

Can community-based tourism contribute to sustainable development? Evidence from residents' perceptions of the sustainability

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ABSTRACT

In this paper, the research gaps in sustainable tourism development were addressed by examining residents' perceptions of the sustainability of community-based tourism based on tourism area life cycle theory. The survey questionnaire was distributed to the residents of six Taiwanese communities, and it was designed to determine the residents' perceptions of the economic, socio-cultural, environmental, and life satisfaction sustainability of tourism. In total, 849 usable questionnaires were collected. The analytical results further elucidated the sustainability of nature-based tourism and suggested that the economic, socio-cultural, and environmental sustainability varied significantly in the consolidation, development, and involvement stages of community-based tourism development. The four dimensions of sustainability were evaluated according to the pre- and post-development perceptions of tourism sustainability, and significantly different results were obtained. The study concludes that the residents' perceptions differed across the developmental stages; thus, managers should consider the development opportunities and adopt appropriate strategies across different development stages.

1. Introduction

Tourism is considered an effective method of reducing poverty in some traditional communities (Croes, 2014) because tourism provides different jobs than traditional livelihoods (World Tourism Organization, 2002) as well as opportunities to sell local products (Lee, 2013; Lepp, 2007). Community-based tourism (CBT) has been widely identified for its ability to improve local economies, and it has been introduced in many countries (e.g., Dodds, Ali, & Galaski, 2018; Lee, 2009b, 2013; Lepp, 2007). Consequently, traditional communities, such as rural communities (e.g., Wang, Cater, & Low, 2016), fishing communities (e.g., Thompson, Johnson, & Hanes, 2016), small islands (e.g., Teh & Cabanban, 2007), and aboriginal communities (e.g., Reggers, Grabowski, Wearing, Chatterton, & Schweinsberg, 2016), could develop CBT to improve their economic status.

The development of CBT increases the number of facilities, roads, parks, and recreational and cultural attractions, which benefits residents' quality of life and respects their culture (Brunts & Courtney, 1999). In exotic communities, tourism offers opportunities for residents to appreciate and respect the local culture of the socio-ecosystem, thereby increasing the sustainability of the socio-ecosystem (Ruiz-Ballesteros, 2011). In aboriginal communities, residents have revived

local traditions and culture and exhibited their culture to tourists (Lee, Jan, & Yang, 2013; Wearing, Wearing, & McDonald, 2010). In addition, abundant natural resources, unique terrains, beautiful scenery, and unique flora and fauna species increase the environmental awareness of residents, leading to greater environmental protection in an attempt to provide high-quality recreation experiences (Lee, 2011; Lee et al., 2013; Lee, Jan, Tseng, & Lin, 2018; Lepp, 2007). Therefore, CBT plays an important role in poverty alleviation because it contributes to community development, thereby supporting community sustainability.

However, tourism may lead to negative impacts, such as an increase in the cost of living (Lee & Back, 2006), an unequal distribution of tourism revenue (Alam & Paramati, 2016), low-skilled and low-paying employment (Davidson & Sahli, 2015), natural and cultural resource degradation (Bowers, 2016), crime and crowded living areas (Ap, 1992; Lee & Back, 2006), and a low degree of empowerment (Hatipoglu, Alvarez, & Ertuna, 2016).

These negative impacts may damage local residents as well as the economy, culture, and environment, such that subsequent sustainable CBT may be obstructed. For sustainable CBT, reducing negative impacts on the environment and society is thus warranted.

Residents' perceptions are crucial for supporting the sustainable development of CBT (Lee, 2013; Nicholas, Thapa, & Ko, 2009). Based

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on the social exchange theory (SET; Ap, 1992), residents may support CBT according to their positive or negative perceptions (Lee, 2013). Moreover, during CBT development, residents are the critical stakeholders who may affect tourism planning, development, and support based on their perceptions of the impacts of tourism (Lundberg, 2015). Based on the perception of tourism impacts, resident attitudes toward tourism development may change from positive to negative (Lee, 2013; Woo, Uysal, & Sirgy, 2018); specifically, residents' perceptions of CBT may change over time according to the level of tourism development (Butler, 1980; Diedrich & García-Buades, 2009; Hunt & Stronza, 2014; Lundberg, 2015). Thus, assessing the heterogeneous perceptions of residents at different levels of tourism development is warranted.

Although scholars have examined the perceptions of residents at different development levels (Diedrich & García-Buades, 2009; Hunt & Stronza, 2014; Lundberg, 2015), monitoring changes in perceptions (i.e., pre- and post-CBT development) may lead to insight into sustainable tourism development (Li, Hsu, & Lawton, 2015). Unfortunately, no studies have assessed sustainable tourism development by examining residents' perceptions of the sustainability of CBT based on tourism area life cycle theory. The perceptions of CBT's pre- and post-development will allow for the assessment of changes by CBT from residents' point of views. If the post-development changes are greater than the pre-development changes, would indicate that the residents feel that CBT has benefited their living in terms of the economy, socio-cultural factors, environment, and well-being. From residents' perspective, understanding the changes by CBT will help us to assess the sustainability of CBT. Thus, determining whether CBT will lead to better or worse living conditions for residents is warranted.

To fill these research gaps, this study, which is based on Butler's (1980) tourism area life cycle (TALC) theory, will examine (1) residents' perceptions of sustainability in terms of the economy, socio-cultural factors, environment, and well-being at different CBT development stages, and (2) different perceptions between pre- and post-development analyses at different CBT development stages. These approaches may broaden the understanding of a sustainable CBT model, as well as help us to determine the development opportunities and appropriate implementation strategies across different CBT development stages.

2. Theoretical framework

2.1. Residents' perceptions of sustainability

Residents' perceptions of tourism impacts are an important issue that has garnered considerable attention in the tourism literature (Almeida-García, Peláez-Fernández, Balbuena-Vázquez, & Cortés-Macias, 2016; Nunkoo & Gursoy, 2012). Based on SET (Ap, 1992), residents support tourism development because they perceive that the benefits will be much higher than the costs (Lee, 2013). Therefore, more positive resident perceptions of tourism will foster greater support for the development of CBT.

