

Article

Developing a Model for Sustainable Hotels in Northern Cyprus

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Abstract: The purpose of this work is to develop a sustainable hotel building model (SHBM) that will allow for the measurement of sustainability in determining what conditions are most ideal for hotels in Northern Cyprus. This research method is based on the synthesis of international sustainable building assessment criteria from the Leadership in Energy and Environmental Design (LEED) and the localization of these criteria in Northern Cyprus. Thus, this article proposes an SHBM, which is especially localized for Northern Cyprus that can be used for new hotel buildings' design and construction and renovations of existing buildings as well as to measure their sustainability regarding environmental, economic and socio-cultural aspects. To serve this purpose, various methods of measurement of sustainability and green certificates (both qualitative and quantitative), global in scale were studied, which provided the basis for the development of the SHBM and local conditions of Northern Cyprus. Six hotels of differing sizes were studied in order to understand localized situation, conditions and priorities. The results of this study suggest that to have a more sustainable hotel in the aimed context, hotels of different scales (based on bed capacity and classification) must be evaluated adopting the SHBM model to achieve a better result for the sustainability of large-scale as well as small-scale hotels. In addition, this model helps the tourism industry and the hotel sector of Northern Cyprus benefit from sustainability in terms of environmental, economic and sociocultural aspects, which consequently help the local community in several ways.

Keywords: sustainability; tourism; sustainable hotels; LEED certificate

1. Introduction

Over the last three decades, sustainable development has become more important on every scale and in every economic sector, especially in building construction and tourism. Developing countries throughout the world have led the charge in forging sustainability models for buildings in general and hotels in particular to follow. Given no one model and its corresponding sustainability certification fits across every region and context, localized criteria need to be considered. In regions where tourism is a primary contributor to GDP, embracing a sustainable design for new construction and renovations is crucial to keep pace with market demands. Northern Cyprus is one such region. As such, this study considers widely accepted sustainable design criteria in developing a localized sustainable hotel building model (SHBM) for the region.

Sustainability is nowhere better exemplified in tourism than through the hospitality sector. In an attempt to be more sustainable, hotels as of late, are becoming more eco-friendly by observing environmental standards in their architecture, interior design, managing approaches and customer services [1,2]. Such an emphasis on the environmental impacts, according to Gao and Mattila [3],

has only become popular, following the traditional concern for social and economic impacts. Plenty of hotels have utilized social impact initiatives to be of service to local communities, enhance the well-being of the employees, and maintain the environment [3,4]. Also, economic factors play an important role in hotel management decisions in using sustainability measures. Hotels rely heavily on how successful they perform financially with regard to demand and minimal costs required to stay in operation. Sustainable practices can be considered altruistic from the perspective of guests, providing a more positive perception of particular hotels that champion such practices.

Consequently, in many developed countries, the hotel industry has already initiated and established sustainability standards, as evidenced by “green” certifications. As such, numerous assessment frameworks exist for measuring the sustainability of hotels and attaining a green certificate at the organizational level, sectoral level, regional or country levels. Examples of these include: ISO 14000, the European Union Eco-Management and Audit Scheme (EMAS), the US green building certification LEED (Leadership in Energy and Environmental Design), the UK BREEAM (Building Research Establish Environmental Assessment Method); and Japan’s CASBEE (Comprehensive Assessment System for Building Environmental Efficiency) [5–7]. Additionally, the Green Star scheme was developed by the Green Building Council of Australia GBCA and launched in 2003 [5,7,8] and finally the Global Sustainable Tourism Council (GSTC) criteria for hotels were created in an effort to come to develop a common understanding of sustainable tourism (through a series of tourism indicators) [9]. Additionally, some eco-rating systems have been developed specifically for the hotel industry, including the Green Key, European Eco-Label for tourist accommodation services, British Green Tourism Business Scheme, Canada Green Key Eco-rating System, Ecotourism Australia, and Taiwan Green Mark Hotel, to name a few [10].

Based on the literature reviewed, each green certificate and measurement of sustainability has its own function and usage according to the context of the country where the study hotels are located. Such certifications and measurements are primarily focused on environmental aspects of sustainability as well as different conditions of the country under examination. As indicated above, various aspects in addition to the environment can affect the sustainability of a hotel, most notably, economic and sociocultural considerations. Nonetheless, a limited number of studies have focused on the sociocultural aspects of sustainability among hotels that meet “green” certification standards. Of the certificates that do have limited measures pertaining to well-being, safety, health and employment, they are primarily focused on the tourism industry rather than specifically on the hotel industry. Thus, other issues in the area of location-related criteria, such as local ownership and local investment, have not been covered in the existing certificates and should be incorporated.

Local conditions in Northern Cyprus, are plagued by: environmental issues, such as limited natural resources [11,12], limited contextual design [13], limitations on energy and water resources [14]; numerous economic problems (e.g., unemployment, limited goods and service production, political isolation); and sociocultural aspects (e.g., conserving local values). Additionally, hotels within Northern Cyprus suffer from low occupancy rates, relatively poor service quality and lack of or insufficient infrastructure [15]. In spite of that, according to a study conducted by Okonkwo [16] and TRNC Ministry of Education (2016), “over 95% of Turkish Cypriots have completed a tertiary education degree,” yet unemployment is still a major problem in the area. What complicates matters even more is the fact that despite Northern Cyprus burgeoning with tourism and construction, a great number of hotel employees are foreigners from Turkey [17–19], making it difficult for locals to find employment within the industry on the island. Despite these concerns, few studies related to current issues in Northern Cyprus have been undertaken considering the sustainability of hotels. Arguably, the solution to many of these concerns lies in embracing sustainability within the hotel sector, primarily as it relates to small-scale hotels as alternatives to the standard large resorts that exist throughout the island [20].

Sustainability measurement methods used globally within the hotel industry are not working properly within the existing conditions of Northern Cyprus. Environmental measurements of

sustainability used throughout the world (within key certification systems) should be complemented by the inclusion of socio-cultural criteria in efforts to advance the hotel industry within Northern Cyprus toward greater sustainability. Furthermore, according to the Ministry of Tourism of Northern Cyprus, great disparities exist in hotel quality, size (classified by a number of rooms, bed capacity) and type to meet the demands of consumers such hotel variety also needs to be taken into account when considering sustainability of the industry.

The aim of the present study is to develop a model that attempts to provide more sustainable hotels within Northern Cyprus. This model aims at providing guidelines for large and small sustainable hotels. As such, the main question this research seeks to answer is: *What environmental, economic and sociocultural aspects should be incorporated in a model, which can lead the large/small scale hotels to be more sustainable in Northern Cyprus?*

In an effort to be as thorough as possible, this study employs a mixed methods approach incorporating both qualitative and quantitative forms of data following a sequential exploratory mixed method design. Such an approach is arguably most appropriate to account for the various types of hotels in Northern Cyprus. The qualitative method was developed based on a review of literature, interviews and observations from six different scaled hotels (i.e., classified by bed capacity and classification). On the other hand, the quantitative method was developed based on the LEED certification to measure the sustainability of hotel facilities and determine appropriate hotel conditions in terms of environmental, economic and sociocultural factors. Finally, this study develops a sustainable hotel building model (SHBM) for large- and small-scale hotels in order to determine which scale can be more sustainable based on conditions in Northern Cyprus.

