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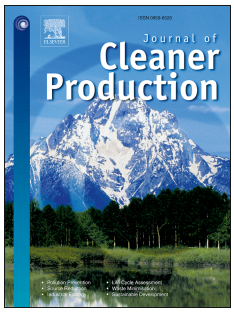

Promoting sustainable consumer behavior through the images of wellness service in Taiwan

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The development of a sustainable wellness service marketing strategy in Taiwan based on consumer eye movements and preferences

Abstract

Developing an image that promotes sustainable consumption is an effective way to support sustainability. Although sustainable tourism is gradually being emphasized, there are still few studies focusing on how to design effective marketing communication strategies that stimulate sustainable consumption behavior on the part of travelers. To fill this research gap, based on a triple bottom line perspective, experience marketing perspective, and cognitive-experiential self-theory, this study is aimed toward an examination of the impact of the types of wellness tourism and related visual cues (including cognitive and affective attributes) on the visual attention and preferences of consumers. This research uses consumers who prefer wellness tourism as the research sample. To achieve better experimental control, 133 participants were recruited to complete the research in a laboratory. The empirical results show that wellness service marketing pictures with a spa in the tourist hotel capture more visual attention and are preferred more by consumers than those with yoga, water aerobics, and spinning. This result means that to attract consumers pursuing wellness, hotels should utilize the visual characteristics of spa images more effectively. Tourist hotels can communicate images of healthy bodies and youthfulness to customers through images of wellness activities such as the use of a spa, stimulating them to check into the hotels and engage in wellness

exercise, thereby improving their willingness to pursue wellness in hotels during their journeys.

Keywords: sustainable behavioral intention; wellness service; visual attention; triple bottom line; physical activity

1. Introduction

Hotels are considered responsible for a considerable proportion of the environmental pollution caused by the tourism industry (Asadi et al., 2020). Some hotels have begun to engage in green innovation in response to concerns about reducing environmental degradation and promoting environmental sustainability (Dos Santos et al., 2017, 2020; Preziosi et al., 2019). After adopting green innovation activities intended to reduce environmental pollution, hotels need to rely on the impression of green behavior created by wellness tourism or eco-tourism to highlight the sustainable value to the environment brought about by green innovation in order to ensure the sustainable growth of their business (Asadi et al., 2020; Wang et al., 2018). In order for innovative products/services to have sustainable performance, they must first obtain the visual attention of consumers. Green innovation must be able to gain consumers' visual attention through specific green impressions in order to improve subsequent sustainable performance. Yet, little research has explored the effect of green images on the visual attention of consumers. The purpose of this study is to explore the impact of sustainable wellness tourism pictures on consumer preferences and visual attention.

The triple bottom line perspective confirms that translating the concept of sustainability into a marketing strategy is a key way to support environmental sustainability (Meehan & Bryde, 2011; Tseng et al., 2016). To maintain rich natural resources and the environment for future generations, it is crucial to promote sustainable consumer behavior (Penn, 2003). Increasing numbers of travelers regard the pursuit of wellness as an important part of traveling (Chen, Liu & Chang, 2013). The ability to design green marketing images is critical to building a hotel's sustainable business strategy. Understanding the benefits sought by tourists helps marketers understand various market segments and helps them communicate more effectively with these customers. This understanding also contributes to their ability to design products and services that meet the needs of tourists for reducing pressure or pursuing wellness (Azman & Chan, 2010; Frochot & Morrison, 2000; Tsai et al., 2012). Wellness services/activities provided by a hotel that can improve the mental and physical fitness of guests through the use of the natural environment as a servicescape (Chi et al., 2019). Yoga, spas, water aerobics, and spinning are common wellness services in hotels in Taiwan (Hsiao, 2009; Kim et al., 2017). These four wellness services are also often used as the main images in wellness service advertisements. Understanding which wellness service is best suited for building a green image is important for maintaining green innovation.

Tourism advertising through the Internet is considered to be an effective communication channel (Heung & Kucukusta, 2013). However, when consumers are browsing the Internet in search of suitable hotel for their vacation, they encounter large numbers of marketing advertisements, resulting in their selectively ignoring irrelevant stimuli in the browsing process (Kastner & Pinsk, 2004). Attention is the first step in the decision-making process and a precondition for conscious information processing. In

particular, visual attention enables individuals to selectively use messages that help them make decisions (Orquin & Loose, 2013). Furthermore, whereas the natural environment is important in establishing the servicescape of tourism hotels, the factors underlying its level of importance have not been clearly delineated in the existing green hotel literature. This study is aimed toward filling this gap (Manhas & Tukamushaba, 2015). In order to design better marketing campaigns, tourist responses to visual advertising can be evaluated objectively before the implementation stage (Scott, Green, & Fairley, 2016). Eye tracking technology is an effective tool for assessing image appeal (Scott, Zhang, Le, & Moyle, 2017; Wang & Sparks, 2016). Attention measures found from eye-tracking studies provide one option for evaluation of interest and fascination for natural aesthetic objects (Scott, Green, & Fairley, 2016). Using eye tracking technology, this study assesses the attractiveness of green images and the impact of these images on consumers' visual attention and accommodation choices.

