

Article

Sustainable Hotel Building Local Assessment Model: A Case of Northern Cyprus

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Abstract: Sustainable building design has grown in importance over the past three decades on every scale, from the global to the small, and in every industry, including the building and tourist sectors. While there are many different types of hotel buildings around the world to meet the demands of guests, their diverse existence can also benefit the local environment and communities through sustainable building design. Hotel buildings have the potential to influence and inspire global transmission of sustainable building methods and their advantages since they are built to attract guests and are reflective of the local culture. Thus, this research aims to build a model to assess the sustainability of hotel buildings as a flexible model according to the different regions' conditions and priorities. The primary method used in this study is to synthesize sustainable building evaluation criteria and various other sustainability measurement methods developed for buildings. The outcome of this model can be used to assess hotel buildings at the early stages of design, new construction, and amid existing building's renovations. This study further suggested adapting the model according to the local requirements and goals of a selected region after designing the assessment model as a globally applicable one. A mixed-method approach utilizing both qualitative and quantitative data methods was used in this article. The qualitative method was developed based on observation and interviews with different stakeholders, and the LEED certification was used as a platform for the quantitative method. With the assessment parameters model in mind, a localized version of the model was applied to one hotel building as a case study. Results indicate that the hotel building should be assessed using a localized rather than a global model to have a more sustainable hotel building in the selected area. The selected hotel was tested with the developed LEED model and the results show that the hotel, as an independent building, could be more sustainable in terms of environmental sustainability but that when the social and cultural indicators were applied from the localized model, the results indicate that the hotel would not be sustainable. Finally, this study revealed that the localized model could work over all the countries by considering each region's existing conditions. Subsequently, this model may help the tourism sector and hotel industries in selected contexts to benefit from sustainability in terms of environmental, socio-cultural, and economic aspects. In turn, these improvements help the local people in numerous ways to have a better quality of life.

Keywords: sustainability; measurement of sustainability; hotel building; sustainable tourism; local business



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1. Introduction

Currently, global warming and climate change imply ecological, political and social awareness. In addition, it is widely known that non-renewable resources are limited [1] and that many by-products that are treated as waste cause environmental pollution. As the population increases, all of the world's present unsustainable habits will only get worse. More consumption, carbon emissions, extinction of species, and pollution will be the results of more people living on the earth. [2]. Therefore, sustainability goals are becoming one of the most watched issues in the world, especially in countries suffering from the various problems associated with unsustainable practices. Sustainability has become increasingly

relevant in the last three decades in every economic sector, including the tourism industries and construction [3].

In most developed countries, sustainable buildings have developed, and different methods have been employed globally to achieve sustainable buildings [4]. More broadly, there are several sustainability criteria for hotel buildings in various regions of the world [5]. However, categorizing and localizing sustainable approaches to design structures region by region is important. Also accruing are the many methods and certification processes developed as tools to measure the level of sustainability of buildings around the world. Meanwhile, the number of certificates continues to grow and the number of buildings certified worldwide has exponentially increased from just a few at the end of the 20th century to many thousands today [6–8]. Certifications are crucial in enhancing sustainability assessment tools by disseminating information among stakeholders, streamlining communications, and including sustainability considerations early in the planning process [6,9].

In addition, the standards and criteria defined by these tools can guide the architect in designing sustainable buildings from the early stages. Unfortunately, most of these tools for measuring sustainability do not measure all dimensions of sustainability; social-cultural aspects, in particular, are often lacking, though they have a significant role in improving the quality of life in a community. Therefore, this study of sustainable building design, focuses especially on hotels as they are one of the main components in the development of the tourism sector and they play an important role in attracting tourists, which contributes to local prosperity. Sustainable hotel structures will be the starting point for overcoming the various socio-cultural, environmental, and economic concerns that have negatively affected the local economy [10].

In addition, because tourism plays a very pivotal role in the economy of many regions, it is possible to support the local community by creating new job opportunities in the sector through local investment, encouraging cultural awareness, reducing inflation and lowering hotel prices in order to attract and host more visitors [11].

Also, previous studies [12,13] have mentioned that tourism greatly contributes to the growth of a host country's national income, outside of the aforementioned routes and through its beneficial impacts on poverty, foreign direct investment, tax revenue, employment, and the external balance. By transferring wealth and income from advantaged and developed countries to impoverished developing and least developed countries, tourist revenues in particular help to eliminate poverty. This results in more work options, improved human capital [12,14], involvement in economic activities, and ultimately a decrease in poverty and a rise in income. In addition, growth of the real exchange rates [15] political insecurity [16], corruption [17], and health quality [12] are influential in determining tourism development.

Similarly, in terms of environmental issues, sustainable hotels can play an important role by offering low prices, optimizing energy consumption, reducing water consumption and increasing energy efficiency [18]. The development of a new approach for assessing the sustainability of hotel buildings—one that includes consideration of local environmental, socio-cultural, and economic factors—needs the use of tried-and-true sources of information. Interestingly, a substantial number of hotel buildings in developed countries have begun to promote sustainability and environmentally friendliness by applying for the relevant certifications. As a result, a variety of assessment procedures for evaluating building sustainability and certifying their green movements have been developed at the local, regional, and global levels [19].

The concept of hotel sustainability began in the 1960s, with a focus on the environmental and social issues that developed as a result of an increase in hotel activity and development [20]. Since that time, the concept of sustainable hotels has evolved, and currently, a sustainable hotel is defined as a facility that, in its design and operations, considers the socio-cultural, environmental, and economic dimensions of the host community [21]. Sustainable hotels provide high-quality services through their environmentally friendly facilities (e.g., Leadership in Energy and Environmental Design (LEED) certification stan-

dards), by optimizing energy and resource consumption (e.g., using renewable energy and recycled water to water their green areas), and by using locally produced goods, by recycling, and by minimizing waste production [22]. These sustainable practices may lead to lower operating expenses [23].

'Green' refers to the concept of sustainability and environmental friendliness, and using a 'green' approach can result in a significant brand value and, as a result, higher long-term profitability [24]. Such hotels can attract a large number of customers who appreciate the environment for future generations through various advertisements and marketing of the notion of sustainability [25]; around 90% of hotel guests express a preference for staying at sustainably-managed hotels [26]. The hospitality industry has become more competitive as a result of tourists' environmental concerns and awareness of the need for environmental protection and preservation [27].

Sustainable principles could help a hotel building achieve a competitive advantage [28] so long as the idea of green and greenness attracts a lot of travelers. In [29] non-green hotels are expected to become outdated in the near future. Once sustainable hotel features become common across the board, they may continue to be significant factors in enhancing customer satisfaction [30], however, such characteristics will benefit the host community in terms of environmental, economic, and socio-cultural aspects.

Consequently, the purpose of this study is to develop an assessment model according to local conditions. This model can help the tourism sector to design sustainable hotel buildings. Hotels are one of the key elements in the growth of the tourism industry and they are important in attracting visitors who benefit local economies, especially in Northern Cyprus. The aim of this study is to discover the main indicators for developing a localized criteria assessment model to measure the sustainability of hotel buildings and investigate how the hotel building can be made more sustainable according to the local conditions of Northern Cyprus. The assessment model offers decision makers guidelines and approaches for increasing sustainability in hotels. With regard to environmental, sociocultural, and economic factors, this model subsequently helps the tourism sector and the hotel industry of the chosen context. The locals benefit greatly from these enhancements in terms of their quality of life.

