

Key Strategies of Green Bed And Breakfast Operations Management: A Case Study of Southeastern Taiwan

Ming-KueiChien

Ph.D., Assistant Professor at the Department of Leisure, Recreation and Tourism Management, Tzu Hui Institute of Technology

ABSTRACT: *This study investigated key strategic factors of green bed and breakfast operations management. Research methods employed in this study included a literature review, in-depth interviews, the Delphi method, and questionnaire surveys. First, a literature review was conducted. Based on a summary of key strategic factors influencing the operations management of green hotels, a first round of questionnaires for scholars, experts, and businesspersons related to the field of green hotels was designed and implemented. Expert consensus was determined based on the responses to the first questionnaire survey, and by making appropriate revisions, the second round of questionnaires was designed. The main objective of the second round of questionnaires was to determine key strategic factors influencing operations management in green hotels and use them as evaluation criteria to design an analytic hierarchy process (AHP) questionnaire. The results in this study showed that in order of decreasing importance, the key strategic factors influencing green hotel operations management included energy saving measures, green procurement, organic foods, environmental education, green building, and green social responsibility.*

Keywords: *green hotel, organic foods, green social responsibility*

I. INTRODUCTION

1.1 Study background and motivation

Changes in the modern world and the promotion of tourism-related governmental policies have not only altered the traveling patterns of Taiwanese people but also affected the utilization of land in Taiwan. In recent years, land use methods in rural areas have changed due to the vigorous development of hotels. The resulting land overuse has led to the development of ecotourism and green hotels in Taiwan (Lin, 2014). With the development of tourism and recreational environments and the promotion of the concept of leisure in Taiwan over the past ten years, and due to the five-day work week in Taiwan, leisure tourism has become a part of modern people's lives. In view of a decline in traditional agriculture, tourism has been modified and developed and hotel needs have become an important link in leisure tourism (Chen &Chwang, 2009). Taiwan's tourism industry continues to develop and hotels play an important role in people's choices of residence. The rapid and vigorous development of hotels has produced economic value but has also had negative impacts. In view of climate change, Taiwan has given more and more consideration to the issues of environmental protection. As a result, the green environment concept has also been increasingly advocated in the hotel industry (Chou, 2012).

Due to growing concern regarding environmental protection in Taiwan, people have begun to incorporate green consumption into their daily lives. Thus, apart from tourists staying in traditional hotels, there are environmentally conscious green consumers who choose to reside in green hotels and green bed and breakfasts integrating the concept of environmental protection and green structures (Tsai, 2012). The developing green leisure and recreation industry balances the benefits of environmental protection and economic development. Under these circumstances, green social responsibility (GSR) and operation efficiency (OE) are endowed with an important role in the hotel industry (Lin, Huang, Wu, & Hsieh, 2013). Green environment management (GEM), meanwhile, is an external issue that cannot be ignored in the development of the hotel industry in Taiwan. The GEM and OE of the hotel industry play an important role in the supply chain and value creation process (Lin, Peng, Hsieh, & Kao, 2014). In the past, the main strategies of operation management in hotels aimed to improve their financial performance. However, in the society which a company depends on and operates in, in addition to earning money, it also needs to obey laws and regulations and carry out certain responsibilities. Although there already exist various strategies for ecotourism development in Taiwan, strategies involving green hotel operations management based on the concept of environmental protection have yet to be developed. Therefore, this study aimed to determine key strategies of operations management for green hotels.

1.2 Research Objectives

This study drew on the idea that under the conditions of growing environmental awareness and the vigorous development of hotels in Taiwan, the importance of preserving the environment and sustainable development needs to be considered. The development of green hotels only provides tourists with environmentally friendly accommodation. Environmentally conscious green consumers can choose to reside in green hotels and green bed and breakfasts integrating the concept of environmental protection and green structures. Thus, this study investigated strategies of green hotel operations management through the example of hotels in the southeast of Taiwan. The objectives of this study were as follows:

1. Examine the current situation of green hotel development in Taiwan.
2. Analyze key factors influencing operations management in green hotels and develop a hierarchical evaluation framework.
3. Use the analytic hierarchy process (AHP) to evaluate the relative weights of key factors influencing operations management in green hotels to provide the hotel industry with a reference for the development of green hotels.