Residents' perceptions can be influenced by demographic factors (e.g., age, gender, education, and years of residence; Huh & Vogt, 2008; Vargas-Sánchez, Plaza-Mejía, & Porras-Bueno, 2009), community attachment (Lee, 2013), tourism planning (Choi & Murray, 2010), environmental sustainability (Choi & Murray, 2010), the state of the local economy (Gursoy, Jurowski, & Uysal, 2002), and the stage of tourism development (Diedrich & García-Buades, 2009; Hunt & Stronza, 2014; Long, Perdue, & Allen, 1990; Lundberg, 2015).

Previous scholars have explored sustainability indicators for measuring the sustainable development of CBT (Choi & Sirakaya, 2006; Lee & Hsieh, 2016). Ross and Wall (1999a, b) provided a framework that included the interactions among tourism, biodiversity, and local residents. Based on their findings, Lee and Hsieh (2016) developed 141 indicators from several stakeholders' points of views (e.g., visitors, residents, for-profit organizations, government entities, non-profit organizations, and the environment). As mentioned above, residents seem to

be the most important stakeholders in CBT development because they interact with tourists directly and provide unforgettable experiences for tourists; thus, residents with positive perceptions will become major stakeholders in tourism planning and management (Davis, Allen, & Cosenza, 1988; Lee & Hsieh, 2016).

To assess residents' perceptions, studies have focused on the perceived economic and socio-cultural impacts (Gursoy et al., 2002). Moreover, scholars have also assessed the perceptions of environmental impacts as a tool for measuring residents' perceptions of sustainable tourism (Diedrich & García-Buades, 2009; Lee, 2013; Lee & Hsieh, 2016; Lundberg, 2015; Nunkoo & Gursoy, 2012; Vargas-Sánchez et al., 2009). Choi and Sirakaya (2006) also proposed six dimensions for measuring the sustainability of CBT: political, social, ecological, economic, technological, and cultural indicators.

Scholars have introduced life satisfaction as an indicator to measure residents' perceptions of CBT (Long et al., 1990). For example, Kim, Uysal, and Sirgy (2013) proposed the perception of the residents' well-being under tourism, which may influence the direction of tourism policy and planning. Several scholars have also used well-being as an indicator to examine residents' perceptions for supporting tourism development (Kim et al., 2013; Vargas-Sánchez et al., 2009). Additionally, Woo, Kim, and Uysal (2015) indicated that residents' perceptions of community life satisfaction is a crucial indicator for supporting sustainable tourism development. Thus, this study includes residents' perceptions regarding the impacts of tourism on the sustainability of the economy, socio-cultural factors, environment, and life satisfaction as effective predictors of support for further CBT development.

2.2. Life cycle of a CBT area

Tourism development changes over time (Butler, 1980). To depict the evolution of tourism, Butler (1980) proposed the concept of TALC, which is based on the product life cycle concept, i.e., the S-curve, in which the y axis represents the numbers of tourists and the x axis represents the development time. This S-curve represents the evolution of tourism development, such as the exploration, involvement, development, consolidation, stagnation, and decline/rejuvenation stages. The S-curve pattern may differ based on the various characteristics of a destination (Butler, 1980). According to Butler (1980) definition, as the tourism increases and tourists visit regularly, local residents begin to provide facilities and services in the involvement stage. In the development stage, local cultural and natural resources are well-developed, and more sophisticated facilities and services are provided by outsiders. The number of residents is nearly equal to the number of tourists in this stage (Butler, 1980). Butler (1980) indicated that the number of tourists exceeds the number of residents, but the rate of increase in tourist declines during the consolidation stage. Because a large number of tourists visit, residents start to become annoyed by tourists' appropriated behavior and grow discontent with tourism activities (Butler, 1980). Since the perspectives of stakeholders are different across different stages (Ngo, Lohmann, & Hales, 2018), destination managers may identify the stage of tourism development to plan for and manage destination resources to increase the attractiveness of communities (Lundberg, 2015). In addition, because residents are key stakeholders in terms of developing tourism, residents' perceptions are an important determinant of whether the development will be successful or not (Long et al., 1990). Diedrich and García-Buades (2009) have used residents' perceptions as an indicator by depicting positive and negative perceptions using the TALC model, and they found that resident support of tourism development is the primary difference between positive and negative perceptions and that this support was highest during the development stage. Thus, the TALC model helps destination managers to develop sustainability strategies and make decisions on the basis of historical paths and future development trends (Kruczek, Kruczek, & Szromek, 2018; Rodríguez, Parra-López, & Yanes-Estévez, 2008).

Several studies have observed the relationship between resident

perceptions/attitudes and TALC based on SET and the carrying capacity theory (Diedrich & García-Buades, 2009; Lepp, 2007; Long et al., 1990; Vargas-Sánchez et al., 2009). One of the most positive attitudes toward tourism is based on the economic benefits at the early stage of tourism development (Diedrich & García-Buades, 2009; Lepp, 2007; Long et al., 1990). Furthermore, negative impacts on socio-cultural factors and the environment may occur but be acceptable (Kang, Lee, Yoon, & Long, 2008). In some developing countries, the socio-cultural impacts were ignored during the early stage of development (Diedrich & García-Buades, 2009; Lepp, 2007). Compared with the negative perceptions, the positive perceptions increased rapidly in this stage of development because residents perceived that the benefits of tourism would outweigh the costs, which led to support for tourism development.

Although positive perceptions increase the level of tourism development, they may also slow the pace of increased development, and negative perceptions may begin to increase rapidly (Diedrich & García-Buades, 2009; Long et al., 1990). Regarding the Belize community, most residents continued to believe that tourism was on the right track in the development stage despite the significantly negative social and environmental impacts perceived by the residents (Diedrich & García-Buades, 2009). At this stage, adjustments are necessary when negative perceptions surpass positive perceptions in the consolidation stage (Diedrich & García-Buades, 2009). In some developing countries, residents' perceptions may vary due to the degree of tourism involvement (Nicholas et al., 2009; Shakeela & Weaver, 2018). The residents that appreciate local resources and support tourism development will demonstrate more involvement with tourism (Shakeela & Weaver, 2018). Hunt and Stronza (2014) also identified that residents who do not participate in tourism tend to have a more negative attitude toward tourism than residents who do participate. Hence, inviting residents to partake in meaningful involvement or providing extra-economic benefits will improve residents' perceptions (Hunt & Stronza, 2014).