To achieve these goals and objectives, this study first developed a global assessment model for sustainable hotel buildings and then localized the model to assess the sustainability of hotel buildings based on the local conditions and priorities of the chosen area. The model will consider all the parameters of sustainability by why this sector may benefit the local community, a community which might suffer from a weak economy, unemployment or many other socio-cultural issues.

Thus, a mixed-method research method has been used by many social and health researchers worldwide in order to have a better comprehension of the research concerns [31]. To obtain a more complete understanding, mixed-method research uses both qualitative and quantitative methods of data collection [32]. The combination of quantitative and qualitative research methods is chosen since neither approach by itself can properly clarify the patterns and specifics of a situation. A mixed-methods approach was used in this study to acquire a complete grasp of the problem raised. The qualitative portion looked into hotel building sustainability challenges using observations, interviews, and documentation. Additionally, the quantitative approach applied the LEED certification system and added the model's omitted socio-cultural characteristics.

Based on these primary steps, several sustainable measurement methods related to sustainable buildings were analyzed, and among them, the Leadership in Energy and Environmental Design (LEED) method was adopted for this research. Table 1 shows all the global certificates studied in this research with their criteria and evaluation approaches. Thus, the LEED method was selected because it is the most widely used method and can be applied globally.

Table 1. Characterization of a comparison of global sustainability assessment methods' criteria.

Indicators	Global Sustainability Assessment														
	LEED	BREEAM	CASBEE	GB Tool	Green Star	ECO-LABEL	Green Key	Green Hotel	Green Tourism Business Scheme	Green Mark	GTSC	HQE	VERDE	BCA	HK-BEAM
	United States	United Kingdom	Japan	United States	Australia	European	Canada	China	United Kingdom	Taiwan	United States	France	Spain	Singapore	Hong Kong
Transportation	•	•	-	•	•	-	-	-	-	-	-	-	-	-	•
Sustainable Sites	•	-	-	-	•	•	-	•	•	•	•	-	-	-	-
Water Efficiency	•	•	-	•	•	-	-	-	-	-	•	-	-	-	-
Energy and Atmosphere	•	•	•	•	•	•	•	•	•	•	•	-	-	•	•
Materials and Resources	•	•	•	•	•	•	•	•	•	•	•	•	-	•	-
Waste	•	•	-	-	•	•	•	•	-	-	-	-	-	-	-
Indoor Environmental Quality	•	-	•	•	•	-	•	•	•	•	•	-	-	•	•
Land Use and Ecology	•	•	-	•	•	•	•	-	•	•	•	-	-	-	•
Construction	•	-	-	•	-	•	-	-	-	-	-	•	•	•	-
Design & Operation Phase	•	-	-	-	-	•	-	-	•	•	-	•	•	•	-
Hygiene, Health, Comfort	-	-	-	-	-	-	-	-	-	-	-	-	-	-	•
Social Involvement & Communication	-	-	-	•	-	-	-	-	-	-	-	-	-	-	-

The socio-cultural and economic aspects, which are crucial components for the particular circumstances in Northern Cyprus, are not covered by LEED. The development of a good quality of life for the local community and the development of sustainable tourism are both impacted by these factors since they open up new options for employment, finances, and other factors. The choice of the case hotel, which addresses economic sustainability, reflects the goals of this study by taking into account the characteristics of Northern Cyprus. Large hotels with foreign investment, a high percentage of foreign workers, and a reliance on imported goods and services are a few of the key obstacles to local economic viability and sustainable growth in Northern Cyprus. By providing sustainable hotel structures, one can start to address these issues.

The localized model was examined and tested using only one type of hotel building. The selection criteria were derived from those in the literature review, which were also used to assess the hotel building's sustainability in accordance with LEED certification requirements. The final step in the development of the localized model was to refer to the necessary local criteria and rules for sustainable hotel buildings in order to identify the characteristics of the most suitable sustainable hotel building for Northern Cyprus.

As indicated in Figure 1, there are three steps in the study that are required to achieve the research question, goal, and objective. The first step was to obtain theoretical background data on sustainability and sustainable hotels. Secondly, since there was not enough recorded data, written documentation, or study on these topics, in-person interviews were employed to collect data. The third step used the LEED method as the basis for the assessment of the developed model.

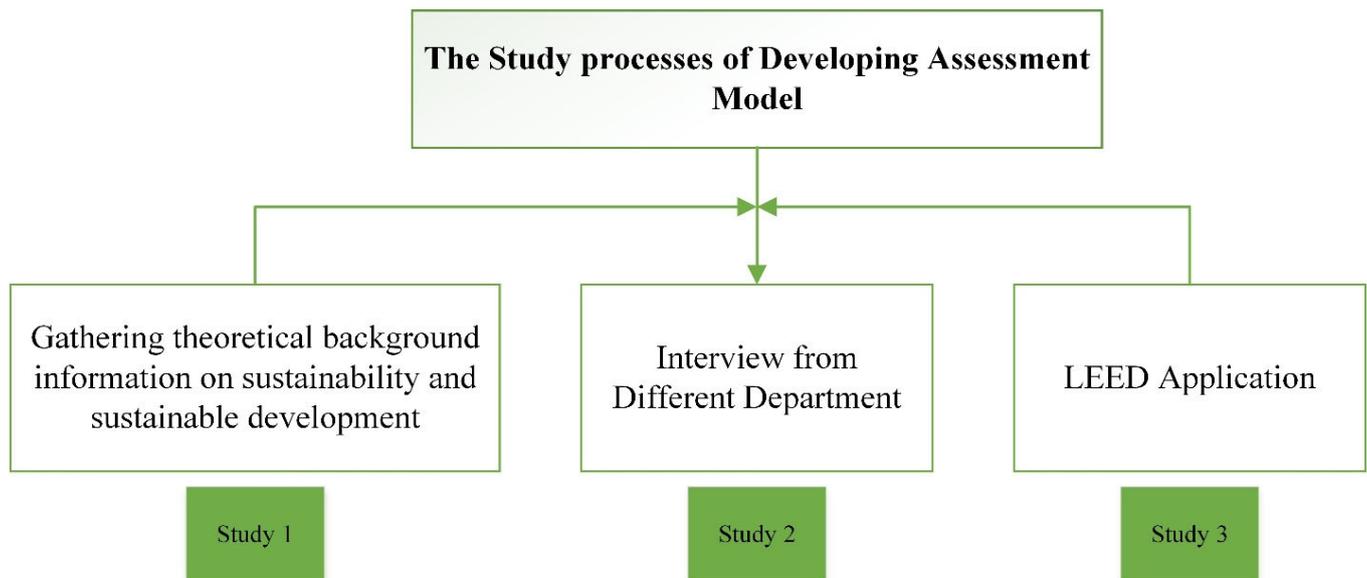


Figure 1. Developing the assessment model study processes.

2. Assessment Model Development Process

Gathering theoretical background information on sustainability and sustainable development was the first step in constructing an assessment model for sustainable hotel buildings. It proceeded to identify sustainability indicators and principles, as well as sustainable tourism criteria, before measuring globally applicable sustainability approaches. All of this was conducted in order to fully understand indicators of sustainability goals and objectives in order to offer first a new global assessment model, and then a localized assessment model that is responsive to the local conditions and priorities of any chosen region.

The sustainability indicators utilized in this study for the quantitative method are based on the Leadership in Energy and Environmental Design (LEED) Green Building Rating System. LEED certification was founded by the US Green Building Council in 2002 as a method to guide and identify sustainable structures based on a set of criteria [33]. Five main certification categories under LEED exist LEED for Homes, LEED for Neighborhood Development, LEED for Building Operations and Maintenance, and LEED for Building Design and Construction [6,8,34].

