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Article

Do Sustainability Perceptions Affect Lake Destination Loyalty?

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Abstract: Despite a growing concern over sustainability in tourism, research on this domain regarding, specifically, lake destinations, is still scarce. Although perceptions on lake destinations have been studied, no study is known that analyses the impact of visitors' perceptions on satisfaction and behavioral intentions. Thus, this paper aims to develop and test a model to analyse the effect of lake visitors' perceptions of destination's sustainability on both satisfaction and loyalty towards lake destinations. A questionnaire survey was conducted in the Shchuchinsk-Burabay resort area, an important lake destination in northern Kazakhstan. The results support the proposed lake destination loyalty model, tested using partial least squares structural equation modelling (PLS-SEM). Sustainability proved to be decisively influential, with water quality being the dimension with the highest impact on satisfaction with the lakes, along with a positive key impact of the absence of congestion. In addition, both water quality and lack of congestion had a significant indirect impact on satisfaction with the lake destination, and on loyalty. Based on the research findings, theoretical conclusions and practical implications are drawn.

Keywords: lake destination perceptions; water quality; sustainability; satisfaction; loyalty; structural equation modelling

1. Introduction

Sustainable development is an essential and popular concept in tourism, and its importance for the sector has been widely discussed in tourism literature [1]. The sustainability of tourism has been examined by assessing its environmental, economic, and social impacts on society or local communities. Sustainable tourism has been defined as “*tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities*” [2]. The environmental aspect of sustainability must be emphasized, since the recent fast economic and social developments have led to degradation of natural resources, such as water, in many parts in the world. The United Nations approved the 2030 Agenda for Sustainable Development in 2015 with 17 Global Goals, including the sixth goal - “*Ensure availability and sustainable management of water and sanitation for all*” [3]. The world water resources are under threat and, therefore, it is crucial to address vital resource challenges and adopt strategies towards sustainability. A significant body of evidence already suggests that humanity's water consumption practices are unsustainable [4].

Among water resources, lakes are vital natural resources for the human being and to ensure sustainability of the lake environment is of high interest for population and industries. As stated by researchers, the lakes are essential environmental resource, and sustainable management initiatives and interventions from the local authorities and policymakers are required to preserve them [5,6].

In the context of tourism, lakes are considered important resources ([5,7], due to their pleasant nature and attractive landscape, which make them meaningful places, often leading to positive mental images and feelings ([8]. Nowadays, lakes are the main tourist attractions for many destinations, as is the case of Lake Balaton in Hungary, of some Australian and Finnish lakes, Great Lakes and those of the English Lake District[9]. In this context, literature suggests that the quality of water is of high value for the lake tourism and sustainability of the lake destinations ([9,10], since it is essential in attracting the tourists and influences an important part of their holidays [4]. Moreover, the importance of sustainable management of water resources for the tourism sector has been acknowledged by official organizations, such as the UNEP and the UNWTO, which have issued several programs aiming to address water challenges [11]. The UNWTO organized its World Tourism Day programme under the theme "*Tourism and Water: Protecting our Common Future*" in 2013 [11]. The programme calls to bring greater attention to the potential role of tourism in more sustainable water management practices.

The interest in examining water and tourism relationships has increased during the last decades [12].

Some attention has also been paid to lake tourism and lake destinations [13,14]. Some authors highlighted the urgent need of environmental protection enhancement and minimization of environmental threats in lake tourism development, to enable sustainable development [15]. Despite environmental concerns arising on lakes' ecological state, few studies were focused on lake tourism and lake destinations ([16]. Consequently, research work focusing on perceptions on lake destination is limited [6,17,18]. There are studies examining the influence of tourism development on lakes' environment [19], exploring sustainable tourism planning in lake destinations [20–22], assessing the perception on lake destinations [6,17,18,23] and appraising satisfaction and loyalty towards a lake destination [24,25]. Nevertheless, to the authors' knowledge no study is known that analyses the impact of visitors' perceptions concerning lake destination, with a special focus on lakes' sustainability aspect, on satisfaction with lakes and respective destination, as well as on loyalty towards lake destinations. Considering all these aspects, this study aims to fill this gap by proposing and testing a model to examine the effects of visitors' perceptions concerning lake destinations (including those related to lakes and the surrounding territory), with a special attention to sustainability perceptions of lakes, including water quality and lack of congestion dimensions, on satisfaction and loyalty towards lake destinations. The aim is to help improve lakes' sustainability and, consequently, visitors' satisfaction with lake tourism destinations, as well as tourism development of these regions by increasing visitors' loyalty.

2. The sustainability of lake destinations

Lakes are freshwater systems, which play a vital role for humanity, environment, and economic sectors. The importance of the lakes for the tourism has also been acknowledged, despite the existence of few studies on lake tourism and lake destinations [8,9,13,14,16]. There are some countries where the lakes play an essential and unique role in promoting the country or some regions as tourism destinations [9]. Thus, ensuring sustainability in lake destinations through a supply of water resources of good quality and guaranteeing that there are no congestions, are fundamental issues for tourism development in these areas [21]. Moreover, water is recognized as a key resource upon which the attractiveness of a destination may depend [26]. Therefore, the visitors' perceptions on lake destinations, and mainly on their sustainability, are crucial since they may influence their future travel behaviors towards these places.