2. Literature Review

2.1. Sustainable Hotels

Sustainable hospitality is currently a prevailing, mainstream notion, and no longer an uncommon trend [21–23]. Hotel sustainability has its roots in the 1960s, stating that greater attention has been given to environmental and social impacts, which result from hotel activities and development [24]. Over the course of the last 50 years, many definitions have been advanced that capture the meaning of ‘sustainable hotels’. As an example, a sustainable hotel is defined as an entity run with various socio-economic and environmental management attributes [25]. Incorporating the notion of sustainable buildings, sustainable hotels provide consumers with product and service sustainability through eco-friendly means and amenities. Sustainable hotels are representative of the demands and desires of both existing and potential guests [26].

In essence, sustainable hotel managers shoulder extra responsibility in seeking to provide guests with a memorable, quality experience [2,27]. Such hotels do their utmost to optimize energy and water consumption, and minimize solid waste, leading to a more environmentally-friendly approach [3,28–32].

The co-founder of Post Ranch Inn, Mike Reed expresses that, “green” is currently considered luxurious and non-green hotels will soon become a ‘thing of the past’ [33]. Kleinrichert, Ergul [31] mentions that “green” has various implications for different stakeholders’ hotel consumers most notably. Becoming a green operation can improve profitability in the long term. This is achieved through decreasing costs, which ultimately passes savings on to consumers [34]. Going green increases the value of a brand, which, in turn, leads to economic profitability [35]. In addition, Han, Hsu [36] found within their study that 90% of hotel guests would rather stay at green-managed hotels. Such a finding is due to green attributes that can potentially lead to a higher level of satisfaction among customers [37]. If a hotel utilizes renewable energy, customers see it as a positive quality, which increases their satisfaction leading to the hotel’s competitive advantage [2]. On the other hand, some green attributes are naturally expected by guests and thus not considered a significant factor contributing to increased customer satisfaction [38]. Consequently, hotels have

been using various green measures in their activities. For instance, such hotels recycle, purchase local products, use reclaimed water for landscaping purposes, and adopt LEED (Leadership in Energy and Environmental Design) certification standards [39]. These include environmental, economic and sociocultural benefits, which strengthen employees' dedication, enhance investor relations, and lead to greater social benefits overall [2].

In terms of environmental sustainability, the operation of hotels necessitates the consumption of huge quantities of water, energy, and disposable products [40,41]. This indeed indicates the harmful impacts the hotel sector can have on the environment, which is naturally much higher than in other industries [42]. Recently however, customers are more in tune with environmental concerns and issues that threaten nature. This environmental awareness has made "greening" a determining factor for competitiveness within the hotel industry [43–45]. Therefore, those owning and operating hotels are transforming approaches and activities in a manner that presents their businesses as being more eco-friendly entities practicing environmentally-responsible methods and following sustainability standards [36]. In addition, the number of hotels that consume durable service products instead of disposable items is rising. This trend convinces customers to recycle service products as well. Other practices are also being employed more as of late, which involve using recycled items, energy-saving light bulbs, reclaimed water, products which help clean the environment, and products grown locally [36,46,47].

2.2. Economic Sustainability

The hospitality industry is widely recognized as extremely profitable with one of the highest growth rates relative to other industries [48]. This is most apparent at the local level whereby new hotel developments have the potential to significantly contribute to local and regional economies through the creation of employment opportunities and generated taxes. Some towns and cities even offer incentives to those who contribute to hotel development. Such incentives are of various forms, such as tax breaks, favorable land leases, or assistance with financing [49]. Furthermore, the hospitality industry can improve the economy of host regions in different ways, such as through foreign exchange, government revenue, revival of the local industries and crafts, improved living standards, and stimulation of employment [50–52]. The hospitality and tourism industries can also improve the well-being of the residents by enhancing economic growth, employment quality, local control, local prosperity, tourist fulfilment, physical health, social equity, community well-being, cultural richness, environmental sincerity, biological diversity and resource efficiency [23,53].

2.3. Sociocultural Sustainability

Tourism overall can impact peoples' lifestyles, viewpoints and the way in which they work. It can also modify social norms and values [54,55]. These social, economic, cultural, and political changes are due to the sociocultural interactions among tourists, locals and the hospitality sector [56]. In general, sustainable tourism growth needs to highlight the socio-cultural benefits it provides for host regions [57–60]. In addition, involvement of the community does not simply mean the individuals outside of the organizational entity. It can also include employees who should not be neglected. A hotel company needs to consider its employees' well-being. This task can be fulfilled by providing employees with fair wages and benefits, inspiring them to take part in charitable events, and informing them about the significance of their involvement with the community in a holistic sense [61,62]. Social sustainability signifies the well-being of any individual who is directly or indirectly influenced by development of the industry. Therefore, social well-being takes into consideration peoples' emotions and attitudes concerning satisfaction, safety, security, comfort, as well as human contributions such as skills, health, knowledge, and motivation [63]. Thus, in order to be prosperous, the hotel sector needs to consider these elements as well. Hotels which invest in strong community involvement efforts, by focusing on education, training and creating sustainable income sources convey to all stakeholders

(including shareholders, staff and guests) the deeply-held company values [54] (see examples of economic and sociocultural benefits to the local community according to GSTC in Table 1).

Table 1. Example of economic and sociocultural dimensions of sustainability [9].

Economic and Sociocultural Dimensions of Sustainability	
Society support	<ul style="list-style-type: none"> • The organization employs with the local society in recognizing opportunities and requirements for measuring and support their potential impact. • The nature and level of contributions made to plans in the local society is registered. • The local society provides the opportunity to reach the tourism services provided and facilities.
Employment of locals	<ul style="list-style-type: none"> • The ratio of employment in management positions already is managed and measured. • Education is provided to local citizens to improve their employment opportunities.
Society services	<ul style="list-style-type: none"> • The organization monitors to local services accessibility of its impact. • An assessment/communication/grievance tool is in place for local people. • Any reduction in the accessibility of basic services to local people, recognized as the outcome of the organization's activities, is addressed.

2.4. LEED Certification Building and Environmental Focused Certification

Sustainability guidelines used in this study are those suggested by the Leadership in Energy and Environmental Design (LEED) Green Building Rating System developed in 1998 by the U.S. Green Building Council (USGBC) [64,65]. In short, the LEED program is essentially a system of 100 credit-points administered across six categories or indicators (see Appendix A).

These categories include Energy and Atmosphere, Water Efficiency, Materials and Resources, Indoor Environmental Quality, and Innovation in Design [63,66–68]. Up to three credits are obligatory under each category. The designer is free to choose the rest for what he or she thinks best suits each unique project. In order to achieve the minimum level of LEED certification, 40–49 points are needed. More points are required to meet higher levels of classification (i.e., 50–59 for Silver, 60–79 for Gold, and 80 or more for Platinum status) [69,70]. Although released in the US, GBC has been diffused worldwide over the years, and recently the World GBC has opened regional chapters in countries in Europe, Africa, America and Asia [64].