The method covers new and existing structures, current structural operations, interiors and exteriors, and neighborhood enhancements. Although the LEED checklist is user-friendly, it is constructed based on a complex system of technical, legal, and regulatory standards [35].

Since 2009, credits have been assigned based on environmental implications as well as potential human benefits. Credits in the LEED rating system have a minimum value of one point, and each system has a 100-point foundation. There are also 10 extra points if there are “Innovation in Design” and “Regional Priority” credits. Several evaluating parties examine several criteria for a total score that determines a project’s sustainability as either Certified (40–49 points), Silver (50–59 points), Gold (60–79 points), or Platinum (80–79 points) (80 points and above) [6,34,36–38] Sustainable Sites (SS), Energy and Atmosphere (EA), Water Efficiency (WE), Indoor Environment Quality (IEQ), Material and Resources (MR), and Innovation are the six areas that receive points (INNO). Energy-related credits (EA) dominate among these categories, accounting for over 30% of the certification score overall [39–41]. As a result, a high EA category score typically corresponds to a higher LEED certificate level [8,42]. Additionally, using this strategy, each subject was accompanied by the words “Yes”, “No”, and “Maybe”, as well as a point system for grading the indications that were used, either “one” or “zero” [29].

Therefore, the LEED certification was chosen because it addresses the most essential environmental aspects and appears to be a more frequently used and popular method of assessing a building's environmental sustainability. As a result, its widely used indicators for energy, water, and waste were combined with socio-cultural elements and other indicators obtained from other sources to compensate for the wide range of regional conditions.

Another critical aspect of comprehending the LEED system is identifying its benefits and weaknesses. The benefits of LEED include [38,43]:

1. Establishing high-priority criteria that give green modelling acknowledgement,
2. Establishing a global greening program

On the other hand, there are certain weaknesses of LEED, which include:

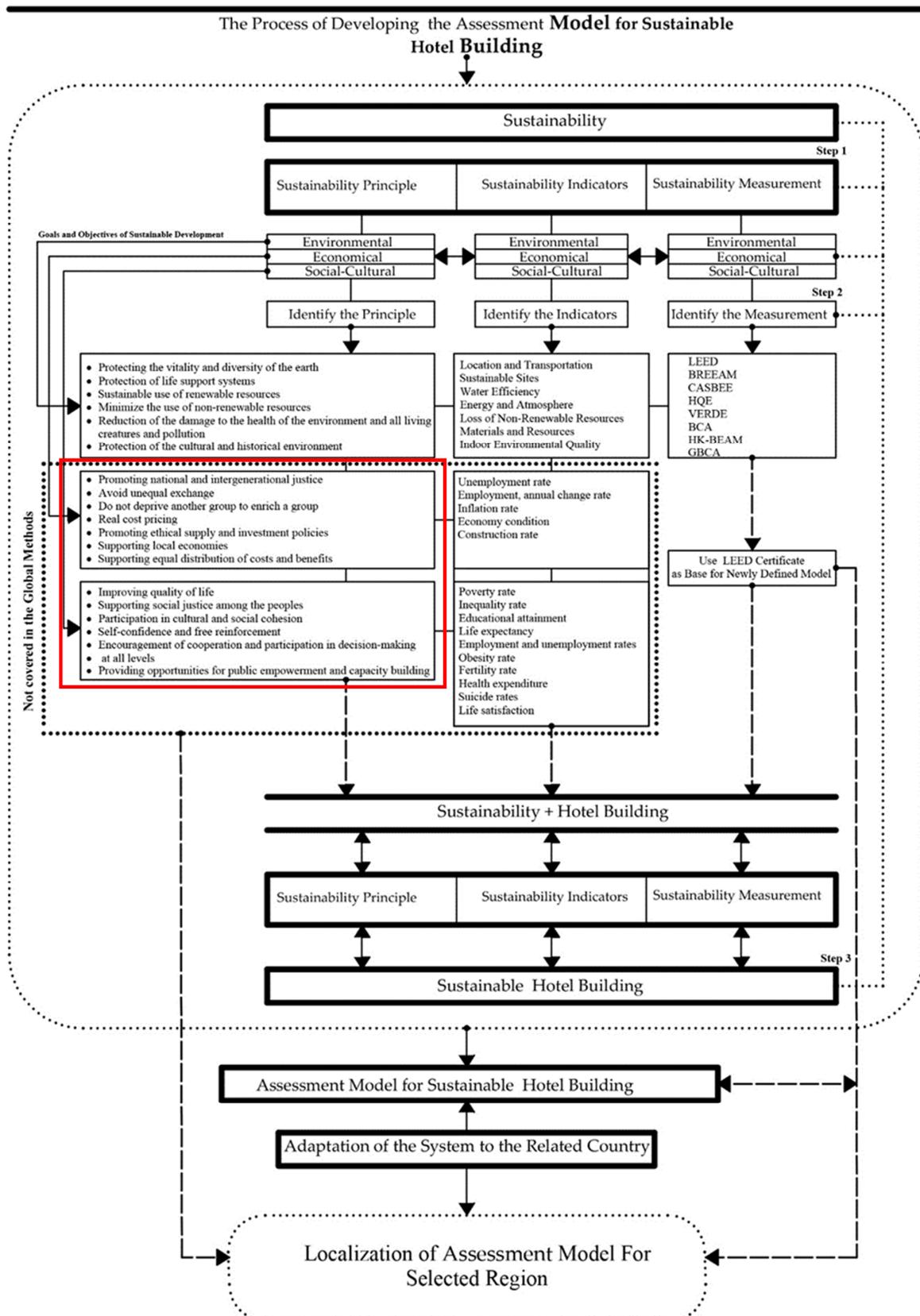
1. It does not recognize architectural creativity,
2. It is time-consuming procedure,
3. It does not consider the building's performance and condition,
4. It does not include economic and sociocultural criteria of sustainable hotels.

As a result, there were four major steps in the creation of the global models:

1. The prospective outcome of the sustainability principle, indicators, and assessment were the first steps.
2. The second step dealt with the compilation of sustainability indicators, principles, and global measurement.
3. The third step looked at the outcomes of correlating sustainability indicators to hotel building outputs and hypothesized the relation between hotel buildings and sustainability.
4. The following model (Figure 2) depicts the process of developing the assessment model after selecting LEED certification as the source for newly defined indicators and eventually localizing the model according to selected regions.

To build a sustainable hotel assessment model, we need to first achieve the goal and objective of sustainable development by comparing various approaches on a global scale to identify all communal indicators for assessing building sustainability. Therefore, in order to develop an assessment model, this study has found several of these methods and indicators.

As a result of the establishment of a relationship between hotel buildings and sustainability indicators, all aspects of sustainability were measured as part of an assessment model for sustainable hotel buildings. Figure 3 depicts a strong relationship between these variables and how regional factors can affect hotel building sustainability. The connections show why sustainability criteria must be assessed critically and regionally. The assessment model should be adaptable in terms of selecting indicators and determining the weight of each item in order to be used in various regions and conditions.



- Improving quality of life
- Supporting social justice among the peoples
- Participation in cultural and social cohesion
- Self-confidence and free reinforcement
- Encouragement of cooperation and participation in decision-making at all levels
- Providing opportunities for public empowerment and capacity building

Poverty rate
Inequality rate
Educational attainment
Life expectancy
Employment and unemployment rates
Obesity rate
Fertility rate
Health expenditure
Suicide rates
Life satisfaction

Figure 2. The process of developing the global assessment model (developed by author).