The increasing population, the industrial use of water and the growing needs of agriculture are putting extraordinary pressure on lakes and threatening the sustainability of lake ecosystem [27], which is not favorable for the tourism sector development. Some authors stated that in case of water crisis caused by various external factors, the tourism industry will be the most seriously impacted [28]. Previous research related to water and tourism is predominantly concerned with tourism impact on either water quality, water quantity [29], water consumption issues ([12] and the water quality challenges rising from tourism development [15]. Many researchers are concerned with the water

resources challenges and reinforce the relevance of its efficient use, protection, and implementation of sustainability practices. In the context of the lakes, the researchers believe that water quality assessment indexes can be useful in monitoring the environmental state of the lakes, and helpful for local authorities in taking certain steps and measures towards sustainability of natural resources [27].

Another relevant sustainability issue is congestion [30]. The excessive concentration of visitors during peak season in nature-based destinations may not only cause degradation of natural environment and threaten the sustainability of the resources, but also negatively influence the visitors' destination perceptions. As noted by the researcher [31], crowding and noisiness at Sun Moon Lake National Scenic Area in Taiwan influences the mood of visitors and leads to negative experiences. Ensuring a balanced number of visitors is of vital importance for lake destinations due to its vulnerable ecosystem.

Despite lakes are important attractions, generating visits to tourism destinations [16] and possibly a growing sustainability awareness, there is little research exploring this interdependence, probably because lake tourism is an emerging type of tourism. Nevertheless, visitor perceptions of lake destinations arguably impact satisfaction levels and loyalty [25]. Since lakes are central to the tourist experience in lakeside tourist destinations [6], perception is expected to determine visitors' behavioral intentions. A deep understanding of how the lake destination perception is formed is thus of central importance.

Lake destinations can differentiate themselves on several dimensions. Part of the lake's destination perceptions is determined by how people perceive the lake itself. In this context, some authors [16] point out that the lacustrine tourism environment encompasses not only the lake itself, but also its shore area, including the infrastructure and facilities that enhance it as tourist attraction. The lake is the main resource in lake destinations' development, combined with other surrounding resources that form the lake environment [23].

Research [6,23] also suggests that lakes are heterogeneous regarding water quality, the lake environment, and the extent of external pressures on the use of resources around the lake, namely the congestion on lakes. Regarding lakes, water quality could be considered an important perception aspect and one of the key components influencing destination selection decisions [9]. Some studies have investigated water quality perceptions in a recreational or, specifically, a tourism context [6,32]. However, assessing visitors' perceptions of water quality is a complicated issue, since not all visitors possess enough knowledge and information to evaluate it [10]. There is also no consensus regarding the appropriate model or set of attributes to measure perceptions of water quality, possibly due to the multidimensional character of phenomena such as water quality or water pollution. Thus, some researchers have proposed using attributes of visual water quality characteristics, explaining that readily observable phenomena are more helpful when assessing overall perceptions towards water quality [10]. Observable variables of water quality characteristics (color, odor, level of water, existence of sediments, algae, animal waste) mentioned in some studies on water quality [32,33] may be also helpful in this context.

Growing human and tourism activities can themselves threaten the lake's vulnerable environment. Changes in water quality and availability may cause negative impacts for tourism, which is not favorable for the mentioned sector. This happened in Québec, where many of the lakes are actively used by tourism and recreational activities, which led to algal blooms [34]. Thus, nowadays the water quality of the lakes in Québec is a bigger concern than water availability. Other researchers also argued that decreasing water quality is already a barrier for sustainable development of the tourism industry in some regions [35]. Pollution and congestion are considered sustainability challenges in a destination [30,36].

Other features of the lake and shore area, besides water quality, can affect visitors' assessment. These features include the variety of the wildlife on the lake, the beauty of the landscape, peacefulness and opportunities to engage in water-based activities such as swimming, boating or fishing [6,23]. Regarding this last aspect, some research analyses the importance of lake water for recreational activities [14,33]. Another important component of lake perceptions - the lake environment - encompasses, besides water, the whole lake ecosystem, its accessibility, peacefulness and natural

beauty, along with opportunities to carry out water-based activities and the tourism infrastructure on the shore.

The development of lake destinations demands tourism facilities, along with various services and activities, which presence may affect perceptions of lakes [6,24], mainly when there is a high quantity of facilities. In addition, heterogeneous use of lakes may not only affect the fragile lake ecosystem, but also give rise to conflict between stakeholders, which may affect visitors' assessment of the lake [9,13]. Thus, a lack of congestion in and near the lake due to overuse or conflict between users (who may want to use the land for agriculture, industry, and tourism, among other activities) may lead to a positive assessment of a lake.

There are other components at lake destinations, located a little away from the lake itself, that may also be of importance. For some researchers, accommodation [6,23], tourist offices [23], restaurants [6], shopping areas and parking [37] are factors that may influence the lake destination perceptions. In addition, some researchers refer to the history and heritage of the area [7] to the friendliness of local people or to cultural attractions in the process of lake destination assessment [23]. Others emphasize the beauty of the lake landscape [7]. Some natural features of lake destinations, even those unrelated to the lake, such as the presence of mountains and valleys or a pleasant climate, may also influence the visitor's perceptions [13,37].