2.3. Sustainability of CBT

At the early stage of CBT development, environmental biophysical conditions and their managerial implications for future tourism development must be investigated (Sebastian & Rajagopalan, 2008; Teh & Cabanban, 2007). Through planning and management, CBT could improve the quality of life of residents, elicit greater respect for local cultures, and maintain biodiversity (Gurung & Seeland, 2008; Lepp, 2007; Sebastian & Rajagopalan, 2008). Recently, the concept of Gross National Happiness (GNH) has been introduced, which focuses on human well-being rather than material goods. Tourism development policy is based on the four principles of sustainability: equitable economic development, environmental conservation, cultural promotion and good governance (Gurung & Seeland, 2008). For example, under the goals of GNH, Bhutan insists that a “high value and low impact” tourism policy benefits local communities in terms of the economy, socio-cultural factors, environmental conservation, and residents' happiness (Gurung & Seeland, 2008).

When a tourism destination has not been properly planned and environmental management is lacking, tourism development may lead to serious problems for locals, such as sewage pollution, strained water resources and management, and decreased biodiversity (Teh & Cabanban, 2007). Moreover, tourism development has also changed or harmed residents' traditional livelihoods (Lepp, 2007). Residents may tolerate these impacts to obtain economic benefits in the early stage of CBT development (Diedrich & García-Buades, 2009). For sustainability, managers require greater knowledge or support from stakeholders, such as non-governmental organizations (NGOs) or scientists, to plan and manage tourism development and provide greater benefits to local residents. In some developing countries, scholars and NGOs provide education on sustainable tourism to train residents on how to protect local natural and socio-cultural resources (Rodríguez-Martínez, 2008; Sebastian & Rajagopalan, 2008; Sebele, 2010). Moreover, governments

create tourism policies to regulate tourism development to assure the quality of life and well-being of residents (Gurung & Seeland, 2008).

In terms of measuring the sustainability of CBT, economic, social-cultural, environmental, and life-satisfaction sustainability factors have been widely addressed (Choi & Sirakaya, 2006; Woo et al., 2015). The economic benefits should be distributed to residents fairly (Choi & Sirakaya, 2006). CBT should promote local economic opportunities that improve the quality of life of residents and protect the local environment (Lee, 2013; Ohe & Kurihara, 2013). Moreover, Ohe (2008, 2012) indicated that managers of CBT may provide educational services and farming experiences that will increase tourists' satisfaction and create new income sources in some agricultural communities, which will promote economic sustainability.

Yoon, Gursoy, and Chen (2001) examined the structural equation modeling that economic, socio-cultural, and environmental impact factors have impacted local residents' support for tourism development. Moreover, Lee (2013) showed that perceived economic benefits, social benefits, and cultural benefits affect support for sustainable tourism development, and perceived social and cultural costs negatively affect residents' support for sustainable tourism development.

CBT provides opportunities for residents to increase their social or traditional cultural identity, as well as enhances the social coherence of the community (Choi & Sirakaya, 2006). Natural resources will be recognized, appreciated, and protected through CBT (Choi & Sirakaya, 2006). To achieve the sustainable development of CBT, residents should be provided with life satisfaction sustainability realms such as material well-being, community well-being, emotional well-being, and health and safety well-being (Woo et al., 2015). By assessing residents' life satisfaction, managers can understand the residents' perceptions of tourism impacts and how to influence their material, community, emotional, and health and safety well-being, which subsequently contributes to the sustainability of CBT (Kim et al., 2013).

To obtain a better understanding of residents' perceptions of current and pre-CBT development conditions under the effects of tourism development, an analysis similar to an importance-performance analysis (IPA) was introduced to evaluate the residents' perceptions of CBT development (Ahn, Lee, & Shafer, 2002; Boley, McGehee, & Hammett, 2017; Frauman & Banks, 2011). This analysis provided baseline data to manage and monitor changes caused by tourism development, and these data could be used to effectively assess the sustainability of CBT development. Using this IPA approach based on the limits of acceptable change framework (Ahn et al., 2002; Boley et al., 2017; McCool, 1994) and recreational opportunity spectrum theory (Ahn et al., 2002; Boley et al., 2017), community-based development strategies could be modified to assess sustainable CBT.

3. Methodology

3.1. Contextual setting

First, to acquire representative samples of the development stages of CBT, information on 20 tourism-related communities were collected. Based on differences in the associated websites, contact information, tourism promotion, tourism services, travel package programs, interpretation services, and local food and beverages in the different communities, three main clusters of samples (consolidation, development, and involvement stages) were identified. Next, six different community-based destinations (consolidation stage: Cigu and Taomi; development stage: Dingcaiyuan and Wumilo; involvement stage: Toshe Living Basin and Linpei) were chosen as the study sites. Third, the authors visited the leader of each community to request permission for participation in the survey. The six communities are described below.

Originally a traditional fishing village, the Cigu wetland area is located in Tainan City, which is one of the attractions of Taijiang National Park. Cigu is famous for its abundant and diverse waterfowl, such as black-faced spoonbills, which can be viewed from late winter to early

spring. Taiwan's government and several NGOs have conducted environmental protection campaigns to protect the valuable wetland and wildlife habitat and thus have preserved this wetland environment (Lee, 2009a).

Taomi, which is located in central Taiwan, was originally a traditional rural community. After the Taomi community was damaged by a major earthquake on 21 September 1999, government officials and community residents decided that the community would be reconstructed. An ecological village development approach that maintains biodiversity and highly diverse species was formed. The host residents established the Taomi Community Development Association for nature-based tourism planning. All the members of this association were trained in conservation and ecological interpretation, catering and hospitality management, and CBT administration (Lee, 2009b; Lee et al., 2013). Both Cigu and Taomi provide sophisticated tourism services, and are both crowded with tourists on the weekend and holiday.

Dingcaiyuan is a traditional rural community located in southern Taiwan. Recently, the Dingcaiyuan community developed an outdoor traditional agricultural museum to show Toe pottery, wine urns, traditional soy sauce, pickled vegetables, preserved vegetables, and a number of animals are stocked, such as water buffalo, goats, turkeys, and country chickens. This community provides recreational experiences for traditional villages, such as controlling pottery kiln and riding on bamboo rafts and buffalos. The community won the Environmental Award in 2013 and was honored by the Environmental Protection Administration, Executive Yuan, Taiwan.