The objectives of this research include exploring the attractiveness of various types of wellness tourism with nature servicescapes in the online advertisements of hotels from the perspective of hotel consumers. This study also compares the preferences of young people and seniors for the images used in four hotel wellness services. This study explores customer preferences to determine which of the four types of wellness exercises combined with natural servicescapes are most preferred and obtain the most visual attention. The paper is structured as follows: Section 2 is a literature review, and Section 3 presents the research method used. Section 4 presents the results from the analytical process. The implications addressing theoretical and managerial perspectives along with concluding remarks are presented in Sections 5.

2. Literature Review

2.1 The theoretical basis of sustainable consumption

Connectedness to nature inspires sustainable consumption behavior (i.e., green purchasing and recycling) through the mediating role of love of nature (Dong et al., 2020). Despite the importance of feeling connected to nature, it is unclear how this preference toward nature can be developed and exploited. This research suggests that pictures that allow consumers to imagine themselves engaged in wellness activities in a natural environment may evoke their love and/or preferences for nature. A servicescape image with forests and/or rivers as the background may awaken consumers' love for nature and perceived benefits from exposure to the natural environment, thus further promoting sustainable consumption behavior.

By disseminating sustainable wellness service images, managers of tourism hotels can persuade consumers to use the hotel's sustainable services and thus support sustainable consumption. As the triple bottom line suggests, sustainability actions enhance the interest of consumers, companies, and society through three dimensions. The environmental sustainability dimension focus on minimizing the negative effects on the environment caused by daily operations (Hassini et al., 2012; Xu & Gursoy, 2015). Hotels that provide wellness services (including yoga, spa services, water aerobics, and spinning) based on natural resources can reduce the negative impact of daily operations. For example, the hotel can arrange for experts to instruct a yoga class for customers by a river or in the woods. The social dimension mainly focus on maximizing the social-welfare and benefits of related internal and external stakeholders in a tourism hotel, including employees, customers, suppliers, and the local community (Hassini et al., 2012; Xu & Gursoy, 2015). Tourism hotels promote the well-being of employees and customers by

118 providing relaxing wellness services in natural-based servicescapes. The economic
119 dimension focuses on increasing and keeping long-terms profits (Kleindorfer et al., 2005)
120 through revenue growth and reductions in operating costs. Wellness services allows
121 tourist hotels in the competitive tourism market to increase operating income by
122 enriching the choices of tourism products (Crouch & Ritchie, 2012).

123 The experiencing marketing perspective treats consumers as rational and emotional
124 beings who are motivated to pursue pleasant experiences (Kim & Park, 2017). In addition,
125 information processing theory is a useful tool for understanding how people process
126 information and then make choices. For example, cognitive-experience self-theory offers a
127 theoretical foundation for explaining the effects of rational and experiential systems in
128 information processing (e.g., Epstein, 1990, 2003). According to cognitive-experiential
129 self-theory, the experiential system is connected through affects, where information is
130 processed in quickly and simply, which is more likely to occur automatically at the
131 pre-conscious level. The rational system is related to logic, dealing with information in a
132 slow, intentional, conscious, analytical, and logical way (Epstein & Pacini, 1999; Kahneman
133 & Frederick, 2002). Based on the experience marketing perspective and
134 cognitive-experiential self-theory, consumers will visually observe and evaluate the
135 cognitive and emotional messages in hotel marketing advertisements while observing
136 them and then will integrate this information to form preferences. Thus, it is important to
137 explore the types of hotel wellness services and to explore what characteristics of
138 sustainable wellness services are more appealing to consumers and lead to increased
139 visual attention and preferences.

140

141 ***2.2*** **Sustainable consumption, wellness services, and eye tracking**

Wellness services in a natural environment allow tourist hotels in the competitive tourism market to increase their operating income by enriching tourism products (Crouch & Ritchie, 2012). By building marketing capability related to sustainable consumption, firms can improve their degree of competitiveness (Tseng et al., 2016). To design more convincing wellness service marketing and communication pictures, it is important to identify the clues or features that are most influential in encouraging sustainable consumption behavior.

Consumers have selective attention differences for hotel wellness service advertisements (Wang et al., 2019). However, there are only a few studies in the hotel field that explore consumer visual responses to specific wellness services in the area of hotel advertising. Hotel researchers are actively using eye-tracking methods to explore consumer perceptions of advertising and their visual behavioral responses (Scott, 2017), including exploring customer attention to specific hotel-related images (Wang et al., 2019). This study explores the impact of pictures of common wellness activities (including yoga, spa activities, water aerobics, and spinning) on consumers in Taiwan. Taiwan is an island country located in Asia, with abundant wellness tourism resources, including natural resources such as water, therapeutic water, a favorable climate, mountains, and forests. The income of the middle class in Taiwan continues to increase, leading to increasing attention to health, and the diversification of wellness tourism products combining traditional health generating methods (such as yoga and Thai massage, etc.) with recreational activities (such as spa activities) (Kim et al., 2017). In addition, swimming and water aerobics are the most common offerings in aquatic centers in Taiwan, with between 50 and 100 people participating each day (Hsiao, 2009). Many tourist hotels in Taiwan are built along the coast to provide water aerobic course services, or along the

mountains or hot springs to provide spa and yoga activities. In addition, many gyms in Taiwan offer spinning training courses. Taiwanese travelers who love fitness have a passion for spinning fitness and like to use spinning fitness equipment in hotels.