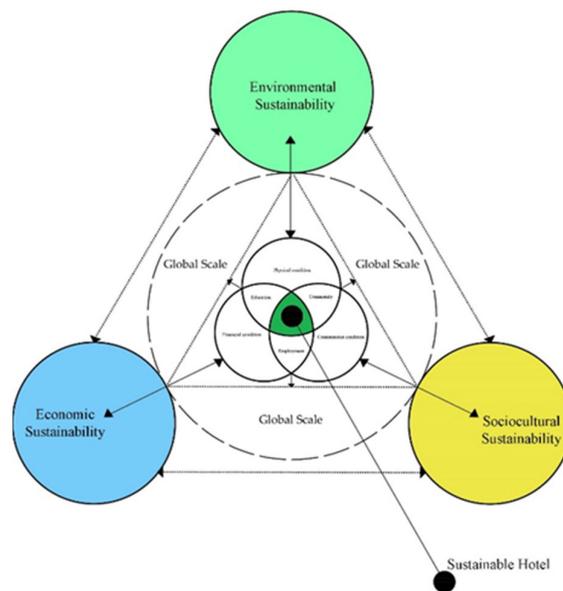


Figure 3. The effect of the relationship between all dimensions of sustainability on the global assessment (developed by author).

3. Research Methodology

3.1. Research Context: Localization of Assessment Model

To obtain more comprehensive results, a mixed-methods approach was used in this research, which included both qualitative and quantitative methods. The qualitative method was based on observations and interviews with people associated with the selected hotel building or the Ministry of Tourism and Environment. The quantitative method used LEED certification to assess the hotel buildings' sustainability and set out the proper hotel conditions in terms of environmental, socio-cultural, and economic indicators. Within this research, the local model can determine both suitability and sustainability of hotel buildings because it is adaptable for several countries with different priorities. Northern Cyprus, as a selected region for this study, is one such developing community that suffers from unsustainable practices and many socio-cultural issues correlated with economic and environmental problems that are the result of past conflicts and the ongoing political situation. The environmental problems pointed out in different studies include limited natural resources [44], limited contextual design, and an unsustainable trend in the construction sector with limitations on energy and water resources [45]. The island has also been facing numerous economic challenges including unemployment; limited sources of raw materials, finished goods, and on-demand services; limited production of goods and services; high rates of energy (electric, heating, and cooling); high levels of water consumption; and political isolation [46]. Socio-cultural issues include the challenges of unequal distribution of capital as well as the endangerment of the social values influencing employment, education, local business, etc. in the community [47]. Thus, to serve selected region requirements better and to develop a replicable method that can assess sustainability with consideration of conditions of locals, various globally used methods of sustainability assessment, sustainability indicators, and green certifications were studied. These provided the base for the establishment of both the global and local versions of the assessment model. As result, certain common indicators of sustainable hotel buildings, as well as missing socio-cultural and economic criteria based on local conditions and priorities, were combined to create a local assessment method for the selected region using global assessment methods and these interviews, respectively. This study went through a literature review, case selection through data collection, surveys, analytic methodologies, data analysis and verification phases to apply the model to the assessment of the hotel. In addition, one hotel building was chosen as a specific case to analyze the corresponding local model methods and the outcomes

obtained from the literature review. The results of the initial analysis suggest the local model should be used to assess the sustainability of hotel buildings in the selected region according to the priorities. As a result, current research for a localized model began with interviews with different employees from various departments in the tourism industry, in order to learn about the most critical socio-cultural and economic difficulties, as well as the most essential facts about the hotel industry.

3.2. Data Collection and Sampling

To achieve the main goal, hotel owners, managers, and other hotel staff members, as well as tourists, were interviewed using the qualitative technique of interviewing. Later interviews with employees from several government offices, including tourism and the Northern Cyprus Environmental Ministry, revealed content that characterized tourists and the current situation of the hotels from environmental, economic, and socio-cultural perspectives. For the study, a total of 32 people were interviewed (Table 2). The interview questions asked the participants if they agreed or disagreed with certain statements after informing them of the research's goal and provided definitions of sustainability and sustainable development. The tourists were interviewed as a small group in an open area of the hotel environment. The number of the group was four and they were mostly from European countries. The interview took about 30 min for each group. However, the interview from different departments of the hotel and other interviewers took longer and were undertaken individually. Table 2 shows the number of respondents and the location.

Table 2. The outline of respondents (developed by author).

Respondent's Code	Respondent	Location	Star of Hotel	Sustainable Hotel	Non-Sustainable Hotel
Response 1.	Architect	Tourism Ministry			●
Response 2.	Architect	Tourism Ministry			●
Response 3.	Civil engineer	Tourism Ministry		●	
Response 4.	Civil engineer	Tourism Ministry			●
Response 5.	General manager	Hotel	****		●
Response 6.	Sales and Marketing Director's	Hotel	****		●
Response 7.	Finance Director's	Hotel	****		●
Response 8.	General manager	Hotel	****		●
Response 9.	Manager of Front Office	Hotel	****		●
Response 10.	Human resource manager	Hotel	****		●
Response 11.	Ownership	Hotel	****		●
Response 12.	Ownership	Hotel	***	●	
Response 13.	Ownership	Hotel	**	●	
Response 14.	Revenue Manager	Hotel	****		●
Response 15.	Director of Engineering	Hotel	****		●
Response 16.	Director of Engineering	Hotel	***		●
Response 17.	Tourist	Hotel	****		●
Response 18.	Tourist	Hotel	****		
Response 19.	Tourist	Hotel	****	●	
Response 20.	Tourist	Hotel	****	●	
Response 21.	Tourist	Hotel	***		
Response 22.	Tourist	Hotel	***		●
Response 23.	Tourist	Hotel	***		●
Response 24.	Tourist	Hotel	**		
Response 25.	Stuff	Hotel	****		●
Response 26.	Stuff	Hotel	****		●
Response 27.	Stuff	Tourism Ministry	****		●
Response 28.	Stuff	Tourism Ministry	****		●
Response 29.	Stuff	Tourism Ministry	***		●
Response 30.	Stuff	Tourism Ministry	***	●	
Response 31.	Stuff	Tourism Ministry	***		●
Response 32.	General manager	Tourism Ministry	**		●

3.3. Qualitative Findings

After analyzing the qualitative data, an assessment model for sustainable hotel buildings was created, considering the localized model of hotel building sustainability. The small island

emphasized socio-cultural awareness among local communities over environmental conservation and sustainability concerns. In this regard, there are no sustainable hotel buildings on the island, according to the conclusions of the interview with staff members, managers, directors, tourists, and the Ministry of Tourism and Environment, and the market is slow. The development of a localized model for measuring the sustainability of hotel buildings is the solution to this problem. Tourism development is expected to rise as a result of this effort. More investment in this area is therefore required, primarily to assist the tourism sector and the local community in achieving greater sustainability. Furthermore, because sustainable building design is a fundamental component of long-term growth, it can benefit the national economy, the natural environment, and socio-cultural values such as good quality of life, comfort, security, and health.