II. LITERATURE REVIEW

1. Green Bed and Breakfasts in Taiwan

The Regulations for the Management of Home Stay Facilities promulgated by the Tourism Bureau of the Ministry of Transportation and Communications report defined home stay facilities as lodging facilities using the spare rooms of a self-used residence; incorporating the local culture, natural landscape, ecological environment, environmental resources, and agricultural, forestry, fishery, or livestock farming activities; run as a family sideline business; and providing tourists with a rural living experience (Tourism Bureau, 2016a). With the fast-paced ecological advances and global economic growth, the demand for energy in modern society has increased. Moreover, gradual exhaustion of global resources has increased the risk of energy and environmental crises. Energy saving and carbon reduction have become imminent global issues. In order to stimulate economic development, the government of Taiwan selected the tourism industry as one of the main service industries that must be promoted (Yang, 2016). According to the Tourism Bureau's Monthly Statistics on Tourism, there are 7240 hotels in Taiwan (202 in Kinmen County and 107 in Lianjiang County), as of August 2016 (Tourism Bureau, 2016b).

With regard to the product lifecycle, which includes the acquisition, manufacturing, sale, utilization, and discarding of materials, Taiwan's Environmental Protection Administration (EPA) aimed to encourage public institutions to effectively reduce environmental pollution and resource consumption by promoting waste reduction, attenuation, and recycling, as well as consumers' willingness to choose recyclable, low-pollution, and resource-saving products in order to improve the quality of the environment. Thus, on March 19, 1992, the EPA selected a clean Earth wrapped by a green leaf as the Green Mark logo, registered its right to the service mark and announced it to the world. Vigorous development of the service industry in Taiwan in recent years has caused a negative impact on the environment and an increase in resource consumption. Therefore, the environmental protection program was expanded to include the service industry. The hotel industry largely affects the environment through energy and water resource consumption, food and drinks, wastewater discharged from clothes washing, the use of disposable products, disinfection for environmental sanitation, medicine use, etc. The Green Mark should be promoted in the hotel industry in order to encourage companies to take measures that reduce their negative impact on the environment. Since 2012, the EPA has been implementing the green hotel promotion plan, promoting guests' use of their own toiletries and the collection of donations to help non-profit environmental protection organizations to conduct educational activities related to environmental protection. Evaluation items for green hotels include 'environmental management,' 'energy- and water-saving measures,' 'green procurement,' 'waste management,' 'environmental protection concept,' and other environmental protection actions (EPA, 2016).

To date, 819 hotels and bed and breakfasts in Taiwan have received the Green Mark, among which 220 are located in the south and east of Taiwan. XiangyangTianyuanJu Homestay in Tainan combines Dongshan culture, the natural landscape, the ecological environment, guests' use of their own toiletries, and not frequently changing bed sheets and towels. Beautiful Green Ecological Hotel in Meinong District has rural landscape features and provides different DIY activities related to Hakka culture and ecological tours. Friendly Hotel in Xiaoliuqiu focuses on environmental priorities, adhering to the use of environmentally friendly materials and facilities, and does not provide guests with disposable products. To support environmental protection, Farm Guest House B&B in Kenting does not provide disposable toiletries, grows organic radish and spinach on its farm and many flowers and plants in its yard, and provides guests with organic products. Yuan Yang Xuan Hotel in Taitung promotes energy-saving and carbon reduction, anti-global warming actions, and pollution reduction, uses solar heated water, and does not actively provide toiletries.