2.2.1 Yoga

Yoga tourism provides an environment for tourists to experience positive psychological wellness during their trip, as well as post-trip (Dillette et al., 2018). Furthermore, Webb et al. (2017) analyzed one hundred forty-two covers of leading yoga lifestyle magazines, and found that as yoga became more popular in western culture, people increasingly saw yoga as a sports and fitness culture focused on appearance. Nowadays, yoga is synonymous with sacred physical and mental exercises and also mainstream sports, leisure fashion, and the sports/fitness culture (Dillette et al., 2018; Neumark-Sztainer et al., 2018). Although consumers do not think of yoga is an overly intense physical activity, some yoga poses are difficult, and not everyone can easily perform such postures. Therefore, some observers see a yoga image and may feel that they cannot easily perform the same posture. It may even create pressure or reduce their willingness to engage in yoga.

2.2.2 Spa services

Spa services have increasingly become an important marketing strategy for hotel managers to attract tourists (Azman & Chan, 2010). According to research by Koh et al. (2010), spa tourists feel that there are four benefits that they can obtain from spas, including social, relaxation, wellness, and rejuvenation benefits. Tsai et al. (2012) also found that relaxation is the core motivation of male spa tourists. Because relaxation and

pampering are the significant motivational factors for spa tourists, hotels should design their spa advertisements based on the relaxation attributes (Azman & Chan, 2010). The marketing image of a spa experience through hotel websites can attract consumers to utilize this option when traveling (Azman & Chan, 2010). Therefore, marketing images with spa relaxation and pampering characteristics are key drivers that encourage consumers to enjoy spas in the hotels they stay in during their trip.

2.2.3 Water aerobics

Water aerobics is one of the most popular and widely used fitness activities because it seems to be suitable for different groups, including the elderly, injured, and healthy individuals (Benelli et al., 2004). Therefore, people who are vulnerable to sports injuries enjoy underwater sports, which allows them to enjoy the relaxation and fun associated with water sports. To provide healthy aquatic activities for customers, hotels can plan a series of “water fitness” courses, in which professional instructors guide customers to exercise in the water. Previous studies have shown that water exercises are effective to increase muscle strength (Bento et al., 2012; Yázigi et al., 2013), where the resistance of the water is used as an overloading factor for muscle strengthening exercises (de Mattos et al., 2016). A wellness service image with water aerobics features will give observers an image of intense physical activity. Because consumers may experience an exercise overload after engaging in water aerobics (Bento et al., 2012), they may not achieve their goal of relaxation. Therefore, consumers who only want to reduce their tension and stress levels may not have a high preference for water aerobics after observing a water aerobics marketing image provided by hotels.

2.2.4 Spinning

Spinning is one of the most popular ways to exercise in the fitness industry (i.e., Caria et al., 2007; Kaya et al., 2018) and is also especially to be particularly suitable for women (Kaya et al., 2018). To enable customers to achieve fitness and toning effects, hotels can provide customers with professional gym-grade spinning equipment and fitness instructors to guide customers in a safe step-by-step routine so as to train different muscle groups of the body, thereby achieving full body exercise. Customers can also enjoy the thrill of working out indoors. Spinning is a medium-to-high-intensity fitness exercise, and users can achieve high fitness effects from this exercise in a short time (López-Miñarro & Rodríguez, 2010). Therefore, a picture of a wellness service with a spanning feature will make observers feel that this is an image depicting intense exercise. Travelers who just want to relax may not want to do this kind of exercise at their hotel because not only will spinning fail to relax them, it can also make their body or muscles more tired.

2.3 The attributes of marketing images and consumer preferences

Products or services that combine cognitive and affective attributes are the most competitive (Berry, Carbone and Haeckel, 2002; Mascarenhas, Kesavan and Bernacchi, 2006) because the customer experience includes two categories: (1) the function of the product or service and (2) the feelings of the customer. Cognitive attributes are related to the feelings generated from use of a product or the feeling of enjoying the service. Experience value is defined as the customer's perception of a product or service caused by direct or indirect observation, including cognitive and affective attributes (Yuan and Wu, 2008). Cognitive attributes of tourist hotel services include price, food and service quality, whether the brand is a national, recognized brand, and sports facilities (Kim & Park, 2017).