3. Impacts of lake destination perceptions on satisfaction and loyalty

According to previous studies, the more positive is the visitors' assessment of a destination, the higher is likely to be these visitors' satisfaction level [38,39]. In the context of lakes, the degrading state of the lakes due to the various uses of the lakes by population – such as industry, agriculture and tourism –, may influence visitors' satisfaction. Some authors [5] pointed out that low water quality, including poor smell, color or a polluted water surface, may affect experience outcomes. Others [6] analysed the effect of polluted lakes in China on the satisfaction level of visitors. The authors [6] noted that “*differing degrees of pollution may exist*” and that a lake without aquatic life may still attract tourists to the destination due to its pleasant visual aspect. Since the water quality dimension has received greater attention from lake stakeholders and researchers [5,6,32,33,40], it is expected to be one of the most influential predictors of visitor satisfaction with the lakes. Despite the lack of research in this scope, it is likely that the various dimensions of perception of lakes, not only those regarding water quality, but also perceptions on the lake environment (the natural and built surrounding environment) and on the level of congestion, influence visitors' satisfaction levels with the lakes. Therefore, it is posited that:

H1: *Satisfaction with the lakes is positively influenced by perceptions of water quality.*

H2: *Satisfaction with the lakes is positively influenced by perceptions of lake environment.*

H3: *Satisfaction with the lakes is positively influenced by perceptions of no congestion.*

Researchers [38,39] found that the more positive the perception of the destination is, the higher the visitor satisfaction tends to be.

Despite increasing interest in destination image and its impact on satisfaction, as mentioned before, the case of lake destinations has not been sufficiently investigated [41]. Some lake destination attributes, namely tourist facilities and cleanness were found essential antecedents of satisfaction, while others explored the influence of homestay facilities on tourist satisfaction [24]. As mentioned before, there is growing interest among researchers on perceptions of water quality and the recreational use of lakes [6,32,33]

Nevertheless, there is still no consensus on the influence of the perceptions of certain dimensions of lake destination image, such as natural and cultural attractions, along with public and private amenities. Taking into consideration previous research carried out in the tourism field, the following hypotheses are set up:

H4: *Satisfaction with the lake destination is positively influenced by perceptions of tourist facilities and services provided.*

H5: Satisfaction with the lake destination is positively influenced by perceptions of natural features.

H6: Satisfaction with the lake destination is positively influenced by perceptions of cultural heritage.

As widely acknowledged, the lakes are the main resource and the key attractions in lake destinations [9,13,14,16]. Overall satisfaction with the lakes, which is formed based on the visitor's perceptions of various lakes dimensions, can be an essential antecedent of satisfaction with the whole lake destination.

H7: Satisfaction with the lakes has a positive influence on satisfaction with the lake destination.

There is a consensus among researchers that travel satisfaction is crucial for successful destination businesses and products, and to promote willingness to revisit the destinations [42]. Moreover, the positive influence of satisfaction on behavioral intentions (intention to revisit and willingness to recommend) have also been examined and empirically confirmed in the case of tourism destinations [25,43–45]. This logic can be applied in the case of lake destinations. Moreover, research [46] reveals that satisfaction with the lake destinations is likely to positively contribute to loyalty towards these destinations. Therefore, it is believed that satisfaction with both the lake and the lake destination are likely to have a positive impact on behavioral intentions, namely on destination loyalty, including the willingness to recommend and revisit the destination. More precisely, it is suggested that:

H8: Satisfaction with the lakes has a positive influence on lake destination loyalty.

H9: Satisfaction with the lake destination has a positive influence on lake destination loyalty.

Based on the above hypotheses, the following conceptual model is proposed (Figure 1).

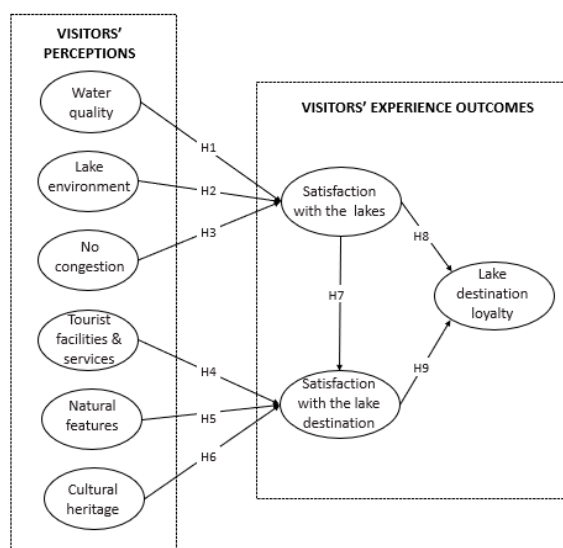


Figure 1. The conceptual model proposed.

4. Materials and Methods

4.1. Context of the empirical study

The present empirical study was carried out in the Shchuchinsk-Burabay resort area, an ecological zone located in Akmola region of northern Kazakhstan. It is one of the most popular tourist destinations in the country, with a beautiful natural landscape and a set of hydrological resources. The region is famous for its many lakes, which are well known for their favorable conditions for water-based activities, recreational tourism, and fishing, its therapeutic and wellness properties [47]. Tourism activity in the resort area is mostly concentrated on the shoreline of the lakes Burabay, Ulken Shabakty and Shortandy, among others. The attractiveness of the lake's environment and most particularly, the quality of the lake water has become a key factor attracting tourists to the resort area during the last decades. Thus, the growth and sustainability of the tourism industry requires the maintenance of the quality and quantity of the water of the lakes.