Despite the fact that LEED guidelines do not focus exclusively on aspects of the hospitality industry (e.g., food supply chain, socio-ethnic factors, etc.) [66], the certification system is still a popular means by which to discern properties according to sustainability criteria in an effort to eliminate subjectivity in labeling properties as “green” or “sustainable” [68,71,72].

LEED also does not oblige users to use a specific method of implementation of each credit; it offers points based on results which can be measured, not the method of point achievement [73]. This enables projects, which prioritize environmental issues, geographic limitations, or guest demographics differently to be assessed based on the same scale, making them comparable. LEED is a certified documentation process, without a physical inspection, which makes implementation of units valid, reliable and verifiable for every project [66,72].

As mentioned above, the existing LEED certification scheme does not incorporate measures to assess sustainability of hotel structures explicitly. Furthermore, the existing measures do not account for the environmental, economic and sociocultural impacts (forming the ‘three-legged stool’ of sustainability) of the hotel structures.

Another important issue in understanding the LEED System is to highlight its advantages and disadvantages. Considering the advantages of LEED, include [74]:

- Providing high-priority standards that give green modelling acknowledgement,
- Providing a global program of being green,

On the other hand, the disadvantages of LEED include:

- LEED does not identify innovation of building,
- LEED is a time-consuming operation,
- LEED does not take into consideration efficiency and conditions of the building,
- LEED does not include the sociocultural and economic aspects of sustainable hotels.

While the LEED certification is not perfect (e.g., it does not include sociocultural and economic dimensions), it was selected given its wide acceptance and application. This is largely due to the systematic approach toward assigning points based on individual indicators. With knowledge that the LEED has room for modification, through its application in a localized context, our work will highlight where it can be improved. Table 2 also provides further justification for the selection of LEED, relative to other certifications and key criteria considered.

3. Method

This research focuses on two main goals. The initial goal is to develop a model (SHBM) that attempts to provide more sustainable hotels within Northern Cyprus. This model aims at providing guidelines for large and small sustainable hotels. The proposed model is based on primary dimensions of sustainability, namely environmental, sociocultural and economic. Based on this, several certification programs related to sustainable buildings were analyzed and among them, the certificate for Leadership in Energy and Environmental Design (LEED) was adopted for this research. However, it is necessary to mention that LEED does not include sociocultural and economic dimensions of sustainable hotel. Furthermore, these two dimensions, sociocultural and economic are among primary issues surrounding sustainable tourism development in Northern Cyprus. Another important issue that led to the adaptation of the LEED certificate was the associations and experience of the authors of this research—two of whom are LEED certified, having implemented LEED standards in numerous previous projects.

The first of which was to identify key factors of hotels (from among six selected) throughout Northern Cyprus that address hotel size, type, location, local employment, local investment and local ownership, knowledge and education of staff—all of which are considered to influence sustainability. This was undertaken through qualitative interviews. However, considering the unique characteristic of Northern Cyprus, it is important to explain how we select hotels and the reason behind this selection. The promising economic sector unfortunately does not embrace sustainable development within Northern Cyprus. Large-scale seaside hotels with foreign investments, large percentages of foreign employees, and imported products stand counter to sustainability and sustainable development in Northern Cyprus. Solutions to these problems can be seen in small-scale hotels, which will be owned and operated by local families. So as to aid in the development of the SHBM, we intentionally considered two groups of hotels to analyze the existing conditions: one comprising three of the most popular five-star large scale hotels and three small scale hotels (with an equivalent five-star classification).

The second goal involved proposing a set of indicators (based on the qualitative interview data), which would allow for the measurement of hotel building sustainability, considering the LEED certification guidelines. The aim of the present study is to develop a model that attempts to provide more sustainable hotels within Northern Cyprus. As such, the model aims at providing guidelines for large and small sustainable hotels.

Table 2. Comparisons of criteria among green hotel certification programs.

Criteria	Certification Programs									
	LEED	Casbee	Breeam	Green Star	Eco-Label	Green Key	Green Hotel	Green Tourism Business Scheme	Green Mark	GTSC
	United States	Japanese	United Kingdom	Australia	European	Canada	China	United Kingdom	Taiwan	United States
Transportation	√		√	√	√	-	√	√	√	√
Sustainable Sites	√		-	-	-		-	-	-	√
Water Efficiency	√		√	√	√	√	√	√	√	√
Energy and Atmosphere	√		√	√	√	√	√	√	√	√
Materials and Resources	√		√	√	√	√	-	-	-	√
Waste	√		√		√	√	√	√	√	√
Indoor Environmental Quality	√			√	√		√	√	√	-
Land Use and Ecology	√		√	√	-	-	-	-	-	-
Social Involvement and Communication	-		-	√	-	-	√	√	-	√

Source: Drawn by Author (2017).

3.1. Face-to-Face In-Depth Interviews

To achieve the first goal, we employed qualitative methods by conducting face-to-face, in-depth interviews with owners, managers and staff of different departments of the six hotels (i.e., classification and type) with various sizes (i.e., classified by bed capacity and room number). Then, in-depth interviews were conducted with the staff of different departments of the Tourism and Environmental Ministry of Northern Cyprus, in order to define the number of tourists and existing conditions of the hotels, considering environmental, economic and sociocultural aspects. All interview questions were open-ended, developed based on the literature, authors' experience and observations. Each group of participants received the same questions.

The core questions included in the interview guide were whether participants agreed or disagreed that: (1) size of a hotel (e.g., number of room, bed capacity, number of employees); (2) type of a hotel (e.g., classification); (3) number of tourists received by a hotel; (4) income of a hotel; (5) local ownership of a hotel; and (6) employment of local residents by a hotel each affects the sustainability of hotels in Northern Cyprus.

At the beginning of each interview, respondents were informed about the purpose of the research and provided with a definition of "sustainability" according to the World Tourism Organization (UNWTO). Interviews were conducted according to the methods designed by Pop and Borza [75], Brinkman and Kvale [76] and were carried out between 2015 and 2017. Each interview lasted approximately one hour on average, depending on respondents' availability of time. The respondents were from six different hotels (either part of the ownership or general management) as well as the Department of Ministry of Tourism (architects, civil engineers, or general staffers). Great care was taken to ensure that members of the sample served their organizations in numerous capacities, had diverse backgrounds, and represented each gender. Such an approach was to allow for a greater likelihood of varied responses. Altogether, 18 respondents were interviewed (see Table 3). Each interview was tape-recorded and transcribed immediately thereafter.

Table 3. The profile of respondents.