Affective attributes include comfort and entertainment value (Kim & Park, 2017). Yuan and Wu (2008) found that cognitive attributes (features and functions of products/services) and affective attributes (customer perceptions such as enjoyment and relaxation) all affect customer satisfaction (Kim & Park, 2017). When the cognitive and affective attributes conveyed by the hotel's marketing image are consistent, this is most effective in terms of influencing consumer preferences (Kim & Park, 2017; Wang et al., 2019). Thus, the level of experience value is determined by whether the features and functions of a sustainable wellness service can cause potential consumers to feel a sense of enjoyment and relaxation. Furthermore, nature-based wellness services may create experience value that appeals to consumers, where consumers will spend more time or money supporting these nature-based wellness services.

2.4 Hypotheses

Individuals expect to release pressure through travel. However, the intangible characteristics of services make it a challenge to develop marketing images that attract customers who want to relax and consume (Wang et al., 2019). A sustainable environment can serve not only as a vehicle for delivering services - a servicescape, but also can provide consumers with an environment in which they can relax. Hotels can use the message of a sustainable environment to design marketing images. By designing a wellness service that works with a sustainable environment, hotels not only can create various services, but also can promote sustainable consumption.

One of the core goals of the tourist hotel is to provide experience services that will provide travelers with relaxation. Previous research has shown that observing spa images can lead to relaxed feelings (i.e., Azman and Chan, 2010). Therefore, when a hotel

provides a marketing image, a spa in a beautiful natural environment at the hotel will increase the feelings of relaxation (Azman and Chan, 2010; Koh et al., 2010; Wang et al., 2019) that the hotel wants to create. However, the yoga, water aerobics, and spinning images project difficult body postures, physical exertion, and muscle exercises to the observers. This cognitive feature of a sports facility is inconsistent with and unsuitable for the affective characteristics (i.e. relaxation) that the hotel wants to provide. Therefore, this inconsistency in information may reduce the attractiveness and marketing effectiveness of marketing images.

Because a spa is more consistent with the image of hotel relaxation in terms of cognitive and affective judgment, it is argued here that compared to the message clues embedded in yoga, water aerobics, and spinning images, pictures of hotels that provide spa message clues are more appropriate for the relaxation or relieve stress image that the hotel wants to convey to the consumer. Therefore, wellness service marketing pictures with spa features designed by hotels will be more likely to capture the consumer's visual attention (the fixation counts, fixation time) and derive more selection preferences than wellness service marketing pictures showing yoga, water aerobics, and spinning. Therefore, based on the experience marketing perspective and cognitive-experiential self-theory, the following hypothesis are proposed:

Hypothesis 1: Sustainable natural clues with spa images may potentially capture more visual attention than images of yoga, water aerobics, and spinning.

Hypothesis 2: Sustainable natural clues with spa images may potentially evoke more consumer preferences than images with yoga, water aerobics, and spinning.

3. Methodology

3.1 Subject population and sampling

The research sample included customers who prefer wellness tourism. The research participants travel regularly to various destinations (at least twice a year) and tend to choose hotels with wellness activities. They were the target customer group for wellness tourism. The researcher established contact with the candidates through wellness tourism-related social groups (including LINE and Facebook) and sent them the questionnaire soliciting their written informed consent/willingness to participate. The researcher reconfirmed by telephone that candidates who had indicated willingness to participate in the study were willing to participate, explained the purpose of the study, and determined the eligibility of the candidate through a series of brief questions, such as confirming that the candidate had participated in wellness tourism at least twice in the past year. The researcher then invited eligible candidates to the laboratory to participate in the experiment.

Healthy eyesight is often one of the key factors that affects the success of capturing a candidate's eye movement data. To capture the candidates' eye movement data accurately, the researcher confirmed that the candidate's eyesight or corrected eyesight met the requirement (above 0.8) before the experiment (Goodman-Deane et al., 2016), after which the experiment was conducted. Candidates who were not able to meet the eyesight requirement were excluded from participation in the experiment. The researcher informed the candidate not to wear circular contact lenses to participate in the experiment so as to prevent the lenses from affecting the accuracy of the eye tracking

instrument. In addition, if the eye movement data of a particular candidate was missing (for example: single eye value was 0), the data for that candidate was rejected.

In this study, 150 candidates from Taiwan were recruited, and after excluding those who did not meet the corrected eyesight requirement of 0.8 as measured by the equipment (include 5 candidates) and those with missing eye movement data (include 12 candidates), the effective were 133 experimental participants included in the study. Furthermore, older and young adults have different needs for wellness activities. For example, yoga has the potential to positively improve body image and a sense of embodiment (Neumark-Sztainer et al., 2018). Therefore, young people who want to establish a positive body image will engage in physical exercise (Gilchrist et al., 2018). Research into body image and reasons for engaging in physical activity in older adults suggests that functional aspects of the body may be more salient for this population as compared to their younger cohorts (Tiggemann, 2015). Therefore, in this study, a comparison was made of the differences in visual attention and preferences between the elderly and younger participants after they observed the wellness services images. Following Shooshtari et al. (2007), a comparison was made between older (55 years or older) and younger participants. The participants ranged in age from 18–65 years old, with an average age of 45 years. Participants aged 55 years and above were categorized as being in the senior group (22.56%); participants younger than 55 years were categorized in the younger group (77.44%).