Wumile (which includes the three villages of Jingliao, Molin, and Houbi) is located in southern Taiwan and is famous for the Jingliao Old Street, the Molin Cultural Exhibition Hall, and the Huang Family Mansion. In particular, the documentary “Let It Be” described four traditional farmers that are gratefully engaged in traditional rice production. The media and the Internet fueled the popularity of “Let It Be”, which is now synonymous with locale marketing for CBT (Tainan City Government, 2017). Both Dingcaiyuan and Wumile have well-developed cultural resources for providing tourism services that have recently attracted more tourists.

Toushe living basin wetland, which is a peat bog in central Taiwan, is a traditional agriculture village located in the Sun Moon Lake National Area. Since 2009, Toushe living basin wetland has been planned as a leisure farm area to develop wetland-based tourism. A diverse recreational program would include options such as “enjoy the earth tremors” and “sink your feet into the earth” and other wetland experiences, agricultural experiences, and canoe trips around the wetland.

Linpei is located in central Taiwan and was originally a traditional agricultural community. This community is famous for the Exhibition Hall of Irrigation, Linpei digital living museum, the migratory relay station for the purple milkweed butterfly, an imperial garden, and a tobacco barn. In particular, the festival of the purple milkweed butterfly is promoted by the local government and several NGOs, which assist in tourism development for the Linpei community. Both Toushe and Linpei began to identify their own natural and cultural resources and have recently provided limited tourism services.

3.2. Research instrument

A survey questionnaire was designed using latent variables, including the residents' perceptions of the economic, socio-cultural, environmental, and life satisfaction sustainability under CBT. The measures of the research instruments that were originally written in English were translated into Chinese by the authors. To overcome translation bias, two native English-speaking persons who are familiar with Chinese were requested to perform the back-translation of these items into English to minimize the translation bias and thus ensure conceptual equivalence (Sperber, 2004). Two scholars specializing in nature-based tourism and one chairman of a community development

association were invited to assess the questionnaire. A pre-test of the questionnaire was conducted in early October 2016 in Dingcaiyuan and Wumilo using the convenience sampling approach. Overall, 74 valid questionnaires were obtained. All of the questionnaire items were subjected to an item analysis, the feedback of three specialists and interviews of five host residents. Six items were removed, and four items were modified for readability and clarity. The formal questionnaire was finally formulated and included the following five sections.

Economic sustainability – The *economic sustainability* section consisted of six items and was based on the findings of Yu, Chancellor, and Cole (2011), Choi and Sirakaya (2006), and Lee (2013) and revised according to the six CBT destinations.

Socio-cultural sustainability – The *socio-cultural sustainability* section consisted of ten items and was based on the findings of Choi and Sirakaya (2006) and Lee (2013) and revised according to the residents' perspectives of the six CBT destinations.

Environmental sustainability – The *environmental sustainability* section consisted of three items and was based on the findings of Choi and Sirakaya (2006), Yu et al. (2011), and Lee and Hsieh (2016) and revised using the six CBT destinations.

Life satisfaction sustainability – The *life satisfaction sustainability* section consisted of 14 items based on the findings of Sirgy and Lee (2006), Kim et al. (2013), and Woo et al. (2015) and revised according to the residents' perspectives of the six CBT destinations.

Resident demographics – The *resident demographics* section consisted of gender, marital status, age, education level, occupational category, residence, and monthly income to create the respondent profiles.

The responses associated with economic sustainability, socio-cultural sustainability, environment sustainability, and life satisfaction were measured on a five-point Likert scale for the pre- and post-development perceptions of tourism sustainability, which both ranged from one for “strongly disagree” to five for “strongly agree”.

3.3. Data collection

The most conservative response format of $p = 0.50$ and $q = 0.50$ was employed to justify the sample size. At least 385 respondents were required to achieve a 95% confidence level and a 5% sampling error (Aaker, Kumar, & Day, 2008). Based on a sample size of 849, the survey results of this study are accurate within a sampling error of 4.66%, with a confidence level of 95%. First, stratified random sampling was performed to adequately guarantee representation among the diverse communities (Graziano & Raulin, 2004). The sample size for each community was determined by the proportional population of each community relative to the total population of the study sites. Next, eight graduate or undergraduate university students majoring in leisure sciences or management were hired and trained to perform randomized sampling, questionnaire administration, and techniques to reduce refusal rates, act as research assistants and collect the questionnaire survey data. One local resident in each community was hired to act as a guide and help select and identify target residents with whom to conduct the questionnaire survey. The questionnaire survey employed respondent-friendly assistants who carefully checked the questionnaires to ensure their proper completion using a face-to-face survey technique because this method achieves a high response rate. The survey was conducted from October 2016 to February 2017. A small gift was given to the respondents who completed the questionnaire as a token of appreciation for their help. In total, 849 usable questionnaires were obtained (i.e., 137, 137, 93, 168, 199, and 115 from Cigu, Taomi, Dingcaiyuan, Wumiluo, Toushe Living Basin, and Linpei, respectively). Additionally, based on the sample sizes of 274, 261, and 314, the survey results were accurate within a 5.9, 6.1, and 5.5% sampling error, with a confidence level of 95% in the involvement stage, developed stage, and consolidation stage, respectively.

Chi-square (χ^2) goodness-of-fit test was used to test whether the usable samples of each community were representative of an equal

percentage of the survey (Sarantakos, 2005). Thus, based on the χ^2 test of goodness of fit ($\chi^2 = 1.59$, $df = 2$, $p > 0.05$), the usable sample of each development stage was apportioned equally in the survey.

3.4. Statistical analysis

Descriptive statistics (e.g., Cronbach's alpha, item analysis, and percentages of resident demographics) and the non-parameter analysis results (e.g., χ^2 test) were analyzed using the statistical software of IBM SPSS Statistics 24 for Windows.

A confirmatory factor analysis was performed using LISREL 8.80 for Windows to assess the validity of the research instrument. The model fit, reliability, and validity (i.e., convergent and discriminant validity) of the economic sustainability, socio-cultural sustainability, environmental sustainability, and life satisfaction sustainability scores were assessed and verified.