2. Green Bed and Breakfasts

A green bed and breakfast can be also referred to as an eco-friendly hotel, green inn, or eco inn. According to Kuo (2008), a green bed and breakfast uses the concept of environmental protection as the basis to integrate local characteristics and culture and provide an ecotourism method that would help to achieve sustainable development of the ecological environment. A green bed and breakfast is characterized by a low environmental impact, human-nature harmony, comfort, the use of natural resources, and energy saving, forming a facility that is easy to maintain and that fulfils tourist accommodation needs. A green bed and breakfast uses the concept of environmental protection as the basis to integrate local characteristics and culture and provide an ecotourism method that would help to achieve sustainable development of the ecological environment. Simply put, a green bed and breakfast is characterized by a low environmental impact, human-nature harmony, comfort, the use of natural resources, and energy saving, forming a facility that is easy to maintain and that fulfils tourist accommodation needs (TravelKing, 2016). As stated by Chen (2007), a green bed and breakfast aims to achieve sustainable development of the ecological environment; it is an ecotourism method that integrates local characteristics and culture and provides guests with short-term accommodation. Guo and Chen (2003) based their definition of a green bed and breakfast on the concept of environmental protection, principles of which include the protection of global resources (water, gas, soil, natural ecological environment) and the utilization of global resources (biomass energy, solar energy, water power, wind power, geothermal energy, ocean thermal energy). Lin (2010) based the definition of a green bed and breakfast on the principles of green building, environmental education, and community integration, defining it as a bed and breakfast that implements environmentally friendly actions based on the concept of environmental protection, has a low environmental impact, and provides tourists with accommodation.

3. Key Factors of Green Bed and Breakfast Operations

Green bed and breakfasts focus on environmental protection in their operations, reducing energy and water consumption and solid waste and using alternative energy (solar, water, and wind energy) in addition to providing tourists with accommodation (Huang, 2011). In the research by Kao (2011) regarding evaluation indicators for special bed and breakfasts in Taiwan, environmental protection factors in the evaluation indicators for the seashore type of special bed and breakfasts mainly included environmental protection measures and green energy facilities. The main environmental protection measures included the reduction and management of waste, the recycling and re-utilization of rainwater and wastewater, the recycling and re-utilization of kitchen waste, and the provision of healthy organic foods to guests. The main green energy facilities included energy-saving and carbon reduction facilities, green energy facilities, water-saving facilities, and green building standards. Lin et al. (2013) maintained that GSR and OE play an important role in the green recreation industry's supply chain and value creation process. GSR integrates the ecological environment, corporate social responsibility, and carbon reduction measures. Kuo (2008) stated that a green bed and breakfast should include the following five basic principles: green building, sustainable landscape construction, organic agriculture, environmental education, and local benefit. In a study by Chen (2008), the system of green bed and breakfast evaluation indicators included six dimensions, namely, 'green building,' 'sustainable landscape construction,' 'organic agriculture,' 'environmental education,' 'local benefit,' and 'other' (i.e., the establishment of simple emergency facilities, cleanliness and hygiene of environment and facilities, website development, channels for customer opinions, customer satisfaction, and related training of bed and breakfast managers and workers). Wang (2009) simplified green bed and breakfast indicators using eight main dimensions and specific measures (management and sales, social participation channels, energy management, water resource management, green procurement, solid waste management, green food and drinks and stay activities, and natural and cultural resources). A green hotel is a green building. Apart from a green building's exterior, air-conditioning, illumination, and energy saving and carbon reduction, environmental protection focuses on transport, food and drinks, and consumption behavior (Lin, 2011).

Chen and Ou (2011) conducted a survey among potential consumers of green bed and breakfasts and found that consumers mainly focused on such features as environmentally friendly tourism measures (e.g., the provision of different types of tourism such as ecotourism, the use of organic materials and low-pollution products, environmental education, etc.), energy- and water-saving facilities and measures (such as timer-controlled light sources, water-saving facilities, the non-use of disposable toiletries, etc.), the re-utilization of products (i.e., using products with recycled and low-pollution materials, not purchasing an excessive amount of packaging products, the provision of green products and information, the non-provision of disposable toiletries), and the improvement of services (such as local experience activities, provision of tourist information, introduction of local food and drinks, etc.). In 2012, the EPA revised the Green Mark Regulations and Standards to increase related awareness and improve technology in hotels via the promotion of green hotel measures and the certification mark and to provide clear and feasible norm guidelines to contribute to the sustainable development of the global environment. Although there is no governmental law or regulation regarding the