A G*Power (Faul et al., 2009) analysis was used to calculate the sample size to determine if the sample was sufficient for the validation of the research hypotheses. Using a G*Power analysis with an alpha error probability = 0.05, effect size = 0.15 (medium), power probability = 0.95, and number of predictors = 2, the minimum required sample

size was found to be 129 to receive a medium effect size of 0.15 (Faul et al., 2009). The sample size calculated by the G*Power efficacy analysis was less than the size of the sample actually participating in the study. Thus, the sample size in this research was sufficient for examining the hypotheses.

3.2 Tools and materials

The purpose of this study was to analyze the visual focus of customers giving attention to hotel advertising images by understanding their visual behavior using eye tracking technology. Eye tracking technology uses eyeball tracking equipment to record the movement patterns of the human eye, which provides information on human visual processing behavior through eye movement (Duchowski, 2007). The stimuli of this study were a series of photographs of hotel exercise and recreational activities. The photos were selected according to the following criteria: 1. The experimental photos were actual images used by the hotel's wellness tourism marketing department, and the dimensions were exactly the same. 2. The resolution of the selected images was moderate. Three experts in the field of hotel research were invited to evaluate 16 photos. The three experts have extensive knowledge in hotel marketing, experience in environmental psychology research, and photography skills. The three experts eliminated photos that were dim, blurry, or taken from inappropriate angles. Finally, four photographs were selected, with each representing yoga, spa services, water aerobics, and spinning activities provided by hotels. The four photos were images from the official websites of two hotels (Volando Urai Spring Spa, & Resort and Hotel Royal Beitou in Taiwan) providing wellness tourism activities. The four experimental pictures are presented below:

Yoga

Spa

Water Aerobics

Spinning

Fig. 1. Experimental pictures

3.3 Experimental design

Before the experiment, the researcher provided the subjects with the following information: You are a consumer with a healthy lifestyle who wants to book a room. You are browsing Hotel A website and evaluating the marketing image provided by this hotel as the basis for your accommodation decision. At present, Hotel A shows you four types of health activity images on its official website. Observe these four images, and assess which wellness activities are most attractive to you when choosing a wellness travel accommodation. In addition, the subjects were reminded that they had sufficient booking funds, so they did not need to consider the price of the accommodation when booking. They just had to consider whether they liked or preferred the marketing pictures provided by the hotel. Furthermore, the experiment was conducted in a silent environment.

3.4 Experimental environment and equipment

To achieve the best experimental quality, this study was conducted in a laboratory in order to control the experimental environment. Before all of the experiments started, the researcher used a hand-held measurement device to standardize the brightness in the experimental environment at 450-500 Lux, and the room temperature was set at 25–26 Celsius so as to ensure the suitability of the laboratory for the eye movement experiments. The actual distance between the subject and the screen projecting the stimuli was approximately 60cm in order to allow the subject's line of sight to fall on the center of the screen. The Tobii Pro X2-60 Eye Tracker (Tobii Technology, Inc. Stockholm, Sweden) was used to record the participants' eye movement patterns at a sampling rate of 60 Hz, including recording each subject's visual focus position, fixation count, and fixation duration.

3.5 Experimental procedure

Before the experiment, the researcher first assisted the subject with obtaining an eye movement tracking calibration. The calibration mode was set at 9-point. After completing the eye tracking equipment tracking settings, the researcher confirmed that the subject understood the experimental process, and then, the experiment began. During the experiment, the subject was shown the four images in order, and finally, the subject was asked to select the wellness activity in which they would like to participate the most. The questions and options were directly displayed on the computer screen for the subject, and the subject was asked to click on the screen with a mouse to answer and to avoid skipping any questions.

In the experiment, each image was displayed for 30 seconds. The entire experiment took approximately 5 minutes. To prevent participants from speculating on the purpose of the research based on the order in which the images were shown, no information related to the research purpose was shared with the participants before or during the experiment. After the entire experiment was completed, the subject was informed of the research purpose. The researcher also used an illuminometer to measure the brightness in the room and adjust the room temperature to control the experimental environment and ensure the conditions were suitable for performing the test. In addition, to prevent sound interference in the experiment, candidates were requested to wear headphones during the whole course of the experiment, and no music was played during the experiment. The computational functions of Qualtrics software were used to randomly extract the images and present them to the subject, thereby reducing primary and recency effects.