In recent years, however, hydrological resources have suffered environmental problems. There has been an increase in contamination levels in the lakes and global climate change and increasing human and tourism activities are the main reasons for water loss in these lakes [15] [48]. The main lakes of the area are already contaminated, having different levels of pollution [49].

Tourism, which has a mass character and is mostly concentrated during summer, is blamed to be one of the stressors causing deterioration of lakes' water quality [15]. Nevertheless, it is also widely considered that agriculture is one of the main economic activities of the region, which increases the pressure on the lake environment. The reasons of environmental issues of the lakes are climate change, growth of population and industry, uncontrolled withdrawal of water from the lakes, agricultural run-off and increase of livestock farming [48]. However, as noted by [36], in the case of Lake Balaton in Hungary, it is complicated to separate only the tourism impact from that of other industries due to unavailability and unreliability of tourism data. Despite that, the referred authors argue that water quality is one of the most sensitive environmental issues and is of high interest for all industries and local population to guarantee lakes' water quality and improve the sustainability of the lake destination.

4.2. Data collection

The target population of the empirical study corresponds to all the visitors who visit the lake resort area under analysis, including those who stay at the hotels, sanatoriums and guesthouses, who stop in the shops and who walk around the villages, lakes and parks. A convenience sampling approach was adopted to select the visitors to include in the sample, due to the impossibility of identifying all the individuals of the population. To gather data for this study, a survey questionnaire was carried out. Some of the questionnaires were administered face-to-face to people visiting the area under research, while others were administered by e-mail. The survey was undertaken between March and April 2018. A total of 450 visitors were contacted, and 366 completed questionnaires were collected, with an 81% response rate.

The questionnaire started with an introduction explaining the purpose and nature of the research and encompassed questions related to the perceptions on lakes and on other components of lake destinations, satisfaction with the lakes and the lake destination, loyalty towards the lake destination, sociodemographic characteristics, and characteristics of the trip. To assess lake perceptions, respondents were asked whether they agreed that the lake image was characterised by a set of items, using a seven-point Likert type scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). The 17 items were related to dimensions evidencing sustainability - water quality and inexistence of congestion, as well as to the lake environment, the environment surrounding the lake. Perceptions regarding other components of lake destinations – such as tourist facilities and services, natural features, and cultural heritage - were assessed through a set of 18 items. Attributes used to assess all these perceptions were mainly adapted from the works of [6,10,23,33]. This list was complemented by some attributes from [38] other work examining dimensions of destination image.

Two questions were developed to measure the satisfaction of the visitors regarding the lakes. The satisfaction measures were drawn from the literature on consumer behavior in tourism [50,51].

To answer these questions, respondents had to use the same seven-point Likert type scale adopted when assessing perceptions. A similar approach to that adopted to gauge satisfaction with the lakes was applied to measure visitor satisfaction regarding the lake destination.

Destination loyalty was measured based on two indicators, namely the willingness to revisit the destination and the intention to recommend it to other people. Questions in this scope were answered with a seven-point Likert type scale ranging from 1 (Very unlikely) to 7 (Very likely). The items were selected from [50,51].

Respondents were also asked about their sociodemographic profile (e.g. country of residence, age, gender, marital status and education level) and about the characteristics of their trip (e.g. whether they had visited the area before or not, length of stay in the destination under research and activities undertaken at the destination).

The questionnaire was initially created in English and was then translated into Russian by the researchers. Prior to data collection, a pilot survey was conducted with 20 people who were visiting the lake area. Their questions and comments were considered and minor changes regarding writing were introduced in the questionnaire.

4.3. Data analysis

Partial least squares path modelling (PLS) is a variance-based method used to estimate composite-based path models [52,53]. As a structural equation modelling (SEM) technique, PLS is helpful in analysing relationships between multiple constructs and is being increasingly used in various business disciplines, notably in tourism research [54].

According to this work [54] PLS-SEM focuses on the explanation of variances rather than covariances, making it a prediction-oriented approach. The research model of the current paper was tested using the SmartPLS 3.0 program [55].

5. Discussion

5.1. Sample profile

As for the demographic characteristics of the respondents, slightly more female (55%) than male respondents (45%) were surveyed. The sample is represented mainly by domestic visitors (which account for 93%), while the share of foreign visitors is only 7%. Although the sample is somewhat varied regarding age, seniors tend to be an exception (those aged 60 years or older represent only 5% of the sample). About 30% of respondents were between 17 and 23 years old, as were those aged between 24 and 34 years, and the next largest group comprised those between 35 and 45 (19%). Approximately half of all respondents reported being married (49%), or single (46%). Respondents with an undergraduate degree accounted for 68% of the sample, followed by respondents with a postgraduate degree (24%). Eighty-one percent of the visitors of the area are state employees (26%), workers of private organizations (27%) or students (28%). Almost a third (32%) of the respondents have a monthly income higher than 132,000 Kazakh Tenge (KZT) (with 1 Euro corresponding to 395.42 KZT), being followed by those who have an income between 66,001 and 90,000 (22%), and then by those whose income was between 90,001 and 132,000 Kazakh Tenge (20%).

Regarding the characteristics of the trip, most of the individuals (81%) had already visited the area before. Most respondents stay in the region for short stays around the weekend or up to about a week, since 40% of the visitors stayed on average 1 to 3 nights, 27% stayed between 7 and 10 nights, and 26% between 4 and 6 nights. One-day visitors represent only 1% of the sample. The most popular activities practiced by visitors are swimming (done by 75% of the sample), followed by boating (51%) and sunbathing (27%).

5.2. Model assessment

PLS path-modelling analysis includes two stages. In the first stage the measurement model (outer model) is assessed, based on the analysis of each construct and the relationship between the constructs and their indicators (measures). The second stage involves evaluating the structural model (inner model) to test the hypotheses underlying the conceptual model proposed.

5.2.1. Measurement model

With all constructs in the model being reflective, these were assessed by analysing the reliability of the multiple-item scales, convergent validity and discriminant validity [53]. As reported in Table 1, the composite reliability of all constructs is higher than 0.86, which goes beyond the reference value of 0.7, and the average variance extracted (AVE) is also greater than the 0.5 cut-off for all constructs, confirming a good convergent validity of the applied scales.

Table 1. Measurement statistics of construct scales.

Constructs / indicators	Indicator loading	<i>t-value</i> ^a	CR	AVE
Water quality			0.941	0.639
Lakes have a color that suggests there is no pollution	0.815	29.068		
Lakes have very clear water	0.718	19.053		
Lakes do not have a bad odor	0.851	44.171		
There is no animal waste	0.742	30.082		
There are not plenty of algae/reeds	0.783	31.710		
There are no sediments on the surface of the lakes	0.837	34.322		
There are no sediments on the bottom of the lakes	0.862	50.902		
Water is not polluted-	0.845	42.087		
Lake's water level is not decreasing	0.724	22.020		
Lake environment			0.877	0.543
Lakes are accessible	0.720	20.686		
Lakes are favorable for water-based activities (swimming, boating, fishing)	0.774	29.874		
Lakes have many species of wildlife and plants	0.771	26.514		
Lakes are very peaceful	0.700	19.707		
Lake shore has enough tourism facilities	0.787	33.700		
Lakes are very scenic	0.660	15.917		
No congestion			0.913	0.840
There is no conflict between users-	0,899	50.397		
Lakes are not being harmed by overuse	0.934	111.924		
Tourist facilities and services			0.958	0.657
High quality of balneology services	0.723	21.258		
Clean and tidy environment	0.849	55.256		
Cleanliness of beaches	0.799	36.338		
Diverse shop facilities	0.848	50.639		
Easy access to tourist information	0.830	33.570		
Good local transport services	0.873	55.649		
Good quality accommodation facilities	0.835	42.657		
Good quality restaurants and cafes	0.860	58.702		
High quality of wellbeing services	0.782	37.915		
Reasonable price for accommodation	0.734	18.723		
Reasonable price for attractions and activities	0.759	23.992		
Safe and secure environment	0.820	42.530		
Natural features			0.868	0.689
Attractive lakes	0.909	66.824		
Scenic mountains and valleys	0.814	35.685		
Favourable and pleasant climate	0.760	22.624		
Cultural heritage			0.889	0.728
Friendly local people	0.814	28.257		

The range of cultural events, shows and exhibitions	0.885	46.841
Rich historical and cultural heritage	0.860	51.409

Table 1. Measurement statistics of construct scales (continuation).

Constructs / indicators	Indicator loading	<i>t-value</i> ^a	CR	AVE
Satisfaction with the lakes			0.972	0.946
I am satisfied with the decision to visit these lakes	0.974	207.041		
Overall, I am very pleased with the lakes	0.972	168.940		
Satisfaction with the lake destination			0.966	0.934
I am satisfied with the decision to visit this destination	0.966	182.621		
Overall, I am very pleased with the destination	0.967	183.657		
Lake destination loyalty			0.950	0.904
I will recommend this destination to other people	0.957	146.067		
I will do a trip to this destination next year-	0.944	70.064		

5.2.2. StrNotes: CR: composite reliability; AVE: Average Variance Extracted; ^a t-values were obtained with the bootstrapping procedure (5000 samples) and are significant at the 0.001 level.

To examine whether a construct is more strongly related to its own indicators than to any other construct, discriminant validity was assessed based on the guidelines of Fornell and Larcker (1981). Table 2 indicates the correlation between constructs, where the square root of each construct's AVE (bold numbers) is higher than its correlation with any other construct. Such results provide support for the discriminant validity of the constructs measured.

Table 2. Discriminant validity of the constructs (correlation between constructs).

Constructs	1	2	3	4	5	6	7	8	9
1. Water quality	0.799								
2. Lake environment	0.501	0.737							
3. No congestion	0.678	0.445	0.917						
4. Tourist facilities and services	0.609	0.498	0.407	0.811					
5. Natural features	0.420	0.623	0.368	0.615	0.830				
6. Cultural heritage	0.404	0.480	0.276	0.740	0.577	0.853			
7. Satisfaction with the lakes	0.663	0.551	0.585	0.419	0.427	0.298	0.973		
8. Satisfaction with the lake destination	0.486	0.591	0.463	0.657	0.700	0.622	0.548	0.967	
9. Lake destination loyalty	0.405	0.535	0.422	0.553	0.582	0.568	0.504	0.828	0.951

Notes: The square root of AVEs is shown diagonally in bold.

5.2.2. Structural model

To test the proposed hypotheses in the conceptual model, the structural model was analysed considering the model's predictive power and the relationship between the constructs. The path coefficients show the relevance and significance of the relationships between latent variables and are thus analysed to test the hypotheses that predict direct effects on the endogenous variables. The t values have been obtained with the bootstrapping procedure (5000 samples). Figure 2 presents the structural model, the path coefficients, and the respective level of significance, with the relationships

identified by arrows as significant. The explained variance (R^2) was examined to assess the predictive power of the structural model, and values ranged from 0.53 to 0.69, which indicates a considerably high prediction power of the model and predictive importance of the latent constructs. Lake destination loyalty is the construct with the highest variance explained ($R^2 = 0.69$), followed by the satisfaction with the lake destination construct ($R^2 = 0.64$).

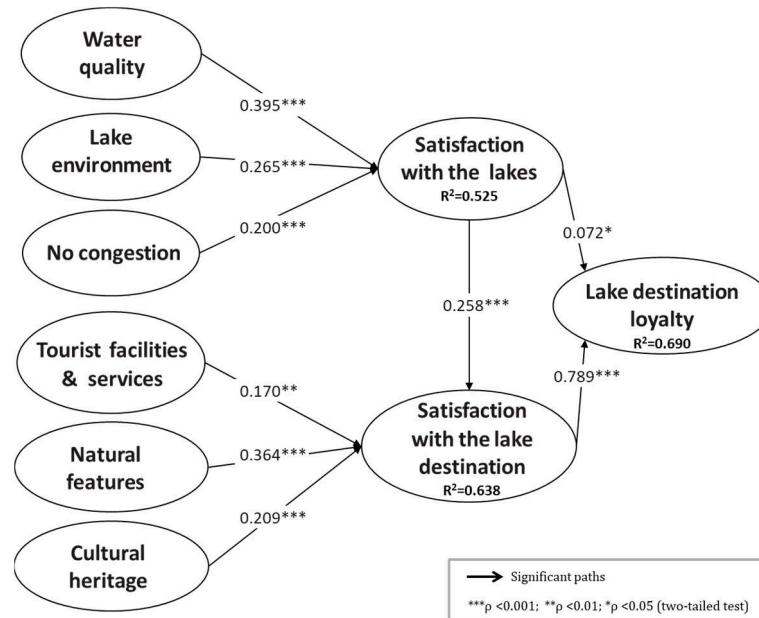


Figure 2. Structural model.

All the hypotheses are empirically supported (Figure 2 and Table 3). The findings confirm a positive and significant influence of perceptions about lakes on satisfaction with the lakes, with the highest impact being that of the perception on water quality ($\beta = 0.40$) (H1), followed by the lake environment ($\beta = 0.27$) (H2) and the inexistence of congestion ($\beta = 0.20$) (H3). These results lead to interesting discussions, since the higher the perceptions on the sustainability of the lakes concerning water quality, on the inexistence of congestion and on lake environment, the more satisfied visitors are with the lakes. This goes in line with what [56] already pointed out that monitoring the environmental state of water bodies on time is crucial in achieving the sustainability of the area. The researcher [40] stated that the water quality of the lake Tapo in New Zealand is of central importance for the sustainable development of the region. Others [57] enhanced the value of the environmental aspect of sustainability in lake tourism development. The research findings highlight the value of the water quality dimension in visitor's assessment of a lake destination, as a crucial antecedent of the satisfaction with the lakes. However, the perceptions of the visitors towards lake water pollution may not be accurate, since visitors do not have significant environmental knowledge about the water quality levels [10]. Moreover, the lakes may not have reached the level of pollution required to be perceived by visitors as dirty. It is also important to consider that perceptions and satisfaction about the lakes may also vary among lakes, mainly because lakes differ regarding their pollution levels, and among individuals, due to their different competences to evaluate these issues, as well as their sustainability attitudes, travel motivations and expectations [58].

Table 3. Hypotheses testing.

Hypothesis	Path coefficient	t -value	p -value	Supported
H1: Water quality \rightarrow Satisfaction with the lakes	0.395	7.714	0.000	Yes
H2: Lake environment \rightarrow Satisfaction with the lakes	0.265	5.331	0.000	Yes

H3: No congestion → Satisfaction with the lakes	0.200	3.504	0.000	Yes
H4: Tourist facilities and services → Satisfaction with the lake destination	0.170	2.630	0.009	Yes
H5: Natural features → Satisfaction with the lake destination	0.364	6.651	0.000	Yes
H6: Cultural heritage → Satisfaction with the lake destination	0.209	3.320	0.001	Yes
H7: Satisfaction with the lakes → Satisfaction with the lake destination	0.258	6.795	0.000	Yes
H8: Satisfaction with the lakes → Lake destination loyalty	0.072	2.075	0.038	Yes
H9: Satisfaction with the lake destination → Lake destination loyalty	0.789	27.283	0.000	Yes

Note: ^b t-values were obtained with the bootstrapping procedure (5000 samples).

The visitors probably perceive the lakes as a part of the entire landscape and enjoy the lakes scenic view, mountains, and forests, and assess their accessibility, peacefulness and opportunities to practice water activities. Since most visitors are from Kazakhstan, these domestic visitors usually want to visit the lake destination to escape from urban life, to relax and enjoy the nature. They often walk along the lake to enjoy the beautiful scenery or wander around the Burabay village, to socialise with families and friends, engaging in other activities that are not directly linked with the lake water and may not have accurate perceptions on water quality.

Regarding the satisfaction with the lake destination, the importance of each destination attribute to create satisfaction with the destination can vary significantly depending on the characteristics of the examined place [45], but when the overall destination is assessed, it usually has a positive impact on satisfaction [39,43,59]. The findings also demonstrate that the perceptions about the lake destination offerings including tourism facilities and services, natural features, and cultural heritage, have a positive impact on the visitors' satisfaction with the lake destination, with hypotheses H4 to H6 being confirmed. Others concluded that tangible factors of service quality are essential predictors of satisfaction in the lake destination [24]. The highest impact was found in the case of natural features dimension ($\beta = 0.36$; attractive lakes, science mountains, pleasant climate), which enhances the value of the environmental aspects of the destination, followed by the cultural heritage ($\beta = 0.21$) and tourist facilities and services ($\beta = 0.17$). The Shchuchinsk-Burabay resort area is a popular place, with a number of sanatoriums providing health improvement and well-being services. Therefore, these results suggest that visitors seeking lake destinations, including those promoting wellness and health improvement, may greatly appreciate destinations with natural features that contribute to create a relaxing atmosphere, as well as with facilities and services to meet their demands while at the destination, including health facilities offering opportunities to relax the body, mind and spirit. Findings also reveal that the satisfaction of visitors of lake destinations is also positively influenced by the opportunities to walk around visiting cultural heritage attractions, with educational activities being more relaxing than the more physically demanding water-based activities.

It is of high interest to emphasize the positive and significant impact of satisfaction with the lakes on visitors' satisfaction with the entire lake destination ($\beta = 0.26$) (H7). The more satisfied the visitors are with the lakes, the higher tends to be their satisfaction with the lake destination overall. This corroborates some studies in the tourism field that reveal that the more positive the perception about the attributes of the destination, the higher is the visitors' satisfaction [38,39,50]. Emphasis should be put on water quality due to the high positive effect of water quality on satisfaction with the lakes. This is especially important in the destination under analysis given the actual environmental state of the lakes. Moreover, water quality has been found in few studies to be important to visitors [6] and one of the most important factors in tourists' overall lake destination satisfaction [5,60].

Despite visitors are generally satisfied with the lakes and lake destination, for Bura bay to become a sustainable tourism destination, it needs to satisfy the tourists in all aspects of developments, without compromising the environmental aspect. This is especially true because the dimensions of lake destinations such as water quality and natural features have a high impact on satisfaction. Efforts should be made by authorities to improve the water quality for the well-being of both residents and visitors. Strategies aiming to reduce the number of visitors during peak tourist

season, by differentiating tourism products and attracting visitors in other seasons, can be helpful. These practices may reduce pressure and have beneficial effects on the lake environment.

Regarding Hypothesis 8, satisfaction with the lakes was found to have a direct positive influence on lake destination loyalty, though not a very substantial one ($\beta = 0.072$; $p < .05$). Hypothesis 9, however, is firmly confirmed, with a strong positive direct influence of satisfaction with the lake destination on lake destination loyalty ($\beta = 0.79$; $p < .001$). The findings confirm that visitors' loyalty is enhanced by a positive satisfaction with both the lake and the lake destination as a whole [58]. The research results also make clear that lake perceptions and lake destination perceptions play an important role in achieving satisfaction, which in turn influences destination loyalty. The structural path between satisfaction and loyalty is consistent with the literature on tourism destinations [38,59].

All indirect effects are significant and presented in table 4. Satisfaction with the lakes has a positive indirect impact on lake destination loyalty, higher than the direct path coefficient, highlighting the relevance of assigning attention to lakes also in the context of the whole destination. Perception on components related to lakes, such as water quality, lake environment and lack of congestion revealed to be significant antecedents of both satisfaction with the destination, and of visitors' willingness to return and recommend it to others. In this context, it is important to highlight that the indirect impact of water quality was the element that had the highest significant impact, emphasizing the importance of this sustainability element.

The relevance of the perceptions of tourism infrastructure, natural and cultural heritage has also been confirmed in the context of the lake destination loyalty. Visitors more positively assessing the components are more likely to have greater willingness to return and recommend the lake destination to others.

Environmental sustainability issues (regarding water quality and lake environment) seem to impact more visitors' satisfaction (with the lakes or with the lake destination) a loyalty, than the social sustainability dimension (the absence of congestion), arguably because the natural environment of the lake destination tends to be more valued and since visitors did not face high levels of congestion.

Table 4. Indirect effects.

Path	Path coefficient	t-value	p-value
Water quality → Satisfaction with the lake destination	0.102	5.721	0.000
Water quality → Lake destination loyalty	0.109	5.502	0.000
Lake environment → Satisfaction with the lake destination	0.068	4.092	0.000
Lake environment → Lake destination loyalty	0.073	3.936	0.000
No congestion → Satisfaction with the lake destination	0.052	2.884	0.004
No congestion → Lake destination loyalty	0.055	2.895	0.004
Tourist facilities and services → Lake destination loyalty	0.134	2.596	0.009
Natural features → Lake destination loyalty	0.288	6,399	0.000
Cultural heritage → Lake destination loyalty	0.165	3.294	0.001
Satisfaction with the lake → Lake destination loyalty	0.204	6.516	0.000

6. Conclusions

The research model proposed and tested in this paper using PLS-SEM provides important insights into lake destination perceptions, and its effects on satisfaction and loyalty, emphasizing the importance of the sustainability of lakes in this context. All the hypotheses of the study were confirmed. Therefore, the research undertaken in this paper provides important theoretical contributions and practical implications that will be identified below.

As far as theoretical contributions are concerned, first, a comprehensive set of items that may be adopted to assess the visitor's perceptions of the lakes and of the entire lake destination, with special attention on the sustainability aspect, is identified. This measurement instrument may be used in various contexts where lake destinations are found. This extends certain previous studies, which mostly rely on assessing a restricted part of the lake destination image, namely that referring to the lake [10,32,33,61].

Second, as stated by [30] the researchers, most of the research works on sustainability in tourism focus on the residents' perspectives, while the present study is concentrated on visitors' perceptions, which adds value to sustainability studies in a lake destination context.

Third, the empirical study expands the research on the lake destination perceptions, not only showing that these perceptions tend to have a positive influence on satisfaction regarding this kind of destination, but also highlighting the high relevance of the environmental aspects of the lake destination, such as water quality, which is the most important determinant of satisfaction with the lake in the present study. Furthermore, natural features also appear to be the strongest determinants of satisfaction with the lake destination. Nevertheless, positive assessment of other dimensions of lake destination, namely lake environment, lack of congestion, tourist infrastructure and cultural heritage are also essential in ensuring satisfaction with the lakes and lake destination.

Fourth, the fact that both water quality and inexistence of congestion had a significant direct impact on satisfaction with the lakes and a significant indirect impact on both satisfaction and loyalty towards lake destination was also a very important finding concerning the relevance of lakes to visitors. This, in addition to the conclusion that the perceptions on water quality were the component of lakes with highest impact in this context, provides empirical evidence of the relevance of the sustainability of the lakes to ensure satisfaction and loyalty regarding lake destinations. Nevertheless, comparing the impact of different sustainability features, environmental sustainability issues, namely water quality, seem to have more impact on satisfaction with lakes than the social sustainability dimension, namely the absence of congestion, probably because the natural environment of the lake destination tends to be more valued and since visitors did not face high levels of congestion.

Fifth, the findings reveal that both satisfaction with the lakes and with the lake destination have a significant impact on loyalty regarding these destinations, suggesting that the management of these places should consider both the lakes themselves and the environment surrounding them. It is observed that satisfaction with the lake destination has a much stronger impact on loyalty towards the destination, than satisfaction with only the lake itself. This underlines even more the importance of the territory around the lake and suggests that the poor environmental state of the lakes may be overcome by good perceptions regarding other components of the lake destination.

The findings of this study also provide important practical implications for planners and managers of lake tourism destinations. Guaranteeing water quality is of major relevance, not only for tourism, but is fundamental for the sustainability of the whole destination. In this sense, the water quality indexes of the lakes can be helpful for local authorities to understand the present status in this context and taking measures towards improving lakes water quality and its protection. The authors reinforced the value of the indexes in measuring water quality and in taking preventive steps to prevent further degradation [27].

Moreover, to move towards sustainable tourism development in the destination, there is a need to guarantee all aspects of sustainability, including favorable environmental state of the lakes. Therefore, new, and innovative approaches are needed for lake destination management, which will incorporate sustainability aspects. The researchers [62] mentioned various technical innovations for improving water quality in the lakes, such as improvements in land management, riparian plantings, constructed wetlands, lakebed treatments and water quality models, among others. Creating a good lake environment, encompassing pleasant scenery, good facilities on the lake shore and good accessibility to the lake, is of major importance due to the impact of the lake environment on satisfaction with the lake.

Despite the important theoretical and practical contributions of this research, some limitations can be identified. Hence, the geographical and temporal scope of the research was limited since the

research model was only tested in a specific lake destination in Kazakhstan. The proposed model should be tested in other lake destinations to ascertain whether the hypotheses are confirmed in other contexts. The research was also carried out in a limited period, not including the whole year nor the period of highest demand. It would be of great value to conduct research during high season, when the visitors are more engaged in water-based activities and where higher use pressure may be felt due to the presence of more people and potential congestion.

This research area is relatively new in tourism, and more contributions are needed to better understand the lake destination perceptions, as well as its consequences. Nevertheless, this research, which provides insights into the impact of lake destination perceptions, including sustainability perceptions, both on satisfaction and loyalty towards lake destinations, provides useful guidelines to design appropriate strategies for managing and planning this kind of destinations.

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