Respondent's Code	Respondent's Affiliation	Location/Site	Respondent's Gender
R#1.	Architect	Ministry of tourism	M
R#2.	Architect	Ministry of tourism	F
R#3.	Civil engineer	Ministry of tourism	M
R#4.	General manager	Hotel 1	M
R#5.	General manager	Hotel 2	M
R#6.	General manager	Hotel 3	M
R#7.	General manager	Hotel 4	M
R#8.	General manager	Hotel 5	M
R#9.	General manager	Hotel 6	M
R#10.	Ownership	Hotel 1	F
R#11.	Ownership	Hotel 2	M
R#12.	Ownership	Hotel 3	F
R#13.	Ownership	Hotel 4	M
R#14.	Ownership	Hotel 5	M
R#15.	Ownership	Hotel 6	M
R#16.	Staff	Ministry of tourism	F
R#17.	Staff	Ministry of tourism	F
R#18.	Staff	Ministry of tourism	F

Qualitative content analysis in the form of 'discourse analysis' was employed [77,78]. These new criteria (in addition to those presented in Appendix A) served as the missing indicators of hotel sustainability according to the localised criteria within the LEED certificate (see Table 4).

Table 4. Environmental, Sociocultural, Economic indicators.

	Categories	Sustainable Hotel Buildings Indicators
Common indicators (LEED certificate)	Environmental impact	Location and Transportation
		Sustainable Sites
		Water Efficiency
		Energy and Atmosphere
		Materials and Resources
		Indoor Environmental Quality
	Economic Impact	Economic Benefits of Hotels for Local People and Tourist
Newly defined indicators (localized criteria)	Sociocultural impact	Employment
		Education
		Social Effects of Hotels on Local Community
		Safety
		Socio-Cultural Exchange in Building Design and Community

3.2. Assessing Sustainability Based on LEED Certification

For the second goal, a quantitative research approach was utilized, which was based on the LEED certificate (see Appendix A). Presently, little research has been undertaken that has examined the application of sustainable design instructions, such as LEED [66], despite the fact that many experts and people who are involved in this industry believe that this particular field of research is essential for developing sustainability [79]. This study acknowledges the fact that the LEED certificate method cannot cover all the dimensions of sustainability in Northern Cyprus. Therefore, to achieve the goal of this work we first examined the same six hotels based on the LEED method to determine the degree of sustainability of each hotel based on the items from. Such an approach allowed us to assess how each of the hotels were meeting the existing environmental aspects through the various items comprising the six LEED indicators.

As mentioned in the literature review, the LEED credits rating system has a minimum value of 1 point and each system has a base of 100 points. In addition, if there is “Innovation in Design” and “Regional Priority” credits, there is up to 10 bonus points [80]. For this approach, each theme was supported by “Yes”, “No”, “Maybe” and the rating system according to the indicators applied by “one” or “zero” points.

Following this, we measured the six hotels according to indicators which were developed based on the economic and sociocultural impacts (from the qualitative portion of the study) (see Table 4). Thus, an indicator for large and small-scale hotels was developed considering environmental economic and sociocultural factors according to the mixed methods research approach (see Table 4). Additionally, in this work according to the number of items, we have 58 points for the localized criteria. Moreover, the levels of sustainability points for the SHBM by following a localized criteria method and newly defined indicators are certified (28–35 points); Silver (36–42 points); Gold (43–50 points) and Platinum (59–69 points).

Finally, according to the results of the data collection and analyses, a sustainable hotel building model (SHBM) was developed, which was adjusted to the characteristics of the localise area in order to measure the sustainability of both large- and small-scale hotels.

4. Case Study

Northern Cyprus, comprising approximately 50% of the landmass of Cyprus, has traditionally served as a tourist destination given its pleasant climate, ancient historical monuments, beautiful landscapes and geographic proximity to many neighbouring countries. Despite undergoing numerous land disputes over the last half century, in the 1980s, the Mediterranean destination began to focus efforts on tourism as a primary means for economic growth (see Figure 1) [15].

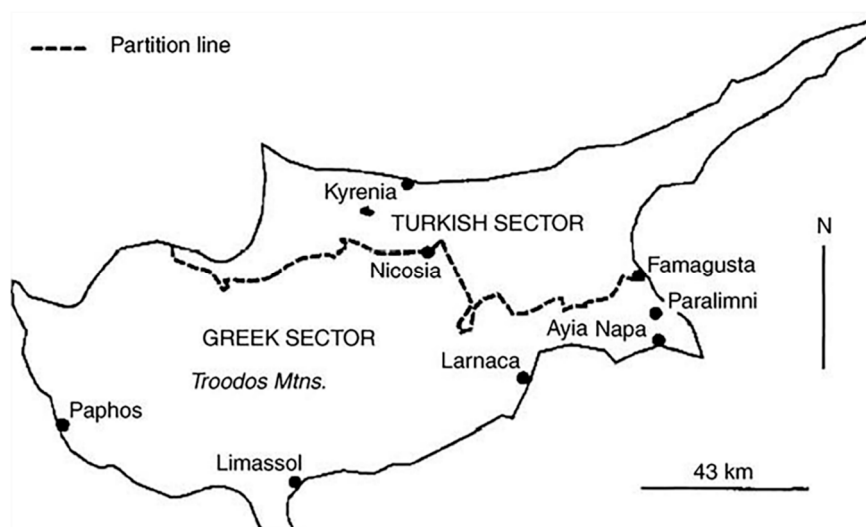


Figure 1. Map of Cyprus. Source: This map is taken from [81].

Northern Cyprus attracts various types of visitors, including traditional family travellers on holidays, young adults in search of advanced degrees at colleges and universities, and skilled labourers in pursuit of employment. Consequently, the island as of late has struggled in contributing to the needs of those travellers in pursuit of sustainable tourism. Like numerous other islands, Northern Cyprus has limited natural resources with a very small domestic market [82]. Hotels on the island have experienced several problems relating to tourism, namely seasonality, low occupancy rates, public transportation issues, high prices of hotel rooms, lack of decent hospitality and skilled personnel, lack of sufficient facilities and services, and low service quality [12,83].

According to statistics of the Ministry of Tourism of Northern Cyprus (2017), the major component of the tourism sector is accommodations, with 136 places that provide lodging opportunities (e.g., hotels, motels and holiday villages) for tourists, totaling 20,337 beds. Additionally, various quality hotels exist throughout Northern Cyprus, which include boutique hotels, special class, class TK, tourist bungalow, apartment hotel, regional house, tourist hostel, Classification T, indoor facility with all facilities and a great number of small-sized bars, cafes, restaurants and gift shops run by families. In this research, six different hotels throughout Northern Cyprus were used as case studies to determine the extent to which they are sustainable. Considering the SHBM, each hotel was different in terms of size, location, and facilities (see Table 5).

Table 5. Features of hotel buildings in Northern Cyprus.

Hotel Company	Classification	Year of Construction	Location	Capacity Bed Capacity	Nationality of Ownership	Total Area
H ₁	Five stars	2007	Bafra–Iskle	1484	Turkish	40,000 m ²
H ₂	Five stars	2011	Bafra–Iskle	1232	Turkish	63,400 m ²
H ₃	Four stars	Before 1974	Famagusta	850	Turkish	65,000 m ²
H ₄	Four stars	Before 1974	Kyrenia	32	Turkish	3000 m ²
H ₅	Three stars	2014	Zeytinlik, Kyrenia	36	Turkish Cypriot	1600 m ²
H ₆	Three stars	2006	Kyrenia	42	Turkish	4555 m ²

5. Results and Discussion

It is not unheard of for hotels to be sustainable, engaging in green practices while providing profits for owners and shareholders. As such, sustainability should also encompass sociocultural awareness and sensitivity to local community needs in areas such as Northern Cyprus. An important condition in

almost every green certificate plan is that hotel organizations need to contribute to and play an active role in the local community, or take charitable measures both in the local area and overseas [84].

However, throughout the world, most hotels are small or medium-sized, owned by local entrepreneurs, run by families, and primarily comprised of local residents (in the way of employees) [85]. Therefore, based on the analytic results of the interviews with staff of the Ministry of Tourism and Environment of Northern Cyprus, during the wintertime, most of the larger hotels are filled with tourists while the smaller ones are empty due to less facilities, less knowledge, lack of decent transportation, etc.

Moreover, the results of the interviews with hotel stakeholders indicated that most of the hotel companies and the respondents agree with the localise criteria considering the sociocultural impacts of the hotel on the local communities (see Table 6). Moreover, such stakeholders expressed that considering such sociocultural aspects can actually foster new opportunities for local employment, local investment, local business development, etc.

Table 6. Interview results among hotel stakeholders.

Categories	Hotel Company *											
	Agree						Disagree					
	H ₁	H ₂	H ₃	H ₄	H ₅	H ₆	H ₁	H ₂	H ₃	H ₄	H ₅	H ₆
Size of a hotel	✓		✓	✓	✓	✓		✓				
Classification	✓	✓	✓		✓					✓		✓
Number of tourists	✓	✓	✓	✓		✓						
Income of a hotel	✓	✓	✓	✓	✓	✓						
Local ownership			✓	✓	✓	✓	✓	✓				
Employ locals				✓	✓	✓	✓	✓	✓			

Note: * H₁ and H₂ are five-star hotels; H₃ and H₄ are four-star hotels; H₅ and H₆ are three-star hotels.

In addition, staffers expressed that such occupancy disparities are primarily due to the fact that larger hotels adjacent to city centres (especially in the historical and suburban areas) provide many local businesses and opportunities for tourism.

Prior to developing the SHBM, a compilation of some of the most well-known green certificates worldwide was formulated. The most commonly used indicators are presented across each certificate. The energy, water, and waste dimensions are the most commonly used criteria in various green hotel certification programs. Therefore, as seen in Table 2, the LEED method covered most of the global indicators for measuring the sustainability of buildings in question. Furthermore, according to the results derived from the interviews and the literature, six new indicators were defined and added to the LEED Certificate guidelines, which are primarily related to local conditions. As a result, for measuring the indicators, three options are possible: ‘applied’, ‘applicable’, and ‘not applied’.

As shown in Table 7, two impacts (i.e., sociocultural and economic) are mentioned which are the newly defined indicators to measure the localised criteria. Each category of indicators has items in order to find the sustainability of hotels by applying these items to the hotels and as we mentioned above, the rating system followed the LEED method.

Moreover, for measuring the sustainability of hotel buildings, we considered these options in order to find the percentage of sustainability of large and small-scale hotels. Our proposed rating system is quite similar to that used within the LEED certificate, which is based on a minimum value of 1 point, each system having a base of 100 points [73].

Thus, in this work (as mentioned prior), we initially measured the sustainability of hotels following the existing LEED method and then, with newly defined indicators, (see Table 7) we examined the sustainability of large- and small-scale hotels and compared the measurement results so as to provide a more robust gauge of sustainability.

The results of hotel buildings measurement, which were based on LEED certification (see Table 8), indicate that large-scale hotels can be more sustainable than small-scale hotels in terms of environmental aspects. In addition, each of the column of Table 8 shows the level of sustainability for each hotel considering the environmental indicators in Table 7 and the credit score was out of 37 for each hotel.

Moreover, results in Table 9 portray how sustainable each hotel was in terms of sociocultural and economic measures. The potential score was out of 21 for each hotel. Contrary to Table 8, the following indicates that small-scale hotels can be more sustainable in terms of sociocultural and economic aspects.

Thus, those hotels according to the goals of sustainability and the result of measurement cannot be suitable and sustainable for Northern Cyprus conditions; only the large scale hotels are sustainable when considering the environmental aspect, just as the small scale hotels are sustainable only when considering the sociocultural aspects (per the localise criteria method). Table 10 shows the level of sustainability according to total credit of each criteria of indicators, and the total credits, in effect, reflect the level of sustainability of hotel buildings according to newly defined indicators (localised criteria). Therefore, considering the LEED method, large scale hotel can be more sustainable from an environmental aspect but still cannot be certified and the same holds for localised criteria. Additionally, small scale hotels can be more sustainable but not certified by total newly defined indicators credit and need to develop and improve the sustainability of hotels according to all criteria (localise and environmental).

Subsequently, the six hotels were compared in terms of environmental and sociocultural aspects and the level of sustainability of each hotel is illustrated in Figure 2.

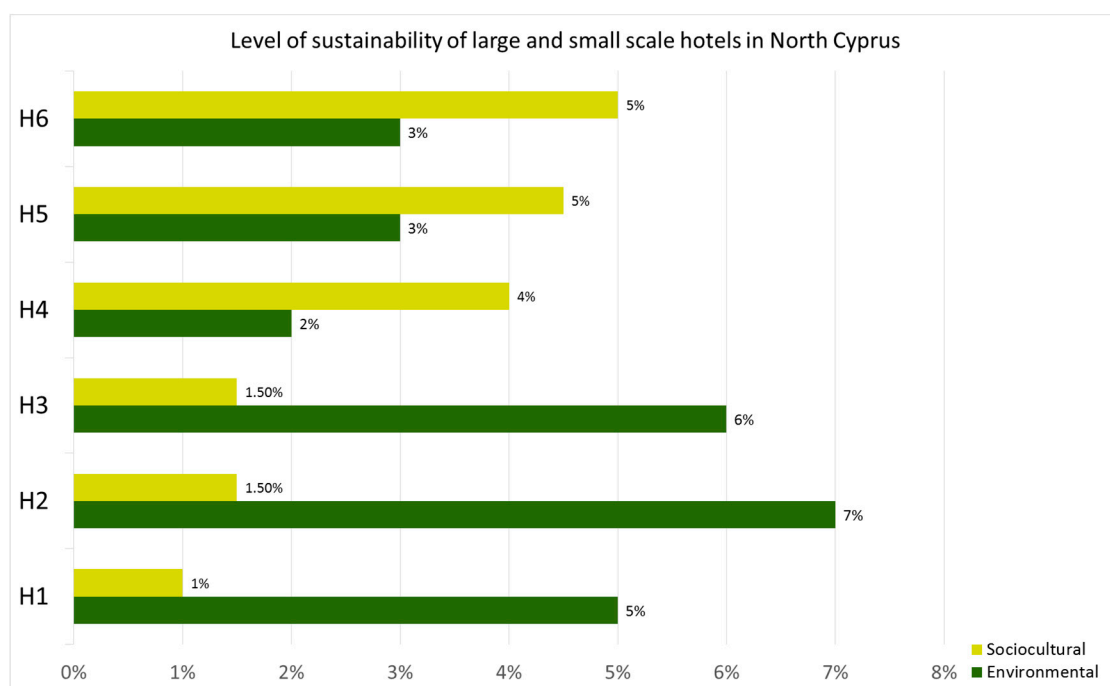


Figure 2. Level of sustainability of large and small-scale hotel building in Northern Cyprus according to environmental and sociocultural aspects.

Table 7. Localised criteria.

Categories	Sustainable Hotel Buildings Indicators	Applied	Applicable	Not Applied	Items
Economic impact	Economic benefits of hotels for local people and tourist				Rent of Hotel Rooms Rate of Energy, Water Consumption Rate of Investment Budget of Construction Economic Responsibility Local Investment Percentage of Revenues Generated by Tourism in the Community Improve the Economic Conditions
Sociocultural impact	Employment				Local employment Local business (ownership)
	Education				Skill of building Skill of staff Skill of local workforce
	Social Effects of hotels on local community				Level of tourist satisfaction from the hotels building Increased number of visitors in the historical area Increased number of lodging facilities (e.g., hotels, guest house)
	Safety				Level of safety in the community Level of safety in the hotel buildings
	Socio-Cultural Exchange in building design and community				Impact of culture and society in the hotel design Increased number of events in the hotels Provide local services in the hotel

Table 8. Measurement of the hotel building result according to LEED certificate.

Items	H ₁			H ₂			H ₃			H ₄			H ₅			H ₆		
	Applied	Applicable	Not Applied	Applied	Applicable	Not Applied	Applied	Applicable	Not Applied	Applied	Applicable	Not Applied	Applied	Applicable	Not Applied	Applied	Applicable	Not Applied
Location and Transportation	3	1	2	3	1	2	4	2	0	1	4	1	2	3	1	2	0	4
Sustainable Sites	3	2	1	3	1	2	2	1	3	1	2	3	1	2	3	1	2	3
Water Efficiency	2	2	0	3	0	1	3	1	0	0	0	4	0	2	2	0	3	1
Energy and Atmosphere	2	3	2	2	2	3	4	2	1	2	1	4	3	1	3	1	1	5
Materials and Loss of Renewable Resources	2	1	2	3	1	1	1	4	0	1	0	4	1	2	2	1	2	2
Indoor Environmental Quality	2	5	2	5	3	1	3	3	3	1	4	4	1	2	6	3	1	5
Total	14	14	9	19	8	10	17	13	7	6	11	20	8	12	17	8	9	20

Table 9. Measurement of the hotel building result according to localized criteria.

Items	H ₁			H ₂			H ₃			H ₄			H ₅			H ₆		
	Applied	Applicable	Not Applied	Applied	Applicable	Not Applied	Applied	Applicable	Not Applied	Applied	Applicable	Not Applied	Applied	Applicable	Not Applied	Applied	Applicable	Not Applied
Economic benefits of hotels for local people and tourist	1	3	4	2	3	3	2	4	2	5	2	1	4	3	1	5	3	0
Employment	0	0	2	0	0	2	0	1	1	1	1	0	2	0	0	2	1	0
Education	1	0	2	1	1	1	1	2	0	1	2	0	1	2	0	2	1	0
Social Effects Of hotels On local Community	1	2	0	1	1	1	1	1	1	2	0	1	2	0	1	1	1	1
Safety	0	1	1	0	0	2	0	0	2	1	1	0	1	1	0	2	0	1
Socio-Cultural Exchange in building design and community	0	1	2	0	2	1	0	2	1	2	1	0	2	0	1	2	0	1
Total	3	7	11	4	7	10	4	10	7	12	7	2	12	6	3	14	6	3

Table 10. Large/small scale hotels measurement credit result, according to LEED and Localise criteria method.

Hotel Company	LEED Method	Localize Criteria Method	Total Credit	Level of Sustainability
H ₁	↑ 14	↓ 3	17	Not Certified
H ₂	↑ 19	↓ 4	23	Not Certified
H ₃	↑ 17	↓ 4	21	Not Certified
H ₄	↓ 6	↑ 12	18	Not Certified
H ₅	↓ 8	↑ 12	20	Not Certified
H ₆	↓ 8	↑ 14	22	Not Certified

6. A Model of a Hotel’s Sustainability

This article, based on the literature, data collected, and comparisons drawn across numerous hotels proposes an SHBM that can be used by hotel buildings to measure their sustainability (considering the case of Northern Cyprus) and make their hotels (whether large- or small-scale) more sustainable. Consequently, the model suggests considering six main areas in hotel buildings to be measured in order to determine sustainability of a hotel under consideration. These areas are categorized under environmental; economic and sociocultural aspects in keeping with [86] work involving such systems. Each system has various sustainability levels. Procedures adopted to create the SHBM intend to measure hotels’ sustainability performance as well as the extent to which a building supports and develops more sustainable systems in the environment it is located.

As Figure 3 reveals, the relationship between the three dimensions can affect the sustainability of large and small-scale hotels equally. However, the sustainability of hotels in terms of environmental, economic and sociocultural factors can be different. The following case study section demonstrates the sustainability of hotels according to these aspects of sustainability relationship.

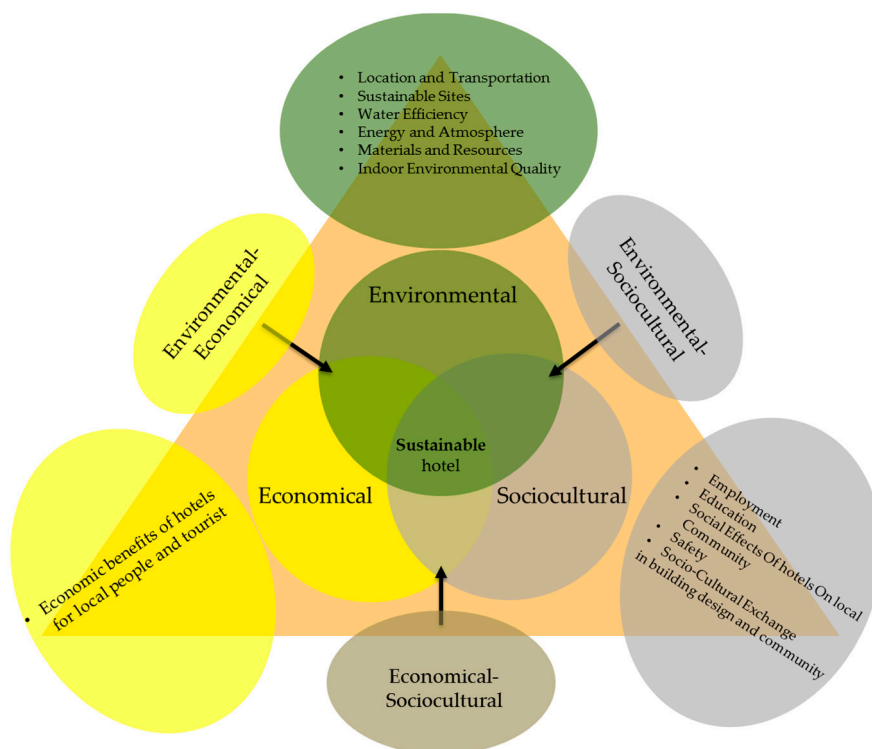


Figure 3. The relationship of environmental, economic and sociocultural aspects of a sustainable hotel.

Also, as Figure 4 shows, the conceptual model for large and small-scale hotels can be built in order to address and meet each sustainability dimension; however, as demonstrated in the results from our study, much improvement is needed within the context of hotels in Northern Cyprus to move towards this sustainability model.

Therefore, in the following model, environmental aspects for larger hotels to consider take the shape of location and transportation, sustainable sites, water efficiency, energy and atmosphere, etc. (many of which line up with the LEED certification scheme) and the sociocultural aspects (that smaller hotels should consider) line up with economic benefits of hotels for local people and tourists, employment, sociocultural exchange in building design and community, etc. (similar to the localised criteria).

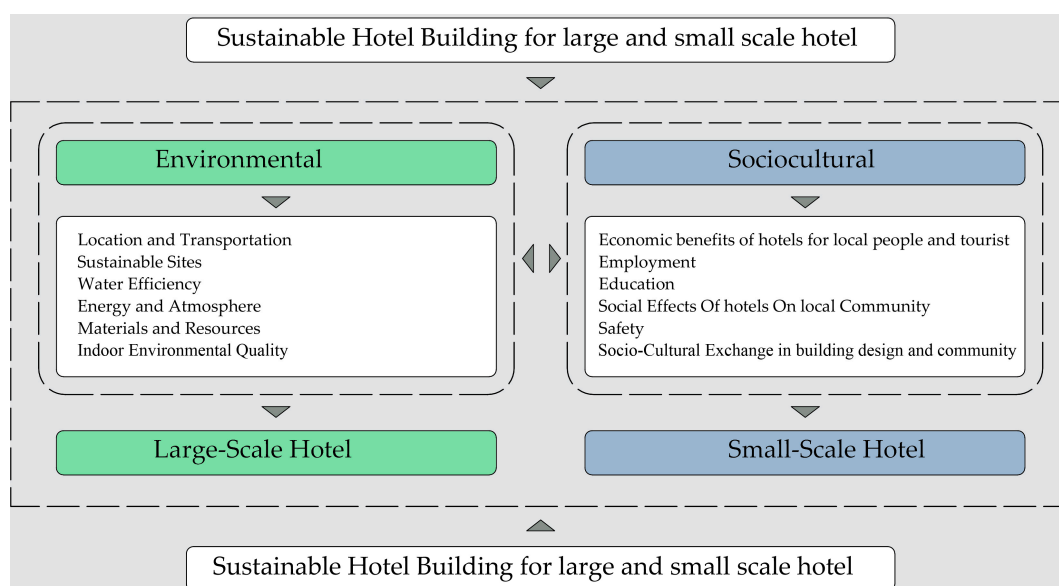


Figure 4. The conceptual model of sustainable large/small scale Hotel buildings.

Based on above-mentioned results and sustainable principles, this article proposes a sustainable hotel building model where main factors take the shape of environmental, economic, social/culture, architectural and technical dimensions of a sustainable hotel. The model also includes decision-making processes and sustainable hotel measurement in all decision-making stages considering the principles of sustainability (see Figure 5).

Based on the literature review, interview results, LEED certification indicators and developed localized criteria based on Northern Cyprus conditions, sustainable hotels must reconcile further dimensions and detail:

- **Environmental:** (environmental construction local materials, energy, waste, health, air quality, land use, buildings purposes matching exterior, re-introduction of local plant species in hotel gardens etc.);
- **Social:** (collaboration, local employment, local business, public awareness and education, social safety, etc.);
- **Economic:** (fair price, cost-efficient price and energy and water saving reliability, good service, etc.);
- **Cultural:** (behavioral standards, cultural heritage, etc.);
- **Architectural:** (aesthetics, comfort, decoration, etc.);
- **Technical:** (improved biological treatment plants and re-use of water for garden irrigation whenever possible; solar-heated water, up to 100% in some hotels; seawater is used in the swimming pools; the use of non-CFC fridges; flow regulators on all bathroom taps to reduce water wastage).

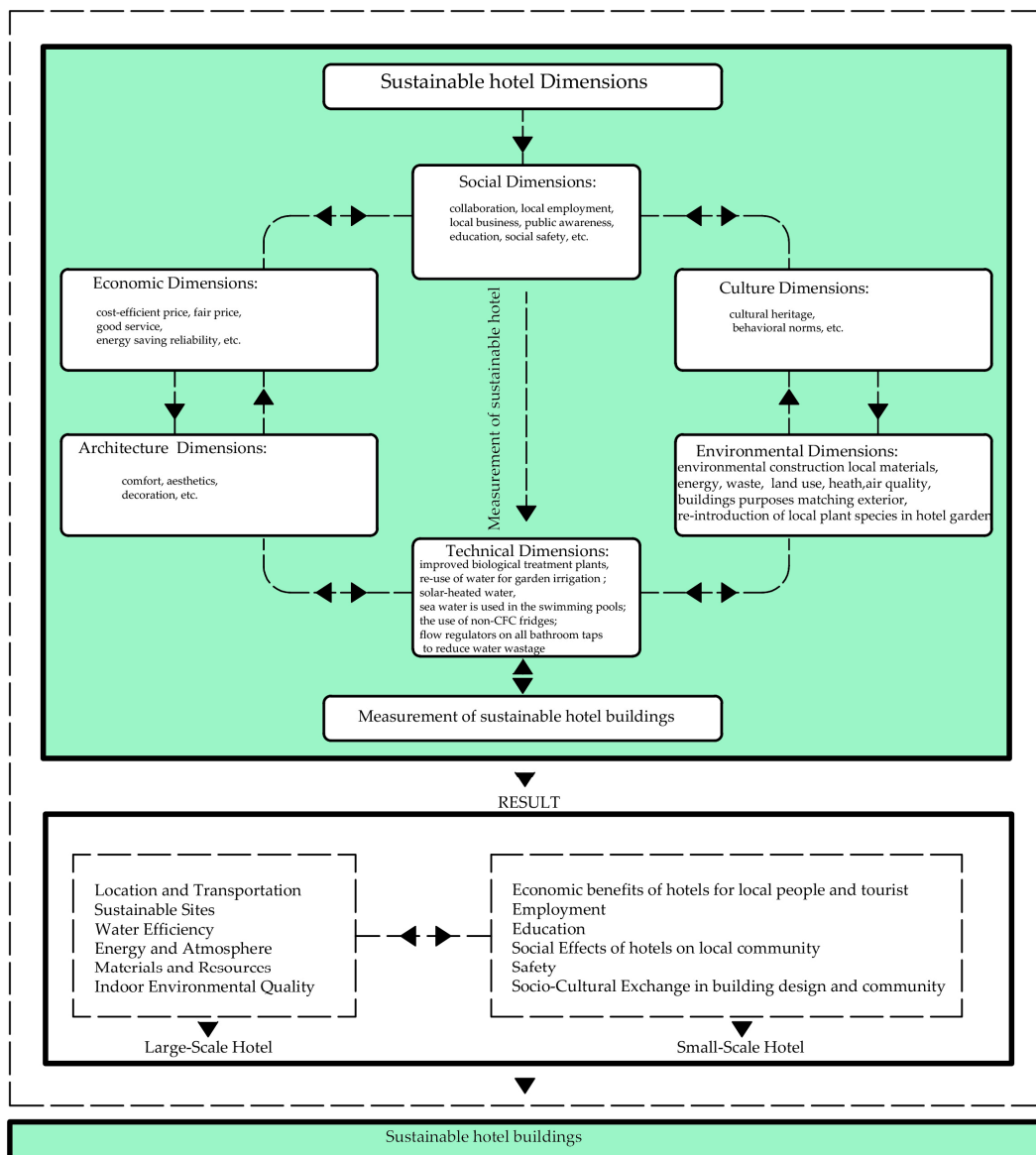


Figure 5. The conceptual model of sustainable hotel building in Northern Cyprus.

All the above-mentioned dimensions are closely related, complementing each other and influencing general sustainability of hotel efficiency. In other words, the use of innovative technologies in the sustainable hotel can provide environmental and economic needs or social/cultural, architectural and technical dimensions support social needs satisfaction. Based on results presented in Figure 5, the SHBM fits well within the Northern Cyprus context. Furthermore, noted characteristics for different hotels are presented within the SHBM necessary for achieving sustainability.

7. Conclusions

The purpose of this research was to identify a model for measuring the sustainability of hotels in Northern Cyprus, considering environmental, economic and sociocultural aspects. Such an effort was undertaken to determine more sustainable and suitable hotel scales for the existing conditions of Northern Cyprus. Such an area faces various problems of limited natural resources from the environmental point of view, limited employment opportunities for local people, high costs of investment and construction [12,15]; high rate of energy and water consumption in the hotel sector [81]; lack of economic responsibility, lack of construction skills and skilled hotel sector personnel.

A number of criticisms have been provided for assessment through a single dimension [64,87,88]. As a matter of the fact, just one criterion will generally not be able to evaluate and measure the complexity of sustainability. To get the large diffusion for multi-criterion systems, an uprising awareness related to externalities, risk and long-term effects have been considered. However, a lack of completeness exists in some of the available multi-criterion systems. For example, they primarily do not take into account the economic dimension of development which leads to prevention of the exact evaluation of the economic consequences of sustainable choices, leads to a great limit in rating systems of sustainability [65]. By ignoring the evaluation of the economic component, the rating system of sustainability opposes one of the development dimensions in allowing for sustainable choices, ultimately contributing to greater criticism [64].

As results demonstrate, sustainable hotels in the tourism industry can foster an increase in the social interaction within the region among local residents and visitors and potentially facilitate greater local ownership of hotels through the establishment of family-run businesses [20]. Furthermore, it could help to balance the economies of richer and poorer regions. However, since the LEED certificate or other green certificates do not consider all the items of sustainability in terms of localized criteria and the conditions of Northern Cyprus, the concept of SHBM was developed to compensate for the lack of sociocultural items in LEED certificate, and measure the sustainability of hotels.

Nevertheless, according to this research, it is believed that, in the future, the hotel sector is going to obtain a bigger share in the tourism industry development. Thus, the need exists for allocating more investment in the tourism industry, especially to help the economy and the local communities that suffer from poverty, economic problems, and unemployment.

Therefore, according to the results of the interviews, we measured the selected six hotels based on bed capacity and different classification and evaluated those hotels, firstly adopting LEED system and secondly using the localized criteria. The results obtained indicate that the large-scale hotels can be more sustainable in terms of environmental aspects, and on the other hand, the small-scale hotels can be more sustainable in terms of sociocultural aspects. However, the results of the data collection and analyses have shown that by measuring the hotel sustainability with LEED indicators as well as newly defined economic and sociocultural aspect cannot be satisfied. Therefore, for that reason according to literature and experts' opinions, this article has proposed a SHBM to cover all the dimensions of sustainability in order to suggest improvements for existing hotels in Northern Cyprus.

Thus, according to SHBM, which covers all the dimensions of environmental, social, cultural, architecture, technical and economic aspects, both small-large scale hotels can be sustainable considering all the items of SHBM. As the results of this study show, a sustainable hotel building can provide the following advantages with regard to different factors related to the regional life and local criteria.

- Developing new businesses (family-run businesses)
- Growing career opportunities
- Developing infrastructures
- Improving local economy
- Higher quality of life for the local people

In addition, through sustainable hotel buildings, we acknowledge the potential of Northern Cyprus to become a popular sustainable tourism destination, which is a valuable asset for the economy of the region. This can be done through a detailed, optimal plan based on a sustainable design approach.

However, the research limitations must be taken into account as well. For example, in addition to the impact aspects that have been recognized, there might be other influences that should be considered in measuring the sustainability of hotels. In addition, further research must be organized on some of the indicators presented above, to determine acceptable levels for these indicators, as they

cannot tend towards infinity (e.g., the number of local employees). Further research may explore a case study approach to consider discourse analysis of numerous forms of data (e.g., news articles, public records, etc.). Such research may provide a more robust examination of sustainability among hotels in Northern Cyprus. Moreover, future research should also emphasize the applied challenges of this model in assessing its reliability, validity and applied viability, after which means of improving the model might be recognized. Moreover, SHBM can be used in measuring sustainability of hotels in contexts outside of Northern Cyprus in order to equally consider all items defined by the principle of sustainability and cover the localized criteria.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. LEED certificate indicators and localize criteria indicators.

LEED Indicators	Items
Location and Transportation	Sensitive Land Protection High Priority Site Surrounding Density and Diverse Uses Access to Quality Transit Reduced Parking Footprint Green Vehicles
Sustainable Sites	Site Assessment Site Development - Protect or Restore Habitat Open Space Rainwater Management Heat Island Reduction Light Pollution Reduction
Water Efficiency	Outdoor Water Use Reduction Indoor Water Use Reduction Cooling Tower Water Use Water consumption (per tourist per bed, or per night)
Energy and Atmosphere	Enhanced Commissioning Optimize Energy Performance Advanced Energy Metering Demand Response Renewable Energy Production Enhanced Refrigerant Management Green Power and Carbon Offsets
Materials and Resources	Building Life-Cycle Impact Reduction Environmental Product Declarations Sourcing of Raw Materials Material Ingredients-Local Material Construction and Demolition Waste Management
Indoor Environmental Quality	Enhanced Indoor Air Quality Strategies Low-Emitting Materials Construction Indoor Air Quality Management Plan Indoor Air Quality Assessment Thermal Comfort Interior Lighting Daylight Quality Views Acoustic Performance

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