3.6 Visual attention measurement

Eye movement distance is short, fast, and difficult to capture. To measure visual attention, the authors divided the wellness service image into four areas of interest (AOI) (Fig. 1.), including 1. servicescape-sustainable natural environment, 2. service equipment, 3. servicescape, and 4. consumer. This method was used to confirm which part of the wellness service image was most interesting to the observers (Fig. 2, A). Eye tracking technology visualizes visual attention in the form of a heat map and gaze plot (Fig. 2, B and C), allowing researchers to explore visual attention. A heat map shows the position and density of the visual focus (gaze point) when the participant looks at an image. The red area in the heat map indicates longer or more frequent fixation, and the green area indicates a shorter or less frequent fixation. Fixation duration and count were used to

assess visual attention in this work (Noone & Robson, 2016; Wang & Sparks, 2016). The fixation duration shows the time the observer spent on one fixation. The fixation count shows the number of times the observer's eye movement stayed on an area of interest in the picture (Engelke & Callet, 2015; Wedel & Pieter, 2012). The gaze plot shows the sequence of the participant's fixations on different AOIs when the participant looks at the picture (Engelke & Callet, 2015; Wedel & Pieter, 2012). The observation sequence indicated the information that the participants are most interested in.

3.7. *Data analysis*

The data was analyzed using descriptive and analytical statistics (ANOVA and chi-squared) with SPSS version 21.0. The descriptive data were presented as means and standard deviations. The chi-square test for categorical variables was used to examine the differences in the wellness image consumer preference characteristics. An ANOVA was used to examine the differences among the four wellness activity images in terms of visual attention. A *p* value less than 0.05 was considered statistically significant.

4. Results

The effective sample size of this study was 133. As shown in Table 1, there were 66 male candidates and 67 female candidates, each accounting for 50% of the total sample size. Fifty-four percent of the candidates had university educations. In terms of average monthly income, those who earned 40,000 (inclusive) to 60,000 NTD constituted the largest group, accounting for 44%. In addition, the majority of the candidates engaged in

exercise 1–2 times a week. It is worth noting that 41% did not have a habit of engaging in regular exercise on a weekly basis.

Table 1. Descriptive statistics of the sample

	Characteristics	Number	Standard Deviation
Gender	Male	66	.502
	Female	67	
Education qualification	Junior high school	18	.895
	Senior high school	21	
	University	72	
	Master's	22	
Average monthly income (NTD)	Below 20,000	10	1.062
	20,000 (inclusive) – 40,000	40	
	40,000 (inclusive) – 60,000	59	
	60,000 (inclusive) – 80,000	14	
	Above 80,000 (inclusive)	10	
Number of times subject engaged in exercise every week	0 times	56	.626
	1-2 times	66	
	3-4 times	11	

4.1 Results of the eye movement analysis of wellness activity images

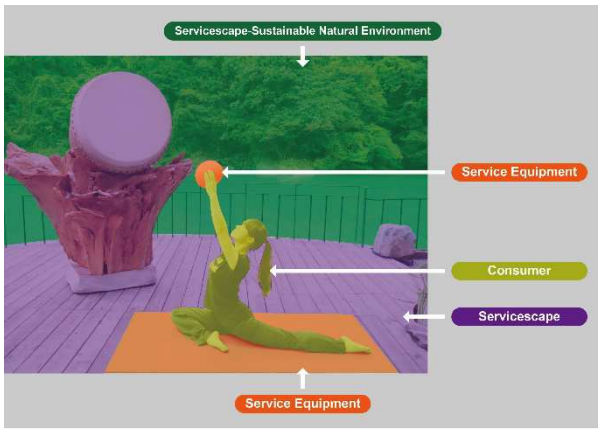
In Table 2, the duration and times the younger group viewed the wellness images were higher than those of the senior group. In addition, in the case of both the younger and senior group, the spa setting and yoga were the activity characteristics with the highest and second-highest fixation count, respectively. In addition, the ANOVA analysis results showed that the fixation duration of consumers observing the four wellness activity images was significantly different among the four conditions taken into account during the study (F (3, 518) =2.75; $p < 0.05$). The Tukey post-hoc revealed the fixation duration on the spa image (4.23, 95% CI (3.8, 4.7); $p < 0.001$) was higher than the fixation duration on water aerobics (3.43, 95% CI (2.99, 3.88); $p < 0.001$) and spinning (3.62, 95%

CI (3.21, 4.02); $p < 0.001$) images. However, the fixation counts of the four wellness activity images did not vary (F (2.19) =2.2; p > 0.05). Thus, Hypothesis 1 was supported.

The participants responded to the questions about their preferences for wellness exercises and recreational activity types. As shown in Table 2, in the younger group, 51.1% of the respondents identified the spa as their first choice, while 18%, 15.9%, and 15% preferred water aerobics, spinning, and yoga, respectively. In the senior group, 51.1% of the respondents identified the spa as their first choice, while 18.1%, 18%, and 12.8% preferred water aerobics, spinning, and yoga, respectively. A chi-square test determined whether or not the participants' preferences differed among the three conditions (including yoga, water aerobics, and spinning) for wellness activity types. The results of these analyses showed that more than half of the respondents preferred to go to hotels for a spa experience. Similarly, the results of the chi-square test were significant, indicating that the participants preferred the spa over water aerobics, yoga, and spinning ($\chi 2$ (3) = 44.31; $p < 0.001$). Furthermore, the order of preference for the wellness image characteristics was the same in both groups. Thus, Hypothesis 2 was supported.