The majority of respondents agreed that socio-cultural aspects should be taken when determining the sustainability of hotels in their communities, according to the results of the interviews. The majority of respondents said sustainable hotels had positive socio-cultural consequences, particularly in terms of supporting local investment and local business development, which are the most effective aims in terms of socio-cultural sustainability. After conducting interviews with stakeholders, it was discovered that some of the indicators were more significant than others. The economic benefits of hotels for locals and tourists were selected as one of the most important measures. The island has suffered many economic issues, including a lack of local investment, local infrastructure and production, and economic security in the community. Employment and education have also been highlighted as important indicators. The local community faces socio-cultural difficulties such as unequal capabilities to exchange and endangered social values. These are known to influence employment patterns that include a lack of, or limited, job opportunities, local community member employability, and support for local entrepreneurs; community member education patterns; and local business viability, e.g., lack of or limited local ownership or local partnerships. Table 3 displays the newly defined and grouped indicators. As a result, the localized model aims to assess hotel sustainability in terms of environmental impacts, local economic situations, and, most importantly, socio-cultural factors. Such aspects affect the long-term sustainability of hotels, whether large or small. The degree of the effects, on the other hand, varies from hotel to hotel. These factors are intertwined and have a variety of complementary and contradictory effects on hotel sustainability.

Table 3. Newly defined indicators based on Northern Cyprus' situation and priorities (developed by author).

Newly Defined Indicators	
Economic benefits of hotels for local people and tourists	Social Effects of hotels on the local community
Employment opportunities	Increased number of visitors
The ratio of tourism facilities in the area	Increased number of accommodation options (e.g., hotels, guest houses)
Recreational cultural and spiritual sites: number and size	Satisfaction level of tourists in the hotel
Hotel room rental	Increased local shopping facilities
Energy consumption rates	Total number of arrivals of tourists
Water consumption rates	Increased leisure facilities.
Investment rate	
Construction budget	
Economic justice	
Investing locally	
The average occupancy rate for hotels.	
Employment	Community Health and Local Public Safety
Local employment	Level of safety in the local community
Local ownership	Level of safety in the hotel buildings
The percentage of management to non-management jobs. The percentage of jobs created by tourism rather than those created by other sectors.	Improvement in local public services
	The interaction between local and different cultures
	Employment
Education	Socio-Cultural
Knowledge of staff	Impact of society and culture on the hotel building
Local workforce	An increase in the number of events held in hotels
Environmental education	Provide local services in the hotel
	Impact of a hotel on the urban pattern

Figure 4 depicts the interaction between the sustainability dimensions, how they can directly affect each other, and how the outcome can be influenced by the local community. This process can be repeated from the hotel scale to the city scale, then to the country, and eventually to the global scale.

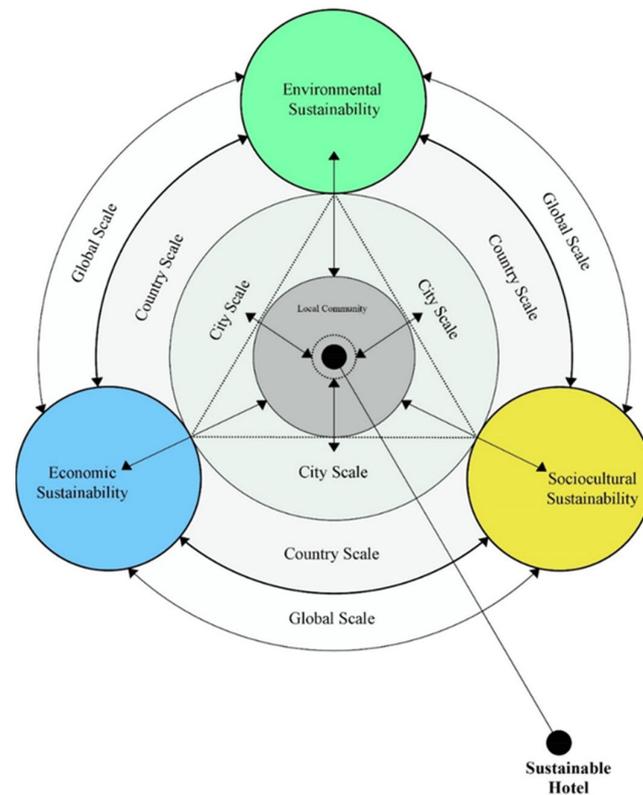


Figure 4. The effect of the relationship between all dimensions of sustainability on the local assessment sustainable hotel building model (developed by author).

3.4. Quantitative Data Findings

To achieve the second goal this study used quantitative research, based on the LEED application. This research discovered that each green certificate and sustainability measurement method has a unique purpose and is designed to be used in specific countries under specific conditions and on any form of building. The fundamental concerns of these methods are environmental conditions in a given country, as well as directly related issues. Apart from environmental conditions, a number of other parameters, such as socio-cultural and economic, affect the sustainability of a hotel building. However, studies focusing on the socio-cultural indicators are few. Moreover, those sustainable certifications that have been developed to assess the socio-cultural and economic indicators (e.g., safety, well-being, health) evaluated the tourism industry in general rather than specifically hotel buildings. As a result, most of the assessment of sustainability assessments used on the global scale are not appropriate for use when addressing the local conditions of a chosen region—a place where socio-cultural issues are not separated from environmental aspects [48]. At the same time, sustainability measurement methods used around the world for the hotel industry do not work accurately under Northern Cyprus' existing conditions. Because few sustainability measurement methods have focused on the socio-cultural aspects, a number of local conditions such as local ownership and local investment, in regard to sustainable hotels, have been overlooked by most of the criteria. LEED is relied upon to involve the most indicators and be the most comprehensive method despite the way in which it falls short in the socio-cultural aspects. The associations and expertise of the study's author, who is LEED certified and has implemented LEED standards in a number of projects, were another crucial factor to take into account while adapting an LEED certificate. Additionally,

as mentioned in the literature review for this technique, the rating system for the indicators used in the LEED application was supported by “one” or “zero” points, with the options “yes”, “no”, and “maybe” [29].

3.5. Weights of Localized Model

The global assessment model rating system was categorized according to the three dimensions of sustainability with equal weights, based on the four categories of the applied rating system (LEED certification) and the fact that other rating systems use various weights for each category (each dimension has 33.33 per cent of 100 per cent). The criteria in the localized evaluation model remain the same, but the weights change depending on the conditions in the chosen region. The normalization and collect parameters approach can be used to generate the weights for the assessment of the level of sustainability of a particular building to suit this goal. The normalization and collect parameters approach is used to determine the weights for each dimension based on the priorities of the host community. Each community, for example, faces significant challenges in terms of environmental, sociocultural, and economic sustainability. As a result, by employing different research methods (survey, observation, interview, questioner, and so on), one can identify the issues that a location faces, incorporate those issues into the normalization and collect parameters approach, determine the localized weights of categories, and ultimately better assess and positively influence the sustainability of hotel buildings in the host community (Table 4).

Table 4. A weight sustainability dimension according to region priorities.

Dimensions		Priorities of Selected Region		
		Weight (%)		
Environmental	33.33	40	30	30
Economy	33.33	30	40	30
Social-cultural	33.33	30	30	40

The global assessment model rating system will include three categories—the three dimensions of sustainability—with equal weights, based on the applied rating system of LEED certification, which has four categories. The weights of the categories in the localized model will be changeable based on the priorities of local conditions, with each dimension having 33.33 per cent of 100 per cent. The chosen region has suffered in all three dimensions of sustainability, but mainly in the socio-cultural dimension, which plays a critical role in the country’s sustainable development. Despite the lack of published information and documentation to quantify the importance of these issues, the weights for the localized model were determined using expert interviews and surveys that were given to key experts in Northern Cyprus hotel buildings and the Ministry of Tourism. A total of 32 respondents and quantity surveyors were contacted and questioned, resulting in a 100% response rate. When ranking the domains, the respondents were presented with the aspect titles as well as a detailed description of each aspect when evaluating those aspects in the domains. Besides the main topics named above, respondents were asked about their own experiences with sustainable hotel construction and their knowledge of existing sustainable certification systems. Finally, the priority indicators were chosen based on the collected responses:

1. Employment of local community and local entrepreneurs;
2. Local community education;
3. Investing locally, or owning a local business;
4. Local production and facilities, or the local community’s economic security; and
5. Health and wellbeing.