Green Mark program for bed and breakfasts, the Tourism Bureau has already included the content, planning, and design of green bed and breakfasts into the courses of the hotel industry. Thus, bed and breakfasts are duty-bound by the social responsibility of environmental protection. Evaluation factors of environmental protection in bed and breakfasts can be classified into five dimensions, which are the ‘use of environmental products,’ ‘resource recycling using environmental protection facilities,’ ‘recycling and re-utilization,’ ‘energy-saving and carbon reduction,’ and ‘introduction to environmental protection’ (Huang, 2015).

III. METHODS

The objective of this study was to determine key strategic factors of green bed and breakfast operations management. This study investigated the factors that can influence operations management in green bed and breakfasts. Research methods applied in this study included literature review, in-depth interviews, the Delphi method, and AHP. The methods used are explained below.

1. Hierarchical Framework

Based on the review of related international and Taiwanese literature, in-depth interviews were conducted among green bed and breakfast managers. The opinions of scholars and experts were used to create a hierarchical framework, in which the first level was the ultimate objective of this study (key strategies of green bed and breakfast operations management), the second level was the selection evaluation level involving the evaluation and comparison of relative weights, and the third level was a pairwise comparison of evaluation factors. The hierarchical framework constructed in this study is illustrated in Figure 1.

2. Questionnaire Design

This study investigated key factors of operations management in green bed and breakfasts. First, based on the literature review, key strategic factors and indicators of green bed and breakfast operations management were summarized and used as a basis in the design of the first round of expert questionnaires. The first round of questionnaires for scholars, experts, and businesspersons related to the field of green bed and breakfasts was then implemented. A total of 20 questionnaires were administered and 12 were returned. Expert consensus was determined based on the responses to the first questionnaire survey, and by making appropriate revisions, the second round of questionnaires was designed. A total of 12 of those questionnaires were administered and 10 were returned. The main objective of the second round of expert questionnaires was to reach expert consensus with regard to the key strategic factors influencing green bed and breakfast operations management and then use them as evaluation criteria in this study. After receiving responses to the second round of questionnaires, an AHP questionnaire was designed based on the key strategic factors influencing green bed and breakfast operations management as determined by participating scholars, experts, and companies. The questionnaire survey was focused on bed and breakfasts in the southeast of Taiwan. 500 questionnaires were administered and 282 were returned, yielding a response rate of 56%. Next, Expert Choice software was used to apply the AHP to the questionnaire results and for the analysis and calculation of the weights for each dimension. Based on the weight calculations, the order of precedence was determined for each dimension to provide green bed and breakfast operations managers with a simple and feasible decision-making model.

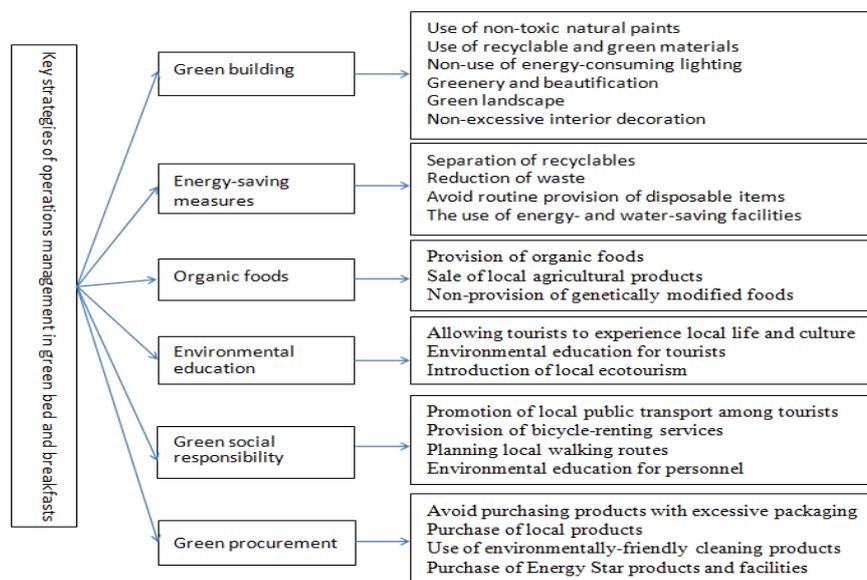


Figure 1. Hierarchical framework

IV. RESULTS AND DISCUSSION

The questionnaire results were analyzed using Expert Choice 2000 in order to determine the order of precedence of the key strategic factors in green bed and breakfast operations management, as well as the weights and order of factors in each dimension. The results are explained in further detail below.

1. Analysis of Key Strategic Factors of Green Bed and Breakfast Operations Management

Based on the AHP analysis of the six dimensions of key strategic factors of green bed and breakfast operations management, the weight was 0.330 for energy-saving measures, 0.184 for green procurement, 0.154 for organic foods, 0.126 for environmental education, 0.113 for green building, and 0.093 for GSR. The order of precedence for the key strategic factors of green bed and breakfast operations management was as follows: energy-saving methods, green procurement, organic foods, environmental education, green building, and GSR. C.I.=0.02 \leq 0.1 and C.R.=0.03 \leq 0.1 indicated satisfactory levels of pre- and post-judgment consistency and matrix consistency, as shown in Table 1.

Table 1. Analysis of key strategies for green bed and breakfast operations management

Level	AHP evaluation indicator		
	Key success factors	Level weight	Order of precedence
1	Green building	0.113	5
	Energy-saving measures	0.330	1
	Organic foods	0.154	3
	Environmental education	0.126	4
	Green social responsibility	0.093	6
	Green procurement	0.184	2
C.I.=0.02		C.R.=0.03	

2. Analysis of green buildings

Among the key strategies of green bed and breakfast operations management, the AHP results regarding the green building dimension showed that the highest importance was given to using recyclable and green materials, with a level weight equal to 0.253, followed by the use of non-toxic natural paints, with a level weight equal to 0.253; the non-use of energy-consuming illumination, with a level weight of 0.158; the use of green environmental facilities, with a level weight of 0.111; green landscaping, with a level weight of 0.107; and the avoidance of using excessive packaging, with a level weight of 0.095. C.I.=0.03 \leq 0.1 and C.R.=0.05 \leq 0.1 indicated satisfactory levels of pre- and post-judgment consistency and matrix consistency, as shown in Table 2.

Table 2. Analysis of green buildings

Level	AHP evaluation indicator		
	Location	Level weight	Order of precedence
2	Use of non-toxic natural paints	0.253	2
	Use of recyclable and green materials	0.275	1
	Non-use of energy-consuming lighting	0.158	3
	Greenery and beautification	0.111	4
	Green landscape	0.107	5
	Non-excessive interior decoration	0.095	6
C.I.=0.03		C.R.=0.05	

3. Analysis of energy-saving measures

Among the key strategies of green bed and breakfast operations management, the AHP results regarding the dimension of energy-saving measures showed that the highest importance was given to the non-provision of disposable items, with a level weight of 0.437, followed by the use of energy- and water-saving facilities, with a level weight of 0.285; resource waste management and recycling, with a level weight of 0.163; and waste reduction, with a level weight of 0.116. C.I.=0.01 \leq 0.1 and C.R.=0.02 \leq 0.1 indicated satisfactory levels of pre- and post-judgment consistency and matrix consistency, as shown in Table 3.

4. Analysis of organic foods

Among the key strategies of green bed and breakfast operations management, the AHP results regarding the dimension of organic foods showed that the highest importance was given to the provision of organic foods, with a level weight of 0.482, followed by the opportunity for local product sales, with a level weight of 0.303, and the non-provision of genetically modified foods, with a level weight of 0.215. C.I.=0.00 \leq 0.1 and C.R.=0.00 \leq 0.1 indicated satisfactory levels of pre- and post-judgment consistency and matrix consistency, as shown in Table 4.

Table 3. Analysis of energy-saving measures

Level	AHP evaluation indicator		
	Service quality	Level weight	Order of precedence
2	Separation of recyclables	0.163	3
	Reduction of waste	0.116	4
	Avoid routine provision of disposable items	0.437	1
	The use of energy- and water-saving facilities	0.285	2
C.I.=0.01		C.R.=0.02	

Table 4. Analysis of organic foods

Level	AHP evaluation indicator		
	Product features	Level weight	Order of precedence
2	Provision of organic foods	0.482	1
	Sale of local agricultural products	0.303	2
	Non-provision of genetically modified foods	0.215	3
C.I.=0.00		C.R.=0.00	

5. Analysis of environmental education

Among the key strategies of green bed and breakfast operations management, the AHP results regarding the dimension of environmental education showed that the highest importance was given to the provision of local life and cultural experiences, with a level weight of 0.475, followed by the introduction of local ecotourism, with a level weight of 0.321, and the environmental education of personnel, with a level weight of 0.204. $C.I.=0.00 \leq 0.1$ and $C.R.=0.00 \leq 0.1$ indicated satisfactory levels of pre- and post-judgment consistency and matrix consistency, as shown in Table 5.

Table 5. Analysis of environmental education

Level	AHP evaluation indicator		
	Product features	Level weight	Order of precedence
2	Allowing tourists to experience local life and culture	0.475	1
	Environmental education for tourists	0.204	3
	Introduction of local ecotourism	0.321	2
C.I.=0.00		C.R.=0.00	

6. Analysis of green social responsibility

Among the key strategies of green bed and breakfast operations management, the AHP results regarding the second-level dimension of green social responsibility showed that the highest importance was given to local walking route planning, with a level weight of 0.436, followed by the provision of car rental services, with the level weight of 0.249; the environmental education of personnel, with a level weight of 0.207; and the promotion of local public transport among tourists, with a level weight of 0.108. $C.I.=0.00 \leq 0.1$ and $C.R.=0.02 \leq 0.1$ indicated satisfactory levels of pre- and post-judgment consistency and matrix consistency, as shown in Table 6.

Table 6. Analysis of green social responsibility

Level	AHP evaluation indicator		
	Product features	Level weight	Order of precedence
2	Promotion of local public transport among tourists	0.108	4
	Provision of bicycle-renting services	0.249	2
	Environmental education for personnel	0.207	3
	Planning local walking routes	0.436	1
C.I.=0.01		C.R.=0.02	

7. Analysis of green procurement

Among the key strategies of green bed and breakfast operations management, the AHP results regarding the second-level dimension of green procurement showed that the highest importance was given to local product purchasing, with a level weight of 0.446, followed by the use of environmentally clean products, with the level weight of 0.225; the avoidance of purchasing products with excessive packaging, with a level weight of 0.176; and the use of Energy Star marked products and equipment, with a level weight of 0.154. $C.I.=0.02 \leq 0.1$ and $C.R.=0.03 \leq 0.1$ indicated satisfactory levels of pre- and post-judgment consistency and matrix consistency, as shown in Table 7.

Table 7. Analysis of green procurement

Level	AHP evaluation indicator		
	Product features	Level weight	Order of precedence
2	Avoid purchasing products with excessive packaging	0.176	3
	Purchase of local products	0.446	1
	Use of environmentally-friendly cleaning products	0.225	2
	Purchase of Energy Star products and facilities	0.154	4
C.I.=0.01		C.R.=0.02	

V. CONCLUSION AND SUGGESTIONS

1. Conclusion

This study used AHP to investigate key strategic factors and evaluation indicators of operations management in green bed and breakfasts in order to provide green bed and breakfast managers with a simple and feasible decision-making model. A literature review; interviews with scholars, experts, and businessmen well-versed in green bed and breakfast operations management; and questionnaire surveys were used to reach the consensus that the six main strategic factors of green bed and breakfast operations management included energy-saving measures, green procurement, organic foods, environmental education, green building, and GSR. Their order of precedence was as follows: energy-saving measures > green procurement > organic foods > environmental education > green building > GSR, with level weights of 0.330, 0.184, 0.154, 0.126, 0.113, and 0.093, respectively. Bed and breakfasts in general use spare rooms in self-owned residences and incorporate local culture, natural landscapes, ecological environments, environmental resources, and agricultural, forestry, fishery, or livestock farming activities; they are run as a family sideline business and provide tourists with a rural living experience. These are not new buildings, for which energy-saving measures are the most feasible factor.