Table 2. Visual attention and preference for wellness image characteristics

	Most preferred wellness activity		**Wellness image fixation duration and count**			
			Average total fixation duration		**Average total fixation count**	
	Younger (%)	Senior (%)	Younger	Senior	Younger	Senior
Yoga	15.0	12.8	4.11	3.45	196.79	170.10
Spa	51.1	51.1	4.30	3.68	205.83	176.97
Water Aerobics	18.0	18.1	3.61	2.85	185.48	136.39
Spinning	15.9	18.0	3.69	3.31	175.27	144.36



(A) Example of defining AOIs

(B) Heat map

(C) Gaze plot

474 Fig. 2. Examples of an eye tracking data analysis for a wellness service image.

475

476 ***4.2. Analysis results for the eye tracking data***

As shown in Fig 3, the results of heat map showed that a servicescape-sustainable natural environment was the area of greatest interest for the observers. The servicescape-sustainable natural environment had a red hotspot ratio that was higher than the other AOIs. Fig. 3 illustrates these results, where the results of the gaze plot show that all wellness service images exhibited the same phenomenon, a servicescape-sustainable natural environment was the AOI that consumers fixated on at first glance. This result suggests that service landscape sustainability is an important attraction for consumers, who observe and assess the benefits of health services in a sustainable natural environment.

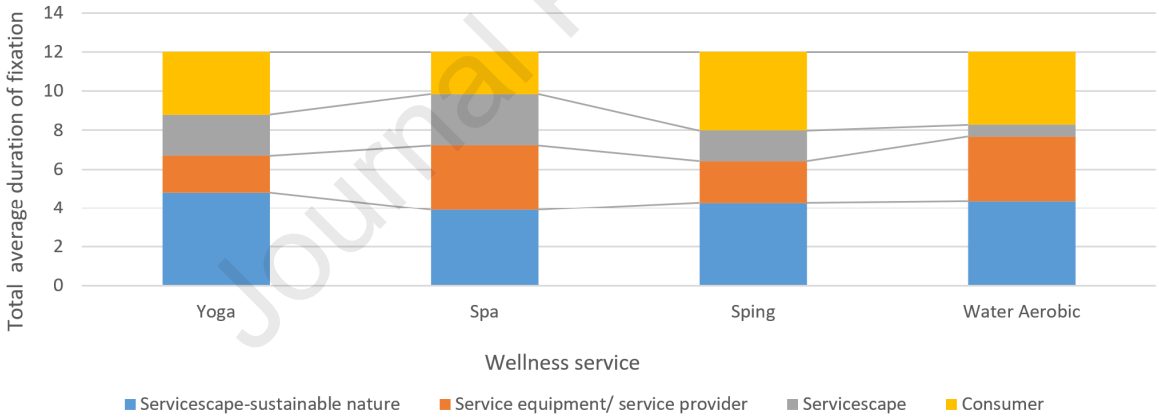


Fig. 3. Total average duration of fixation on different AOIs among the four style of wellness service images.

5. Discussion and conclusion

5.1 Discussion

In this study, consumers' eye movement data were collected and analyzed to explore the impact of a combination of sustainable natural clues and wellness activity images on consumers' visual attention and preferences. This study confirmed that nature-oriented

green images positively influence customers' visual attention and consumer preferences. Even if consumers do not realize that natural-based services can reduce the consumption of natural resources and in turn support sustainable consumption, their preferences will guide them to choose products or services developed based on supporting nature. In this way, a wellness service with natural servicescapes should be designed to stimulate consumers' sustainable consumption behavior.

This research contributes to the research on and managers of sustainable consumption in the following ways: First, hotels can use sustainable wellness services as a marketing strategy. Specially, this study confirms that a natural environment with spa and yoga options evoked higher visual attention from both older and young people as compared to water aerobic and spinning options. The results of this research imply that individuals do not treat all visual messages in the same way (Engelke & Callet, 2015), and they allocate more visual attention (including fixation counts and fixation times) on features they are interested in. This may be because these two wellness activities (spa and yoga) can strengthen the attention restorative effect provided by nature, which in turn evokes a sense of relaxation. The experience marketing perspective argues that memorable experience marketing depends on whether the service-related messages delivered by a hotel are consistent with the cognitive perceptions of and emotional messages received by consumers (Wang et al., 2019). For example, Wang et al. (2018b) used an eye tracking analysis to explore whether the performing arts images with natural or built servicescapes attracted more consumers' visual attention or influenced their behavioral intentions. Their experimental findings suggested that a hotel's images of performing arts taking place in a natural environment can deliver a message with higher service quality to customers. The reason for this may be that the service quality associated

with artistic performance (cognitive clues) and the natural environment (affective clues) of the hotel are better than other alternatives. Therefore, when a hotel incorporates cognitive cues and affective cues into marketing images, especially when the cognitive and affective cues can be matched, marketing effectiveness will be higher.