The differences between the pre- and post-tourism development periods were analyzed using the paired-sample *t*-test. A multivariate analysis of variance (MANOVA) was conducted on the four subscales of sustainability (i.e., economic sustainability, socio-cultural sustainability, environmental sustainability, and life satisfaction sustainability) to determine the between-group statistical differences (in terms of Wilks's lambda) among the three development stages of the CBT destinations. To further understand the statistically significant MANOVA findings and assess any significant differences among the three development stages of CBT destinations, a one-way analysis of covariance (ANOCOVA) was conducted to determine whether the results remained significant after controlling for the potential confounding variable of perceived pre-development sustainability as the covariate. To assess the statistical differences, post hoc least significant difference comparisons were performed for each subscale of sustainability among the three development stages of CBT.

To explore the perceived changes that occur pre- and post-development of CBT, this study produced a scatter plot, which was similar to the IPA (Ahn et al., 2002). A two-dimensional grid was produced, with the post-development period on the *y*-axis, pre-development period on the *x*-axis and the mean score as the quadrant divider. Using this matrix, the priorities and strategies for adoption could be assessed (Ahn et al., 2002). All 26 item scores were contained in two-dimensional grids, with the post-development period on the *y*-axis, pre-development period on the *x*-axis and mean score as the two-quadrant divider (Martilla & James, 1977). Items in quadrant I, which is denoted "keep up the good work", had scores above the means of the pre-development and post-development periods, indicating that the effects of tourism must be maintained. Items in quadrant II, which is denoted "tourism could help", had lower pre-development and higher post-development scores, indicating that CBT could enhance residents' perceptions of sustainability. Items in quadrant III, which is denoted "bad and getting worse", had lower pre-development and post-development scores, indicating that tourism had no effect on or worsened sustainability. Items in quadrant IV, which is denoted "concentrate here", had higher pre-development and lower post-development scores, indicating potential threats related to the development of CBT that should be concentrated on during development. Accordingly, community-based managers should focus on these items for sustainable CBT.

3.5. Quality of the research instrument

The Cronbach's alpha for the variables of economic sustainability, social sustainability, cultural sustainability, and environmental sustainability were 0.898, 0.910, 0.850, and 0.913 in the pre-development period, respectively, and 0.854, 0.866, 0.841, and 0.909 in the post-development period, respectively. All these scores were above the suggested benchmark of 0.70, suggesting good internal consistency (Nunnally & Bernstein, 1994).

Based on the confirmatory analysis, the measurement model

justifies how the latent variables were assessed in terms of the observed variables and determined the validity and reliability of the responses of the observed variables for the latent variables (Hair, Black, Babin, Anderson, & Tatham, 2010). Many indices have been used to assess the measurement model fit because the statistical properties of the different indices may vary with regards to several aspects of model fit (Hair et al., 2010). The χ^2 value of the model was 1407.19 ($df = 289$, $\chi^2/df = 4.87$; acceptable value < 5) in the Pre-development stage and 1178.81 ($df = 289$, $\chi^2/df = 4.08$) in the post-development stage, implying that the measurement model did not fit the data well. However, because the sample size can affect the χ^2 value, a large sample size can make this test an inadequate measure of a model's fitness (McDonald & Ho, 2002). The other model fit indices included the normed fit index (NFI) of 0.96 in the pre-development stage and 0.97 in the post-development stage, the comparative fit index (CFI) of 0.97 in the pre-development stage and 0.98 in the post-development stage, the root-mean-square error of approximation (RMSEA) of 0.076 in the pre-development stage and 0.056 in the post-development stage, and the standardized root mean square residual (SRMR) of 0.076 in the pre-development and 0.056 in the post-development stage. Based on these model fit indices, the measurement model appeared to fit the sample data well (Hair et al., 2010; Marsh & Hocevar, 1985). Table 1 lists the factor loadings, *t*-values, and composite reliability (CR) and average variance extracted (AVE) for the dimensions of ERB. All the CR scores were greater than 0.6, indicating that these items were reliable measures of the corresponding constructs. All the factor loadings exceeded 0.5 and achieved statistically significant ($t > 1.96$, $p < 0.05$), indicating acceptable convergent validity. All the AVE scores exceeded the threshold of 0.5, indicating acceptable convergent and discriminant validity (Bagozzi & Yi, 1988). Moreover, according to Deery, Erwin, and Iverson (1999), discriminant validity was demonstrated because the model allowed for free covariance among pairs of latent constructs (model fits for pre-development were NNFI = 0.97, CFI = 0.97, GFI = 0.87, RMSEA = 0.072, and SRMR = 0.076; and model fits for post-development were NNFI = 0.97, CFI = 0.98, GFI = 0.89, RMSEA = 0.064, and SRMR = 0.056), which is preferable to a model in which pairs of measures are fixed to perfect covary (pre-development: $\Delta\chi^2 = 1250.89$, $df = 7$, $p < 0.001$, and the model fits were: NNFI = 0.93, CFI = 0.94, GFI = 0.79, RMSEA = 0.103, and SRMR = 0.24; and post-development: $\Delta\chi^2 = 1221.6$, $df = 7$, $p < 0.001$ and model the fits were: NNFI = 0.94, CFI = 0.94, GFI = 0.80, RMSEA = 0.097, and SRMR = 0.25). Additionally, the cross-validation test was conducted using two samples, with the pre-development settings as a calibration sample and the post-development settings as a validation sample. The loose replication (fixed factor structure), moderate replication (fixed factor structure and factor loadings), and tight replication (fix the structure, factor loadings, and residuals) were tested (Table 2; MacCallum, Roznowski, Mar, & Reith, 1994). The Dc2 value for the model between the loose and moderate replications was 32.48 (with 26 df , $p > 0.05$), suggesting that the two replications were equivalent. The Dc2 value for the model between the moderate and tight replications was 190.12 (with 32 df , $p < 0.05$), indicating significant differences between the two samples. Thus, cross-validation with moderate replication was achieved between pre-development and post-development.

4. Results

4.1. Resident demographics

Table 3 shows the respondents' profiles for the consolidation, development, and involvement stages of development. Briefly, 55.0% of the participants were male in the involvement stage, 49.8% were male in the development stage, and 52.7% were male in the consolidation stage. Most participants were married in these three stages. In the involvement stage, 29.7% were over 61 years old in the involvement; in

Table 1
Factor loading, T-value, average variance extracted (AVE), and composite reliability (CR) of residents' perceived sustainability.

Perceived sustainability	Factor loading		T-value		AVE*		CR**	
	Pre-developing	Post-developing	Pre-developing	Post-developing	Pre-developing	Post-developing	Pre-developing	Post-developing
Economic sustainability					0.55	0.63	0.86	0.90
1. Increases employment opportunities	0.75	0.79	23.40	24.62				
2. Increases shopping opportunities	0.83	0.81	27.32	25.87				
3. Increase local government tax revenues	0.74	0.66	23.18	19.20				
4. Promote local business opportunities	0.85	0.80	28.47	24.92				
5. Attracts more investment opportunities	0.80	0.65	25.93	19.09				
Socio-cultural sustainability					0.50	0.61	0.86	0.90
6. Participate in cultural activities	0.79	0.74	25.38	22.30				
7. Develop cultural activities	0.80	0.73	25.54	22.10				
8. Preserve the local culture	0.74	0.72	22.92	21.70				
9. Cultural exchanges	0.81	0.72	26.04	21.60				
10. Positive effects on cultural identity	0.77	0.70	24.29	20.74				
11. Increases facilities	0.77	0.66	24.18	19.20				
Environmental Sustainability					0.56	0.58	0.79	0.80
12. Protect the natural environment and wildlife habitats	0.64	0.67	17.73	18.38				
13. Protect the community's biodiversity	0.73	0.74	20.90	20.72				
14. Increase environmental awareness	0.89	0.83	26.42	23.97				
Quality of life satisfaction					0.45	0.46	0.91	0.91
15. Health well-being	0.73	0.70	22.22	21.26				
16. Safety well-being	0.73	0.71	22.45	21.44				
17. Family satisfaction	0.77	0.76	24.22	23.93				
18. Satisfaction with leisure	0.58	0.62	16.64	18.14				
19. Satisfaction with spiritual	0.76	0.75	23.56	23.45				
20. Satisfaction with cultural life	0.62	0.67	18.13	20.09				
21. Satisfaction with social life	0.69	0.66	20.76	19.74				
22. Satisfaction with neighbors	0.67	0.63	19.85	18.38				
23. Satisfaction with housing	0.74	0.68	22.99	20.58				
24. Standard of living	0.65	0.64	19.39	18.67				
25. Life are excellent	0.59	0.61	16.92	17.80				
26. Overall life satisfaction	0.57	0.55	16.40	15.68				

* Average variance extracted = $(\sum\lambda)^2 / [(\sum\lambda)^2 + \sum(\theta)]$,
 ** Composite reliability = $(\sum\lambda)^2 / [(\sum\lambda)^2 + \sum(\theta)]$ (Jöreskog & Sörbom, 1996)

Table 2
Fit indices of the cross-validation model.

Strategy	Overall model fit		Validity sample		%
	MFF χ^2 (df)	ECVI	GFI	χ^2 (df)	
Loose replication	3629.58 (586)	2.82	0.84	1710.72 (586)	47.12
Moderate replication	3662.06 (612) $\Delta\chi^2 = 32.48$, $\Delta df = 26$, $p > 0.05$	2.82	0.84	1728.30 (608) $\Delta\chi^2 = 17.58$, $\Delta df = 26$, $p < 0.05$	47.19
Tight replication	3852.18 (644) $\Delta\chi^2 = 190.12$, $\Delta df = 32$, $p < 0.05$	2.91	0.84	1820.53 (640) $\Delta\chi^2 = 92.23$, $\Delta df = 32$, $p < 0.05$	46.39

the development stage, 23.0% were between 41 and 50 years; and in the consolidation stage 26.8% were over 61 years old. In total, 38.0% had achieved only a junior high school education or below in the involvement stage; 38.7% had achieved a high school education in the development stage, and 41.2% had achieved a high school education in the consolidation stage; Of the population, 30.6% were agriculturists, farmers, or fishermen in the involvement stage; 27.6% were laborers in the development stage; and 20.1% were agriculturists, farmers, or fishermen in the consolidation stage. Regarding time in the community, 18.6% had lived in the community for over 61 years in the involvement

stage; 21.5% had lived in the community for 11–20 years in the development; and 17.7% had lived in the community for 31–40 years in the consolidation stage; In addition, 49.0%, 38.7%, and 47.3% of the residents had a monthly income of less than NT \$ 20,000 (1 US \$ = 30.037 NT \$ as of June 12, 2018) in the involvement, development and consolidation stages, respectively.

4.2. Residents' perception of sustainability and CBT development

The MANOVA findings showed that the four subscales of sustainability were significantly different among the three stages of development of CBT destinations (Wilks' Lambda = 0.023, F (4, 843) = 9014, $p < 0.001$). The MANOVA findings were significant; therefore, a series of one-way ANOCOVAs were performed to examine the differences between the three stages while controlling for the effect of pre-development perceived sustainability in each stage. Table 4 shows that except for life satisfaction sustainability, all the economic sustainability, socio-cultural sustainability, and environmental sustainability variables presented significant differences among the three stages of CBT development. For economic sustainability, the scores for residents' perception of both the consolidation and development stages were significantly higher than those of the involvement stage, although significant differences were not observed between the consolidation and development stages. For socio-cultural sustainability, the scores for

Table 3
Profiles of the resident in three tourism development stages.

Variable	Involvement		Development		Consolidation	
	n	%	n	%	n	%
Gender						
Male	172	55.0	130	49.8	144	52.7
Female	141	45.0	131	50.2	129	47.3
Marital status						
Unmarried	75	24.3	101	38.7	74	27.8
Married	234	75.7	160	61.3	192	72.2
Age (years old)						
16-20 years old	15	4.8	29	11.1	19	7.0
21-30 years old	38	12.1	47	18.0	23	8.5
31-40 years old	45	14.4	41	15.7	37	13.6
41-50 years old	58	18.5	60	23.0	53	19.5
51-60 years old	64	20.4	45	17.2	67	24.6
Over 61 years	93	29.7	39	14.9	73	26.8
Educational level						
Junior high school and below	119	38.0	43	16.5	98	36.0
High school	108	34.5	101	38.7	112	41.2
University or college	76	24.3	100	38.3	55	20.2
Graduate school	10	3.2	17	6.5	7	2.6
Occupation						
Office or teacher	12	3.8	20	7.7	11	4.1
Agriculturist, farmer, fisherman	96	30.6	22	8.4	54	20.1
Laborer	68	21.7	72	27.6	44	16.4
Service industry	11	3.5	8	3.1	32	11.9
Housewife	41	13.1	38	14.6	34	12.7
Retired	28	8.9	9	3.4	35	13.1
Student	17	5.4	35	13.4	19	7.1
Others	41	13.1	57	21.8	39	14.6
Years residence						
Under 10 years	33	10.6	50	19.2	45	16.6
11-20 years	53	17.0	56	21.5	39	14.4
21-30 years	55	17.6	55	21.1	43	15.9
31-40 years	34	10.9	27	10.3	48	17.7
41-50 years	42	13.5	30	11.5	37	13.7
51-60 years	37	11.9	20	7.7	27	10.0
61-70 years	58	18.6	23	8.8	32	11.8
Monthly income (NT\$*)						
≤20,000	149	49.0	101	38.7	125	47.3
20,001-40,000	109	35.9	100	38.3	93	35.2
40,001-60,000	30	9.9	30	11.5	34	12.9
60,001-80,000	7	2.3	21	8.0	7	2.7
80,001-100,000	3	1.0	7	2.7	3	1.1
≥100,001	6	2.0	2	.8	2	0.8

* 1US\$ = 30.037 NT\$ (June 12, 2018)

residents' perception of development stage were significantly higher in the consolidation stage, and the scores in the consolidation stage were significantly higher than those in the involvement stage. For environmental sustainability, the scores for residents' perception of the consolidation stage were significantly higher than those in the development and involvement stages, although significant differences were not observed between the development and involvement stages.

According to the paired-sample t-tests, the pre-development and post-development periods presented significant differences in the residents' perceived economic sustainability, socio-cultural, environmental, and life satisfaction sustainability (Table 4).

4.3. Pre- and post-development analysis of CBT

Figs. 1–3 graphically show the mean of the pre- and post-development perceived sustainability for the 26 items on a two-dimensioned grid in the consolidation, development, and involvement stages of CBT, respectively. Three items, eleven items, and ten items representing the opportunities achieved through CBT in the consolidation, development, and involvement stages, respectively, were located in quadrant I (keep up the good job) of the graphs. Nine items, three items, and six items

indicating the strengths of the CBT in the consolidation, development, and involvement stages, respectively, were located in quadrant II (tourism could help) of the graphs. Six items, eight items, and eight items representing relatively weaker effects of CBT in the consolidation, development, and involvement stages, respectively, were located in quadrant III (bad and getting worse) of the graphs. Seven items (*health well-being, safety well-being, family satisfaction, satisfaction with leisure, satisfaction with spiritual life, satisfaction with cultural life, and life is excellent*), five items (*health well-being, safety well-being, family satisfaction, satisfaction with leisure, and satisfaction with housing*), and two items (*health well-being and satisfaction with leisure*) representing potential threats related to the development of CBT that should be concentrated on in the consolidation, development, and involvement stages, respectively, were located in quadrant IV (concentrate here) of the graphs.

5. Discussion and conclusion

5.1. Theoretical implications

Previous studies have suggested that CBT is an effective method of alleviating poverty (Croes, 2014; Lepp, 2007). However, no studies have compared the perceptions of residents with regard to the economic, socio-cultural, environmental, and life satisfaction sustainability of CBT and the pre- and post-development perceptions in different stages of development. By assessing the residents' perceptions in the pre- and post-development stages across three stages of CBT development, the dynamic fluctuations of sustainability regarding CBT development could be better understood. Therefore, this study has contributed to the literature by providing a comparison of residents' perceptions of different CBT development stages.

According to the SET (Ap, 1992) and TALC (Butler, 1980), residents' perceptions vary in different stages of development. The economic benefits are the most recognized in the involvement stage (Diedrich & García-Buades, 2009; Kim et al., 2013; Lepp, 2007; Long et al., 1990). The empirical results demonstrated that the economic sustainability in the involvement stage is significantly lower than that in the consolidation and development stages, which may result from the fewer tourist visits during the involvement stage of communities, as well as the limited tourism services that are provided by the residents. Nicholas et al. (2009) also indicated lower levels of tourism involvement correspond to lower perceptions of tourism. Moreover, the interaction between residents and tourists may be limited, which leads to limited tourism revenues in this stage of CBT development (Uysal, Woo, & Singal, 2012); thus, the perception of economic sustainability is lower in the involvement stage than that in the consolidation and development stages. The perceptions of economic sustainability were not significantly different between the development and consolidation stages, which may be explained by the findings of Diedrich and García-Buades (2009), who argued that positive perceptions would increase rapidly in the involvement stage; however, the increasing rate of positive perceptions would slow in the development and consolidation stages.

In the socio-cultural sustainability context, at the involvement stage of CBT development, residents engaged in tourism development; thus, they may ignore social carrying capacity threats (Diedrich & García-Buades, 2009; Kim et al., 2013; Vargas-Sánchez et al., 2009) and environmental impacts (Teh & Cabanban, 2007). By increasing development, the opportunity for interactions between tourists and residents increased, the traffic conditions and leisure facilities improved, and the crime rates increased (Long et al., 1990; Uysal et al., 2012). In this study, the socio-cultural perceptions were significantly different in the three stages, which is consistent with the results of previous studies (Diedrich & García-Buades, 2009; Kim et al., 2013; Long et al., 1990; Vargas-Sánchez et al., 2009).

In the context of environment perception, residents may focus less on the environment conservation in the involvement stage; however, the increasing environmental impacts will cause residents to encounter

Table 4
Comparisons for perceived pre- and post-development periods of community-based tourism in consolidation, development, and involvement stages.