In this situation, the chosen location has been losing its social culture as a result of external influences (for example export, import, political isolation, worker etc.). In order to solve these problems, it would be acceptable to give the socio-cultural factor more weight.

Consequently, weights corresponding with the priority of the selected region aspects can be used in the localized model. The ratio of points is 30% for 41 environmental items, 30% for 11 economic items, and 40% for 22 socio-cultural items after reviewing and comparing the percentages of the localized model to local priorities. A building must achieve a minimum of 100 credits for the different technical requirements in order to receive the certificate. For innovation credit, an additional 10% can be applied. The application of the localized model is the same with four categories because of the minimum and maximum points created based on LEED. The LEED certification system and the localized model were applied individually to see how each would assess the building with and without taking into account the current conditions of the chosen hotel.

3.6. Case Study

Northern Cyprus. With a total size of 9851 km, Cyprus is the third largest island in the Mediterranean Sea. It is 60 km south of Turkey's coast and 322 km south of Greece. [44]. Northern Cyprus hosts a huge variety of tourists. The island has recently struggled to meet the needs of those seeking sustainable tourism [47]. It has a weak domestic market and limited natural resources [49]. Seasonality, public transportation, low occupancy rates, high prices of rooms, lack of skilled personnel and decent hospitality, lack of services and enough facilities, and low service quality are some of the problems that the hotel in Northern Cyprus has faced [29]. According to research conducted as part of this study, Northern Cyprus has not established any assessment method to assess the sustainability of its buildings. Salamis Bay Conti Resort Hotel was chosen as a specific case to analyze the corresponding local model methods. Northern Cyprus was chosen as the case study for this research and the test case for the suggested approach in order to address these issues.

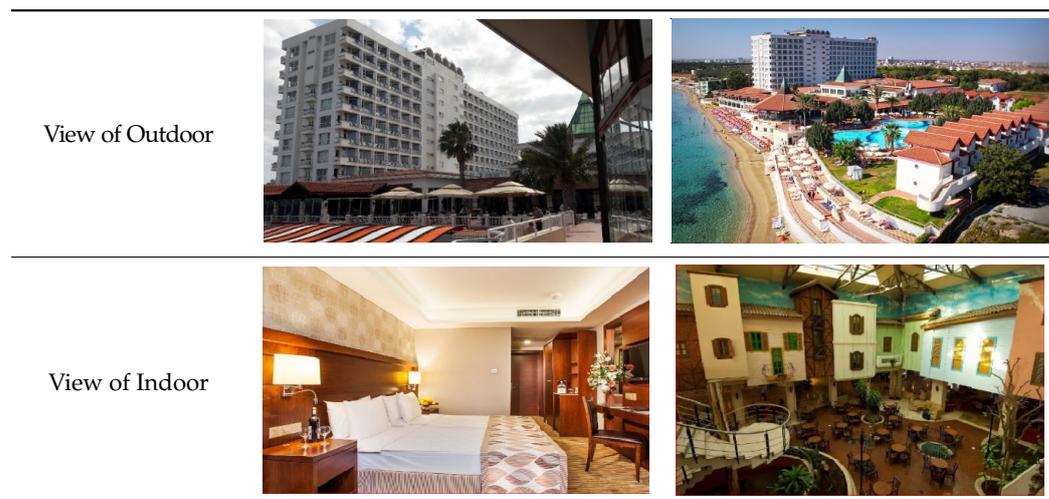
The Salamis Bay Conti Resort Hotel was chosen as a case study to assess the sustainability of hotel buildings using the localized approach. This option was chosen in order to test the localized model on a structure that would be able to achieve the goals of sustainability and enhance a hotel's environmental, economic, and sociocultural benefits. A five-star hotel with a capacity of 1000 beds and a total area of 65,000 m², Salamis Bay Conti Resort Hotel (Salamis Bay Hotel) is located in Salamis, Greece. Yeni Boaziçi-Gazimausa, in Northern Cyprus, is where it is situated. Famagusta is eight kilometers away, while Ercan International Airport is 45 kilometers away.

In terms of transportation, it is difficult to reach this hotel easily because it is located outside the city and there is no public transportation that reaches it. Table 5 shows the characteristics of the hotel.

Table 5. Characteristics of Salamis Bay Conti Resort Hotel.

Hotel characteristics
General Information
Type of hotel and name: Salamis Bay Conti Resort Hotel (5*)
Construction Year: before 1974
Location: Famagusta, Cyprus
Building characteristics
Geographical area: Yeni Boğaziçi
Capacity: 850 (1000)
Nationality of Ownership: Turkish (TC)
Total area: 65,000 m ²

Table 5. Cont.



First, the LEED system was used to assess the hotel's sustainability. Second, the hotel was assessed using a localized model to compare the results of the two ways and determine which method produced the best sustainability result. Then, using both the LEED system and the localized model, this study examined the hotel's current situation in different parts and seasons to see how it performs in the actual world. Because the interviews and information demonstrated that the hotel was busy in both summer and winter, it was able to assess seasonal functionality. The hotel was deemed to be capable of functioning as a more sustainable hotel after being assessed as an independent building. However, it is currently not conforming to the priorities of the chosen region and is unable to cope with and improve the economic standard.

The hotel's weaknesses must be addressed in accordance with the following aims and targets for sustainable development:

1. Local job opportunities should improve.
2. There should be more job opportunities and professional mobility, as well as an increase in family income.
3. Hotel ownership should be shared with local partners, or local people should be attracted and involved, at least with a little investment, to increase their incomes.
4. The hotel's facilities should be increased in ways that help local people, such as increased promotion of local items such as local workshops, local food products, and local restaurants, bars, snack bars, cafés, and so on.
5. It should also reduce the rate of water and energy consumption so that room prices can be reduced to attract more visitors.
6. Improve community collaboration and integration.
7. Improve worker education and skill levels.
8. Increase economic responsibility in accordance with the selected country's standard economy.

The assessment of the hotel building involved observation, interviews with various people working in various departments (managers, directors, staff members, technical section, etc.), and the gathering of records and images. Using the hotel's building and operation dates as a starting point, information was organized chronologically.

According to all appearances, the Salamis Bay Hotel did not go through an integrated design process or observe any procedure to advance the objectives of energy and water conservation in light of the host island's limited natural resources and environmental issues.

Instead, it seems to have placed a strong emphasis on the outstanding internal environment, mood, and high level of service. The hotel was constructed next to a wide beach and is surrounded by a variety of trees to provide guests with a healthy atmosphere. However,

the beach frequently faces environmental issues including deterioration and devastation over time. All rooms were created with window coverings to reduce heat absorption from the late spring sun while allowing the winter sun to enter and warm the spaces.

The findings obtained from the application of the LEED rating system to the hotel revealed that Salamis Bay Hotel would be eligible for a “Gold certificate”, which means it would have more points for being a more sustainable construction in terms of environmental factors (Figures 5 and 6).