Second, the heat map and gaze plot from the eye tracking analysis showed that a servicescape-sustainable natural environment in the wellness pictures is an area of greatest interest to observers. Thus, environmental sustainability can be designed by service companies into a servicescape that provides different services to consumers. Previous researchers have argued that green symbols, images of nature, and wellness service designs can be used to differentiate services and provide added value to consumers (Prothero & Fitchett, 2000; Preziosi et al., 2019). Consumers have begun to consider the importance of sustainable consumption and are beginning to pay more attention to the degree to which their behavior is environmentally friendly (Wang et al., 2018a). This study further reveals that service firms not only can make efforts to protect the environment, but they can also design natural resources into a servicescape to develop differentiated services that lead to a state of relaxation.

Third, compared to information and communication technology firms and manufacturing firms, service firms can develop different sustainable consumption models based on their efforts to protect natural resources. For example, service firms can transform sustainability into core services rather than treating it as a supplementary service or an aspect of corporate social responsibility. The hotel can use nature as a servicescape (Wang et al., 2019), and let consumers engage in wellness activities in the natural environment or see the natural environment (i.e., forests, rivers, or lakes) through a window when they are engaging in the wellness activities. Hotels can use the results of

this research to enhance marketing effectiveness. For example, a hotel may place links to their website on a sustainable marketing image, thereby guiding potential consumers toward sustainable marketing images in order to browse the hotel's website or reservation page. In this way, hotels not only enhance their visibility, but also reduce consumer search costs, which makes it easier for potential consumers to access and search for sustainable wellness services offered by hotels.

Finally, the results of the count analysis and chi-square test indicated that the participants preferred the spa over water aerobics, yoga, and spinning. However, the order of preference for the wellness image characteristics was the same in both groups, where no between-group differences were found based on age. In addition, in terms of visual attention tracked by measuring eye movements, in both groups, spa service and yoga were the activity characteristics with the highest and second-highest fixation count, respectively. The results indicated that a spa visit was the wellness activity that these consumers most wanted to participate in. This study suggests that spa images can be used as a visual cue for a hotel to market their wellness services since it is more attractive to consumers. In addition, the ANOVA analysis results showed that the fixation duration of consumers viewing the spa image was higher than that of consumers observing other wellness activity images. This shows that these consumers preferred the spa image. The spa image had higher visual attractiveness to consumers when compared with the other wellness activities. This implies that effectively utilizing visual characteristics (presenting spa or yoga images) can attract customer attention, motivate customers to process hotel service information with the least effort, and guide them to choose the accommodation that benefits wellness in both mind and body.

For hotels with limited resources, managers can choose to invest resources in spa infrastructure, equipment, and personnel training because of its greater likelihood of attracting consumers to enjoy wellness services in their hotel.

There were some limitations in this study. First, online booking is a complex decision-making process, and there are many factors that affect this process. This study explores the visual element sustainable consumption pictures from the perspective of sustainable consumption. However, the impact of multimedia information (for example, price) is not discussed. It is suggested that future research discuss the impact of multimedia information (for example, price and sound) on sustainable consumption decisions. Second, this study only compared the visual attractiveness to an individual for four types of wellness activity images. Future research can further compare the impact of these four wellness activity images on recall and accommodation decisions. Finally, some hotels offer consumers walking tours (or other emerging wellness tourism activities) as a method of enjoying the tourism resources surrounding the hotel. Future research can explore the visual attractiveness of such wellness activities to consumers.

5.2 Conclusion

Using consumers' eye movement data can lead to an understanding of their visual attention and preferences and support further exploration of the impact of the combination of sustainable natural clues and wellness activities images. The results of this study showed that to maximize the synergy between sustainability and the wellness service strategies, managers should focus on the fit between the cognitive and emotional aspects of marketing images. In particular, images that combination sustainability with spa visits or yoga deliver consistent relaxation or pressure release messages to customers,

592 which will lead to higher visual attention and selection preferences from consumers. In
593 addition, the message in the marketing image should avoid conflicts or inconsistencies in
594 the cognitive and emotional dimensions. Images of nature, including forests and rivers,
595 cannot be matched with all wellness activities to provide relaxing services to customers.
596 Hotels wanting to use nature as part of their wellness strategy should choose suitable
597 physical activities as the different services that the hotel provides to consumers. Second,
598 to meet the expanding elderly tourism market, hotels are changing traditional marketing
599 advertisements from the original emphasis on services and food to wellness promotion
600 and sustainability. However, not all wellness activities have the same appeal to
601 consumers. The results of this study indicated that consumers pay more attention to spa
602 clues. This study suggests that in order to attract customers' visual attention, hotels can
603 advertise spa services or yoga more or promote spa services or yoga as their main
604 wellness services because images of these wellness activities appear to attract the
605 attention of older customers.
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Declaration of interests

☒ The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

☐The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: