of CC2, which is the least influential (coefficient of 0.557); Economic Dimension – EcC3 and EcC7 have the greater (coefficient of 0.797) and lesser (coefficient of 0.534) expressiveness, respectively; and Political Dimension – PC5 and PC2 have the greater (coefficient of 0.840) and lesser (coefficient of 0.568) expressiveness, respectively.

5. Discussion

This paper highlights that at least five dimensions comprise the sustainability concept: environmental, social, cultural, economic, and political (Santos et al., 2017). In addition, Pérez and Del Bosque (2014) state that assertive, sustainable management must contemplate stakeholder and organizational needs and establish a balance between them.

Establishing a sustainable management would be the sum of these two viewpoints in addition to an understanding of the characteristics, temporalities, and complexities of organizational impacts to leverage their positive effects and minimize their negative ones. Numerous challenges, such as those related to the level of interest and participation of the stakeholders, must be met before these measures can be established (Mensah, 2014). In addition, another challenge would be the implementation of a transparent and ethical organizational culture committed to the collective (Mihalic, 2016), exposing a tenuous difference, but still a very relevant one, which is the perception of "right and wrong" between organizational interests and their impacts on quality of life, well-being, safety, and the protection of all and any peculiarity of the environment, society, and its other stakeholders (Pérez and Del Bosque, 2014; Abdel-Maksoud et al., 2016; Melissen et al., 2016b).

It is specifically on this point that this research exhibits its greatest value. From the result of this CFA, the validation of such criteria was possible along with their hierarchizations and correlations to the five sustainability dimensions, which built up a final set of criteria with good data representation that surpass the environmental connotations observed in contemporaneous studies on tourism sustainability.

Although the final set of criteria exposes an "organizational architecture" (Bocken et al., 2014) that will support sustainability in hotel businesses, it is important to emphasize that sustainable tourism development must be seen as an adaptable paradigm and that hotel managers must therefore consider these 39 criteria as a flexible proposal open to possible rearrangement. This prerogative

would be justified by the fact that its design is closely linked to a multiplicity of changing events capable of producing various environmental, economic, political, cultural, and social interactivities and interdependences that can influence the effectiveness of these criteria.

In addition, there are other prerogatives that must be considered by hotel managers including the following set of obligations: (1) acknowledge that individuals and social groups are icons as expressive as local ecosystems. The success of these criteria depends on establishing partnership systems with the representative spheres of the community, the public and the private sector to meet their expectations of the proposal's operationalization (Sigala, 2014); (2) extend their analytical horizons, interiorizing interdisciplinary precepts that detect articulations among the sustainability dimensions, which would enable better decision-making processes (Santos et al., 2017); (3) realize that sustainable businesses go beyond the benefits addressed by clients or companies as they also take into consideration the interests of society and the environmental limits that specifically influence the tourist experience (Ingelmo, 2013); (4) understand that the success of this proposal also relies on the cooperation of guests. Directly or indirectly, this process will influence the quality of the service offered to customers. Thus, there is an urgent need to create conditions that will reward their commitments regarding the implementation of these practices (Susskind, 2014); and (5) promote a harmonic organizational environment where every employee is committed to the sustainability ideal (Chou, 2014).

Only if they are founded on all these premises will the 39 criteria be implemented in hotel organizations, making it worthwhile to promote a cycle of debates on the benefits/advantages that this arrangement will bring about not only to the hotel business but also to the quality of life and well-being of its stakeholders. Thus, the primary contribution of this study resides in the construction of criteria that can promote holistic, participative, and integrated hotel management that not only responds to organizational aspirations but also considers the needs of other stakeholders and the protection/conservation of the natural, social, and cultural resources that support their operations.

6. Conclusion

In recent decades, tourism has experienced a continuous and diversified growth marked by significant positive and negative impacts on the economic sectors, natural and cultural resources, and social relationships. It is no accident that the United Nations considers tourism one of the foundations for contemporary sustainable development.

Consequently, there is a desire to better understand the role of sustainable tourism management to ensure a balance between stakeholder interests and the preservation of any specificity, whether environmental or sociocultural, that feeds its attraction coefficient. In this context, because they are exceptionally relevant to the tourism supply chain, hotel companies must assume their role as protagonists seeking to establish a sustainable organizational culture.

This crucial aspect is this study's objective: to offer a set of criteria enabling hotel companies to establish holistic and participatory management that addresses the environmental, social, cultural, economic, and political dimensions of sustainability. One important point to be highlighted concerns the limitation of this research: the sampling used does not allow generalizations to be made for all types of lodging. Thus, as noted above, the criteria should be viewed as guidelines for sustainable management to be incorporated in these establishments.

Therefore, we should also underscore that the weight given to these criteria must be continuously monitored based on each specific territorial nature and their variable production and consumption patterns, which may be seen as a research limitation as the criterion design may hinder comparisons among hotel enterprises from a territorial and temporal perspective. Thus, there is an urgent need to study each criterion to describe its implementation procedures. We therefore propose to expand the present study in the future.

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Declaration of competing interest

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References

Abdel-Maksoud, A., Kamel, H., Elbanna, S., 2016. Investigating relationships between stakeholders' pressure, eco-control systems and hotel performance. Int. J. Hospit. Manag. 59, 95–104.
Anptur, 2017. Mission. Available at: https://www.anptur.org.br/portal/wiew/others-information/mission.php. (Accessed November 2018).
Babyak, M., Green, S., 2010. Confirmatory factor analysis: an introduction for psychometric medicine researchers. Psychosom. Med. 72, 587–597.
Brown, J., Isaacs, D., World Café Community, 2007. O World Café: dando forma ao nosso futuro por meio de conversações significativas e estratégicas. Cultrix, São Paulo.
Browne, M.W., Cudeck, R., 1993. Alternative ways of assessing model fit. In: Bollen, K.A., Long, J.S. (Eds.), Testing Structural Equation Models. Sage, Newsbury Park, CA.
Bocken, N.M.P., Short, S.W., Rana, P., Evans, S., 2014. A literature and practice review to develop sustainable business model archetypes. J. Clean. Prod. 65, 42–56.
Byrne, B.M., 1994. Structural Equation Modeling with EQS and EQS/Windows. Sage Publications, Thousand Oaks, CA.
Chou, C.J., 2014. Hotel's environmental policies and employee personal environmental beliefs: interactions and outcomes. Tourism Manag. 40 (1), 436–446.
Christou, P., Hadjielias, E., Farmaki, A., 2019. Reconnaissance of philanthropy. Ann. Tourism Res. 78, 1–12.
Creswell, J.W., 2012. Qualitative Inquiry and Research Design: Choosing Among Five Approaches, third ed. Sage Publications, Inc, Thousand Oaks.
Dimara, E., Manganari, E., Skuras, D., 2017. Don't change my towels please: Factors influencing participation in towel reuse programs. Tourism Manag. 59, 425–437.
Emmott, S., 2013. Humans: the real threat to life on Earth. Available at: https://www.theguardian.com/environment/2013/jun/30/stephen-emmott-ten-billion. (Accessed February 2017).
Fraj, E., Matute, J., Melero, I., 2015. Environmental strategies and organizational competitiveness in the hotel industry: the role of learning and innovation as determinants of environmental success. Tourism Manag. 46 (1), 30–42.
Galpin, T., Whittington, L., Bell, G., 2015. Is your sustainability strategy sustainable? Creating a culture of sustainability. Corp. Govern. 15 (1), 1–17.
Geerts, W., 2014. Environmental certification schemes: hotel managers' views and perceptions. Int. J. Hospit. Manag. 39, 87–96.
Hair Jr., J.F., et al., 2009. Multivariate Data Analysis. Pearson Prentice Hall, Upper Saddle River, NJ.
Ingelmo, I.A., 2013. Design and development of a sustainable tourism indicator based on human activities analysis in inle lake, Myanmar. Procedia - Social and Behavioral Sciences 130 (1), 262–272.
Jarvis, N., Weeden, C., Simcock, N., 2010. The benefits and challenges of sustainable tourism certification: a case study of the green tourism business scheme in the West of England. J. Hospit. Manag. Tourism 17 (1), 83–93.
Kasim, A., et al., 2014. The importance of water management in hotels: a framework

for sustainability through innovation. J. Sustain. Tourism 22 (7), 1090–1107.
Khairat, G., Maher, A., 2012. Integrating sustainability into tour operator business: an innovative approach in sustainable tourism. Tourismos: An International Multidisciplinary Journal of Tourism 7, 213–233.
Latour, B., 1999. Pandora's Hope: Essays on the Reality of Science Studies. Harvard University Press, Cambridge, Massachusetts.
Martínez, P., Del Bosque, I.R., 2015. Analyzing responsible corporate identity in the hospitality sector. Tourism Cult. Commun. 14, 183–197.
Melissen, F., et al., 2016a. Sustainable development in the accommodation sector: a social dilemma perspective. Tourism Management Perspectives 20, 141–150.
Melissen, F., et al., 2016b. Is the hotel industry prepared to face the challenge of sustainable development? J. Vacat. Mark. 22 (3), 227–238.
Melissen, F., Ginneken, R.V., Wood, R.C., 2016. Sustainability challenges and opportunities arising from the owner-operator split in hotels. Int. J. Hospit. Manag. 54, 35–42.
Mensah, I., 2014. Stakeholder pressure and hotel environmental performance in Accra, Ghana. Manag. Environ. Qual. Int. J. 25 (2), 227–243.
Mihalic, T., 2016. Sustainable-responsible tourism discourse. Towards 'responsustable' tourism. J. Clean. Prod. 111, 461–470.
Mineo, A.M., Pontilo, A., 2006. Using R via PHP for teaching purposes: R-php. J. Stat. Software 17 (4), 1–20.
OXFAM International, 2017. An economy for the 99%. It's time to build a human economy that benefits everyone, *not just the privileged few*. Available at: https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bp-economy-for-99-percent-160117-en.pdf. (Accessed January 2017).
Pérez, A., Del Bosque, I.R., 2014. Sustainable development and stakeholders: a renew proposal for the implementation and measurement of sustainability in hospitality companies. Knowl. Process Manag. 21 (3), 198–205.
Prud'homme, B., Raymond, L., 2013. Sustainable development practices in the hospitality industry: an empirical study of their impact on customer satisfaction and intentions. Int. J. Hospit. Manag. 34 (1), 116–126.
Raworth, K., 2012. A safe and just space for humanity. *Can we live within the doughnut?* Available at: https://www.oxfam.org/sites/www.oxfam.org/files/dp-a-safe-and-just-space-for-humanity-130212-en.pdf. (Accessed December 2016).
Robson, C., 2011. Real World Research Design: a Resource for Users of Social Research Methods in Applied Settings, 3rd. John Wiley and Sons, Ltd, West Sussex.
Rodríguez-Antón, J.M., et al., 2012. Use of different sustainability management systems in the hospitality industry. The case of Spanish hotels. J. Clean. Prod. 22 (1), 76–84.
Romagosa, F., Priestley, G.K., Llurdés, J.C., 2013. The role of tourism in sustainable development strategies. Tourismos: an International Multidisciplinary Journal of Tourism 8 (2), 77–95.
Sadhukhan, S., Banerjee, U.K., Maitra, B., 2015. Commuters' perception towards transfer facility attributes in and around metro stations: experience in Kolkata. J. Urban Plann. Dev. 141 (4), 1–8.
Santos, R.A., Méxas, M.P., Meiriño, M.J., 2017. Sustainability and hotel business: criteria for holistic, integrated and participative development. J. Clean. Prod. 142, 217–224.
Searle, S.R., Casella, G., Mcculloch, C.E., 1992. Variance Components. John Wiley, New York.
Segarra-Oña, M., Peiró-Signes, A., Verma, R., Miret-Pastor, L., 2012. Does environmental certification help the economic performance of hotels? Evidence from the Spanish hotel industry. Cornell Hospitality Quarterly 53 (3), 242–256.
Sigala, M., 2014. Customer involvement in sustainable supply chain management: a research framework and implications in tourism. Cornell Hospitality Quarterly 55, 76–88.
Steffen, W., et al., 2015. Planetary boundaries: guiding human development on a changing planet. Science 347 (6223), 736–747.
Stieger, J., 1990. Structural model evaluation and modification: An interval estimation approach. Multivariate Behav. Res. 25 (2), 173–180.
Stylos, N., Vassiliadis, C., 2015. Differences in sustainable management between four- and five-star hotels regarding the perceptions of three-pillar sustainability. J. Hospit. Market. Manag. 1–35.
Susskind, A.M., 2014. Guests' reactions to in-room sustainability initiatives: an experimental look at product performance and guest satisfaction. Cornell Hospitality Quarterly 55 (3), 228–238.
Tabachnick, B., Fidell, L., 2007. Using Multivariable Statistics. Allyn and Bacon, New York.
United Nations, DESA – Department of Economic and Social Affairs, Population Division, 2015. World population prospects – the 2015 revision. Available at: https://esa.un.org/unpd/wpp/Publications/Files/Key_Findings_WPP_2015.pdf. (Accessed February 2017).
Tyrrell, T., Paris, C.M., Biaett, V.A., 2012. Quantified triple bottom line for tourism: experimental results. J. Trav. Res. 52 (3), 279–293.
United Nations, 2015. Transforming our world: the 2030 Agenda for sustainable development. Available at: https://sustainabledevelopment.un.org/post2015/transformingourworld. (Accessed January 2017).
United Nations, 2016. General assembly: resolution adopted by the general assembly on 22 december 2015. Available at: http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/70/193andreferer=/english/andLang=E. (Accessed March 2017).
UNWTO – World Tourism Organization, 2016. UNWTO tourism highlights - 2016 edition. Available at: http://www.e-unwto.org/doi/pdf/10.18111/9789284418145. (Accessed March 2017).
Yusoff, R., Mohd Janor, R., 2014. Generation of an interval metric scale to measure attitude. Sage Open 4 (1), 1–16.
Yasothornsrikul, P., Bowen, D., 2015. Tourism demonstration and value change. Int. J. Tourism Res. 17 (1), 96–104.