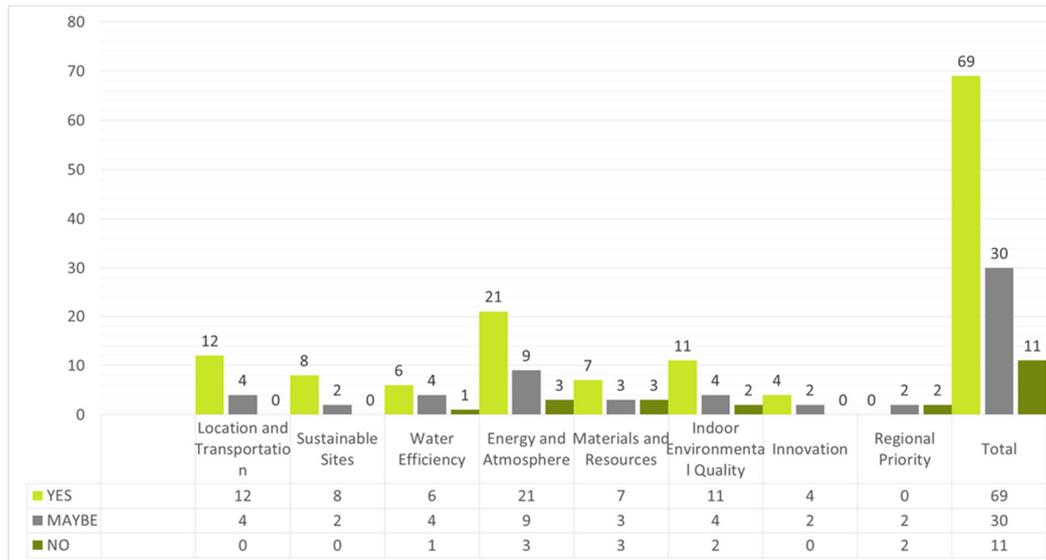


Figure 5. Distribution of LEED points.

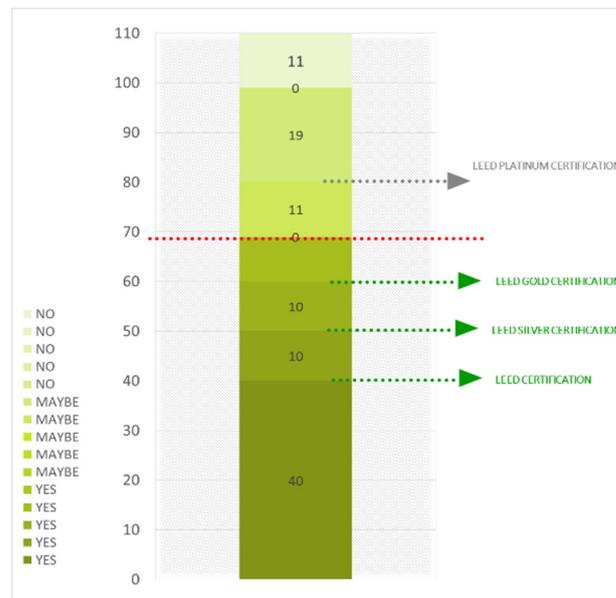


Figure 6. LEED points and certificate level.

However, the study recognized that the results show lower levels of sustainability when the localized model was applied, which covered the socio-cultural aspects of sustainability along with the environmental and economic aspects of the entire country. Because the local community had not gained significantly socio-culturally or economically from the success of the hotel building, according to the localized model’s analysis of the local conditions and priorities of a chosen country. In terms of regional socio-cultural elements, Salamis Bay Hotel’s use of the localized model resulted in lower sustainability.

This study attempted to evaluate the localized model in a way that would be suitable for the tourist hotels in Northern Cyprus in accordance with local priorities and demands and might result in hotel sustainability in accordance with local economic and social elements.

The results obtained from measuring the sustainability of the hotel using the localized model (Figures 7 and 8) revealed that the hotel would receive a “Silver” certificate as a sustainable hotel with 50.55 points as “Satisfied”, 40.51 points “Average”, and 19.87 as “Poor”. Therefore, in order to be considered more sustainable, this hotel needs to increase all areas of sustainability, especially socio-cultural sustainability.

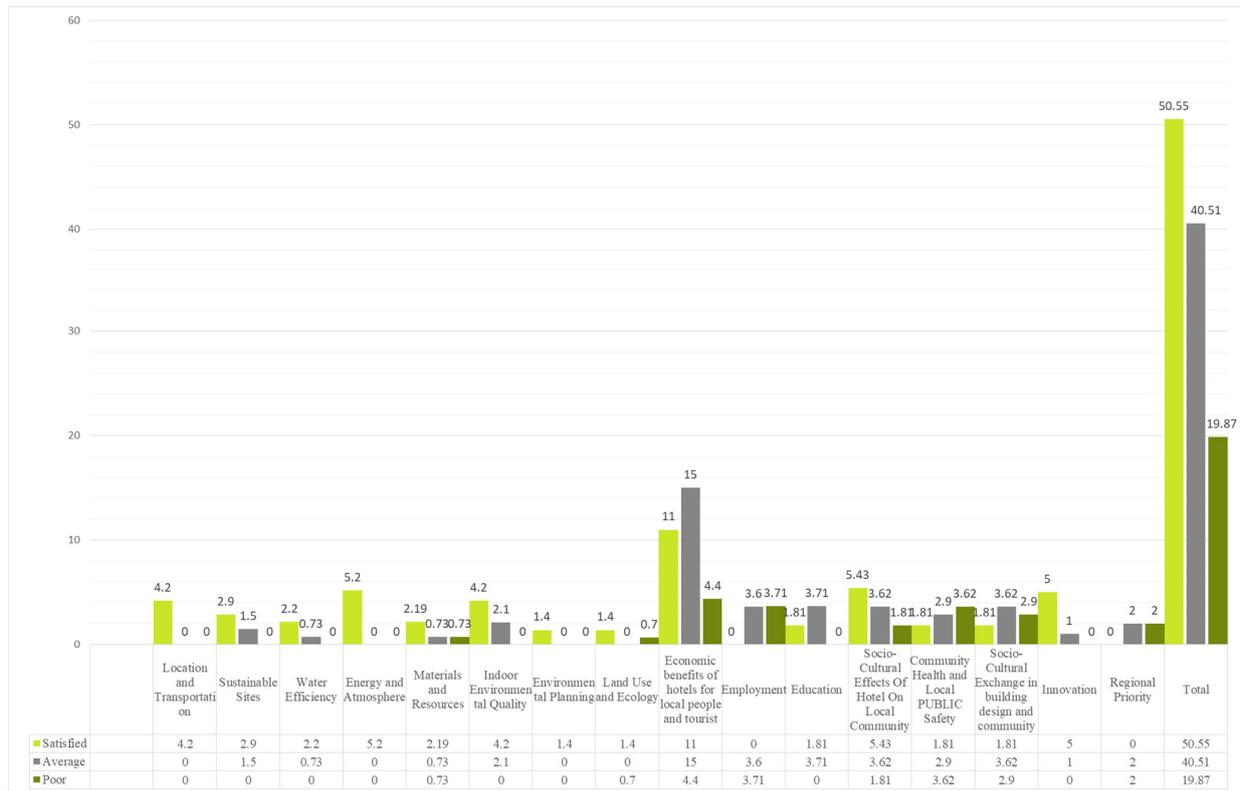


Figure 7. Distribution of localized model points.