(1) Green building

Most bed and breakfasts in Taiwan are built in the spare rooms of self-owned residences; therefore, it is difficult for them to comply with green building requirements. The Architecture and Building Research Institute of the Ministry of the Interior (2007) defined green buildings as ecological, energy-saving, waste-reducing, and healthy buildings. In this study, six factors of green buildings, namely, the use of recyclable and green materials, the use of non-toxic natural paint, the non-use of energy-consuming illumination, environmental facilities, green landscapes, and the avoidance of excessive packaging, corresponded to the current situation of green bed and breakfasts in Taiwan.

(2) Energy-saving measures

Energy saving in green bed and breakfasts is promoted via such energy-saving measures as the avoidance of providing disposable toiletries (e.g., tooth brushes, toothpaste, shower caps, paper slippers, etc.; purchasing recyclable toiletries instead of disposable ones), the use of energy- and water-saving facilities (e.g., the non-use of decorative lamps, climate control, water-saving shower nozzles and toilets, etc.), waste management and recycling, and waste reduction.

(3) Organic foods

Organic foods refer to the non-use of artificial chemical additives, chemical pesticides, and chemical fertilizers in planting, raising, and processing in farming, fishery, and livestock activities. Natural sustainable living can be achieved if bed and breakfasts can provide local organic materials and farming products and avoid to provide genetically modified foods.

(4) Environmental education

Environmental education focuses on education ‘in’ the environment; knowledge, attitude, and skill teaching ‘about’ the environment; and education ‘for’ sustainable environment. Environmental education includes six core learning concepts, namely, natural resource conservation, environmental management, ecological environment principles, interaction and interdependence, environmental ethics, and sustainability (Wikipedia, 2016). The objective of environmental education can be achieved through the provision of the opportunity to experience local life and culture, environmental education, and the introduction of local ecotourism to bed and breakfast residents.

(5) Green social responsibility

GSR is an important external issue in the hotel industry that considers the concepts of green energy and environmental protection, which involves the development of green landscapes and energy-saving measures (Lin et al., 2013). The social responsibility of bed and breakfasts can be fulfilled via such GSR factors as the promotion of local public transport among guests, the provision of bicycle rental services, the environmental

education of personnel, and the planning of local walking routes.

(6) Green procurement

Green procurement refers to expressing love towards the environment through the purchase of products and services that can improve it (Faith-Ell et al., 2006). Thus, in the process of procurement, green bed and breakfasts should avoid purchasing products with excessive packaging, instead purchasing local products, environmentally clean products, and Energy Star marked products and equipment in order to minimize damage to the environment.

2. Suggestions

This study determined key strategies of green bed and breakfast operations management based only on an investigation of bed and breakfasts in southeastern Taiwan and without including any input from officials of governmental institutions. It is suggested that future studies integrate governmental institutions into the research and extend the research scope to all of Taiwan in order to increase the applicability of key strategies.