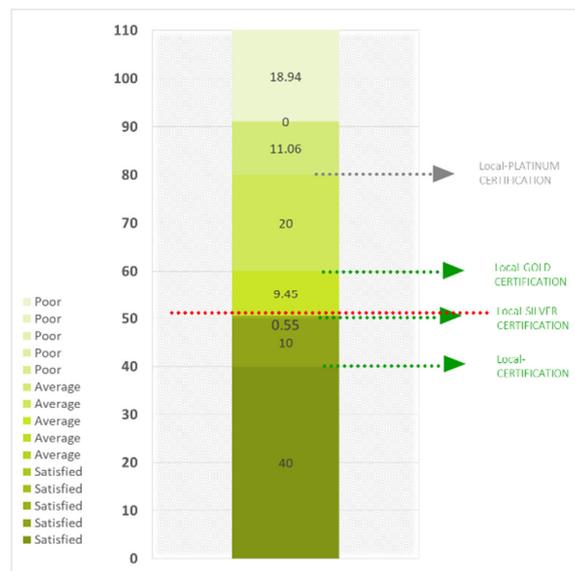


Figure 8. Localized model points and certificate level.

4. Discussion and Conclusions

Sustainable hotels have been working to improve the efficacy of buildings and their locations by making better use of energy, water, and materials while reducing their impact on human health and the environment over the duration of a building's entire lifecycle. Additionally, creating energy-efficient buildings is essential due to the ongoing increase in energy prices. As a result, in recent years, the concept of sustainable building has gained more and more recognition. Buildings that use modern coordinated methods to reduce energy demand and consumption are increasingly preferred over conventional structures due to the growing awareness of sustainable development [50–52].

A sustainable hotel building can provide economic and socio-cultural benefits in addition to environmental considerations. Also, there are a lot of studies that have confirmed that developers have made a wise decision by choosing to become certified sustainable builders in order to safeguard the environment and reap financial rewards [52,53]. Therefore, to obtain these benefits, as well as other sustainable development goals, hoteliers and their contractors must consider all principles of sustainability while taking into consideration the priorities and local conditions of each region. The findings show that sustainable hotels in the tourism sector can promote an increase in social interaction between locals and tourists in the area and possibly encourage increased local ownership of hotels by fostering the emergence of family-run companies [54,55].

Having sustainable hotels as part of a community's tourism industry is advantageous, as opposed to the many hotels throughout the world that suffer from unsustainable design and eventually become a detriment to their host community, as this research has revealed. There are many different green certificates and measurement applications for a building that can evaluate its level of sustainability and guide design to act and react sustainably. Unfortunately, most of these methods do not address all principles of sustainability, especially social and cultural aspects.

The first step toward comprehensive sustainability is choosing the right tool to measure and establish sustainable approaches for a hotel, its tourism sector, and its broader community. Northern Cyprus has not adopted any assessment tool to assess the level of sustainability of its buildings, according to this study, which used the selected area as the case study. As a result, the community continues to face socio-cultural issues as well as economic and environmental problems as a result of unsustainable practices.

Consequently, this research developed a sustainable hotel building assessment method that can be localized and should work flexibly for different communities and regions based on their local requirements and priorities. However, the hotel sector is expected to gain a larger role in the growth of the tourism industry in the future, according to this study. Therefore, there is a need for increased investment in the tourism sector, particularly to support the local economy and communities that are struggling with unemployment, poverty, and other economic issues [54,56].

To begin utilizing a localized model to assess hotel building sustainability in different areas and regions, the model first defines a set of indicators based on environmental, economic, and socio-cultural variables specific to the chosen area. The initial step in the model's creation was to define the global scale model's indicators, and the second step was to localize the model based on region-specific conditions and priorities. Understanding the function of the model in different countries needed a comparison of existing methods and research in order to develop a localized model for Northern Cyprus in step two. Conforming to the selected region, specific indicators can have a positive impact on the tourism sector and hotel buildings in terms of sustainability. When specific sustainability indicators for hotel buildings are used, developing local sustainability through hotel design is most beneficial.

The LEED certification process was chosen as the basis for developing a new model because it is the most widely used, is globally relevant, and completely covers the numerous dimensions of sustainability. This study identified missing socio-cultural indicators in LEED and other approaches and included additional indicators to adapt the model to

the requirements of Northern Cyprus. The developed model considers all principles of sustainability in order to assist the hotel industry in addressing multiple contextual issues, although it is primarily focused on the priorities of the chosen region;

1. Natural resources are limited.
2. A lack of job opportunities in the community.
3. High energy expenses.
4. High construction and investment expenses.
5. In the construction and hotel industries, there is a lack of competence and professionalism.
6. Lack of economic responsibility.

Also, through fostering enhanced social activity between locals and foreign workers and tourists, and by expanding local ownership of hotels through the formation of family-run companies, hoteliers seeking sustainability can bring about a variety of positive improvements in the local community. A move toward sustainability in the hotel business has the potential to bring the country's economy back into balance by closing the gap with richer nations.

As a result, this study recommends directing more effort and resources to a long-term sustainable strategy for tourism sector growth, as this investment can boost the economy of local people and communities. Sustainable hotels can benefit regional life and the local community, according to the conclusions of this study and the goals and objectives of sustainable development and policy development:

1. Establishing new, family-owned enterprises
2. Increasing the number of job opportunities,
3. Increasing the number of job openings
4. Improving the local economy, and
5. Improving the citizens and community's quality of life.

In addition, the localized model can be utilized for assessment in the early stages of design, new construction, and hotel renovations of an existing hotel in Northern Cyprus. It can also contribute to the tourism sector and help to achieve sustainable development goals and policy development such as:

1. Local jobs in the tourism industry
2. Diverse career prospects in the tourism sector for educated locals (such as local investment, business ownership, etc.),
3. Workers' education and skill, family income,
4. Local marketing (such as local workshops, local food production, and local restaurant, bars, snack bars, and cafés),
5. Local and social activities and events in the tourism sector
6. Collaboration and community integration
7. Economic responsibility in accordance with the specified country's standard economy
8. Cost-effective operation and construction
9. Water and energy consumption rates that are environmentally friendly, and
10. Better public transport options.

Finally, certain recommendations were created to help the localized model perform successfully in Northern Cyprus. This model should be improved as a guideline for decision makers and the government, based on the current conditions of the region and the hotel under consideration. The following are some approaches to use in order to obtain the localized model certificate:

1. Turkish Cypriot ownership or a Turkish Cypriot partnership should be required.
2. Establish a percentage of locals to work in the hotel in accordance with regional regulations and roles
3. A hotel that offers tourists a discount for lowering their metered energy or water use might gain more sustainability credit.
4. Using or supplying transportation options for guest helps the country by creating jobs, distributing income, and reducing air pollution.

5. Offering local producers' foods, commodities, services, and facilities to hotel guests increases socio-cultural awareness, lowers transportation costs, and boosts the local economy.

The study had several limitations even though it took into account many dimensions and elements. Other intervening elements that may have had an impact should be researched. The degree or extent to which each indication has an impact as well as their acceptable levels of existence should also be taken into account in future studies, despite the fact that different indicators and criteria have been identified.

By conducting a discourse analysis on various types of data, including articles, theses, and other pertinent published materials, later research can also use a case study approach. This method will probably give a clearer picture of how sustainable hotels are in the context of the study. It is important to consider this model's dependability, validity, and applicability before using it in additional research. The model can be modified and applied in other situations to evaluate sustainability by analyzing regional sustainable development principles and taking into account local conditions.

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