REFERENCES

- [1]. W.C. Lin, Hillside green B & B landscape design- A case study of Olive Tree B & B in Hsinsh Township, Taichung City, master thesis, Tunghai University, Taiwan, 2014.
- [2]. W.F. Chen, and B.J. Chung, Alpine develops for Bed and Breakfast to discussion of the land on slope security—Chin-Ging Area as an example. *Journal of Slope Hazard Prevention*, 8(2), 2009, 1-18.
- [3]. S.C. Chou, A study of B&B owners knowledge, supportive attitudes, practices on Eco-inn in Yilan, Taiwan, master thesis, National Taipei University of Nursing and Health Science, Taiwan, 2012.
- [4]. C.H. Tsai, A study of the correlation between values, attitude, behavior, and green knowledge in green hotel residents in Hualen, Taiwan, master thesis, National Dong Hwa University, Taiwan, 2012.
- [5]. J.R. Lin, C.C. Huang, L.W. Wu, and C.K. Hsieh, Green social responsibility and operating efficiency: Analysis of the B&B industry in the Sun Moon Lake Scenic Area, *Journal of Tourism and Leisure Studies*, 19(1), 2013, 55-78.
- [6]. J.R. Lin, T.K. Peng, C.K. Hsieh, and Z.F. Kao, Green environmental management and operating performance: An application of Bounded-DEA, *Commerce & Management Quarterly*, 15(2), 2014, 137-159.
- [7]. Tourism Bureau, Ministry of Transportation and Communications, *Regulations for the Management of Home Stay Facilities*, 2016a. Retrieved August 12, 2016, from http://admin.taiwan.net.tw/law/law_d.aspx?no=130&d=39
- [8]. M.Y. Yang, An evaluation of energy performance for green homestay industry in Taiwan, master thesis, Asia University, Taiwan, 2016.
- [9]. Tourism Bureau, Ministry of Transportation and Communications, *Monthly Statistics on Tourism*, 2016b. Retrieved August 12, 2016, from <http://admin.taiwan.net.tw/statistics/month.aspx?no=135>
- [10]. Environmental Protection Administration, Executive Yuan, *Green hotel promotion plan*, 2016. Retrieved August 12, 2016, from <https://greenliving.epa.gov.tw/GreenLife/WalkSing2013/Action.aspx>
- [11]. N.W. Kuo, Sustainable rural tourism development based on agricultural resources: the eco-inn initiative in Taiwan, *International Journal of Agricultural Resources, Governance and Ecology*, 7(3), 2008, 229-242.
- [12]. TravelKing, *Green hotels*, 2016. Retrieved August 1, 2016, from <http://www.travel-service.com.tw/loading02.php>
- [13]. Y.J. Chen, An investigation on evaluation indicators for eco-inn selecting in Taiwan, master thesis, National Taipei University of Nursing and Health Science, Taiwan, 2007.
- [14]. N.W. Kuo, and Y.S. Chen, Sustainable rural tourism development: Development of green hotels. *Proc. 2nd Forum on Recreation, Culture and Green Resource*, Taipei, Taiwan, 2003.
- [15]. S.F. Lin, Pay less and save more—Willingness to pay for green B&B, master thesis, National Taiwan Normal University, Taiwan, 2010.
- [16]. C.P. Huang, A study of consumers' knowledge, attitudes, practices on green B&B, master thesis, Fu Jen Catholic University, Taiwan, 2011.
- [17]. C.C. Kao, The study on evaluation indicators for Special B&B inn – The example of seashore type, master thesis, Kainan University, Taiwan, 2011.
- [18]. Y.Y. Wang, Predictors of B&B managers' and guests' acceptance of green-B&B strategies, doctoral diss, National Sun Yat-sen University, Taiwan, 2009.
- [19]. Z.P. Lin, Green hotels, *Scientific Development*, 460, 2011, 34-39.
- [20]. M.J. Chen, and S.R. Ou, Constructing accommodation properties of green hotels, *Horticulture NCHU*, 36(2), 2011, 87-102.
- [21]. Y.O. uang, Investigation of importance of implementing environmental protection measures by B&B operators using AHP- Taking Yilan B&B as an example, master thesis, Hsing Wu University, Taiwan, 2015.
- [22]. Architecture and Building Research Institute, Ministry of the Interior, *Green Building Explanation and Assessment – 2007 revised edition* (Taipei: Architecture and Building Research Institute, Ministry of the Interior, 2007).
- [23]. Wikipedia, Environmental education, 2016. Retrieved August 2, 2016, from <https://zh.wikipedia.org/zh-tw/%E7%92%B0%E5%A2%83%E6%95%99%E8%82%B2>
- [24]. C. Faith-Ell, B. Balfors, L. Folkesson, The application of environmental requirements in Swedish road maintenance contracts, *Journal of Cleaner Production*, 14, 2006, 163-171.