Perceptions of sustainability	Consolidation			Development			Involvement		
	Pre-	Post-	Difference	Pre-	Post-	Difference	Pre-	Post-	Difference
Economic sustainability	3.95	3.37	0.58***	3.54	3.96	0.42***	3.06	3.46	0.40***
Increase employment opportunities	3.45	3.99	0.54***	3.54	3.93	0.39***	3.18	3.44	0.25***
Increase shopping opportunities	3.46	4.04	0.58***	3.59	4.08	0.49***	3.10	3.58	0.48***
Increase local government tax revenues	3.28	3.73	0.45***	3.45	3.81	0.36***	2.98	3.25	0.27***
Promote local business opportunities	3.41	4.20	0.80***	3.63	4.15	0.51***	3.13	3.70	0.57***
Attract more investment opportunities	3.25	3.80	0.56***	3.51	3.85	0.34***	2.88	3.34	0.46***
Social and cultural sustainability	3.38	3.99	0.61***	3.69	4.12	0.43***	3.25	3.70	0.45***
Participate in cultural activities	3.39	4.07	0.67***	3.75	4.17	0.41***	3.34	3.78	0.44***
Develop cultural activities	3.40	4.06	0.65***	3.70	4.17	0.47***	3.33	3.78	0.45***
Preserve the local culture	3.39	3.99	0.60***	3.77	4.10	0.34***	3.33	3.69	0.36***
Provide cultural exchanges	3.38	4.01	0.63***	3.69	4.11	0.42***	3.16	3.60	0.44***
Provide positive effects on cultural identity	3.41	3.95	0.54***	3.63	4.10	0.47***	3.31	3.73	0.42***
Increase facilities	3.32	3.87	0.55***	3.61	4.09	0.48***	3.02	3.61	0.60***
Environmental sustainability	3.22	3.82	0.60***	3.33	3.59	0.26***	3.18	3.55	0.37***
Protect the natural environment and wildlife habitats	3.17	3.75	0.58***	3.25	3.47	0.21***	3.13	3.39	0.27***
Protect the community's biodiversity	3.17	3.76	0.59***	3.28	3.45	0.17***	3.15	3.47	0.32***
Increase environmental awareness	3.34	3.96	0.62***	3.47	3.86	0.39***	3.27	3.77	0.50***
Quality of life satisfaction	3.59	3.84	0.25***	3.66	3.87	0.21***	3.59	3.80	0.21***
Health well-being	3.49	3.75	0.26***	3.62	3.80	0.18***	3.54	3.65	0.11
Safety well-being	3.48	3.70	0.21***	3.62	3.75	0.12*	3.60	3.79	0.19***
Family satisfaction	3.61	3.82	0.21***	3.69	3.85	0.16***	3.66	3.84	0.17***
Satisfaction with leisure	3.58	3.85	0.27***	3.68	3.91	0.23***	3.45	3.73	0.29***
Satisfaction with spiritual life	3.57	3.81	0.24***	3.57	3.83	0.25***	3.58	3.75	0.17***
Satisfaction with cultural life	3.52	3.83	0.32***	3.63	4.01	0.38***	3.38	3.65	0.27***
Satisfaction with social life	3.73	3.97	0.24***	3.67	3.97	0.31***	3.74	3.93	0.19***
Satisfaction with neighbors	3.77	4.01	0.24***	3.81	3.99	0.18***	3.88	4.07	0.20***
Satisfaction with housing	3.71	3.90	0.19**	3.69	3.84	0.15**	3.71	3.91	0.20***
Standard of living	3.45	3.69	0.24***	3.50	3.70	0.20***	3.38	3.71	0.33***
Life is excellent	3.64	3.87	0.23***	3.74	3.95	0.21***	3.60	3.78	0.18***
Overall life satisfaction	3.79	4.04	0.25***	3.85	4.03	0.19***	3.70	3.88	0.18***

*: p < 0.05; **: p < 0.01; ***: p < 0.001

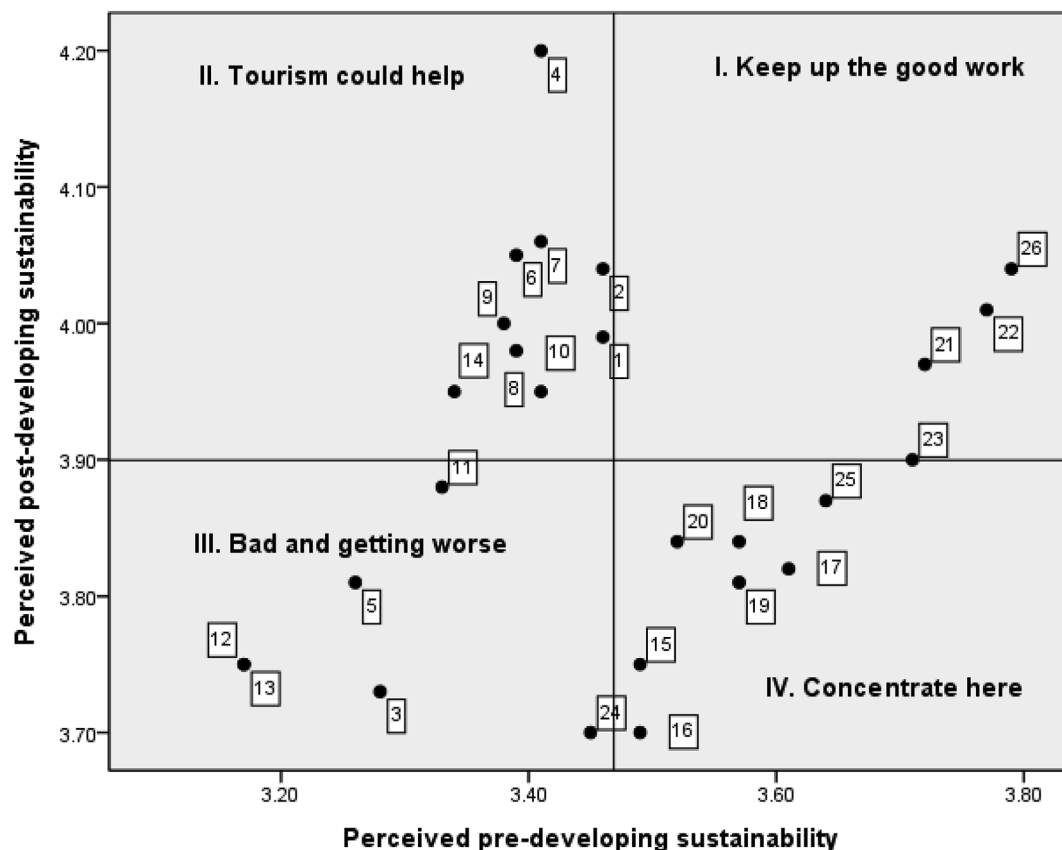


Fig. 1. Pre- and post-developing analysis plot of community-based tourism in consolidation stage.
Note: The number in grid was the statement number of questionnaire (see Table 1).

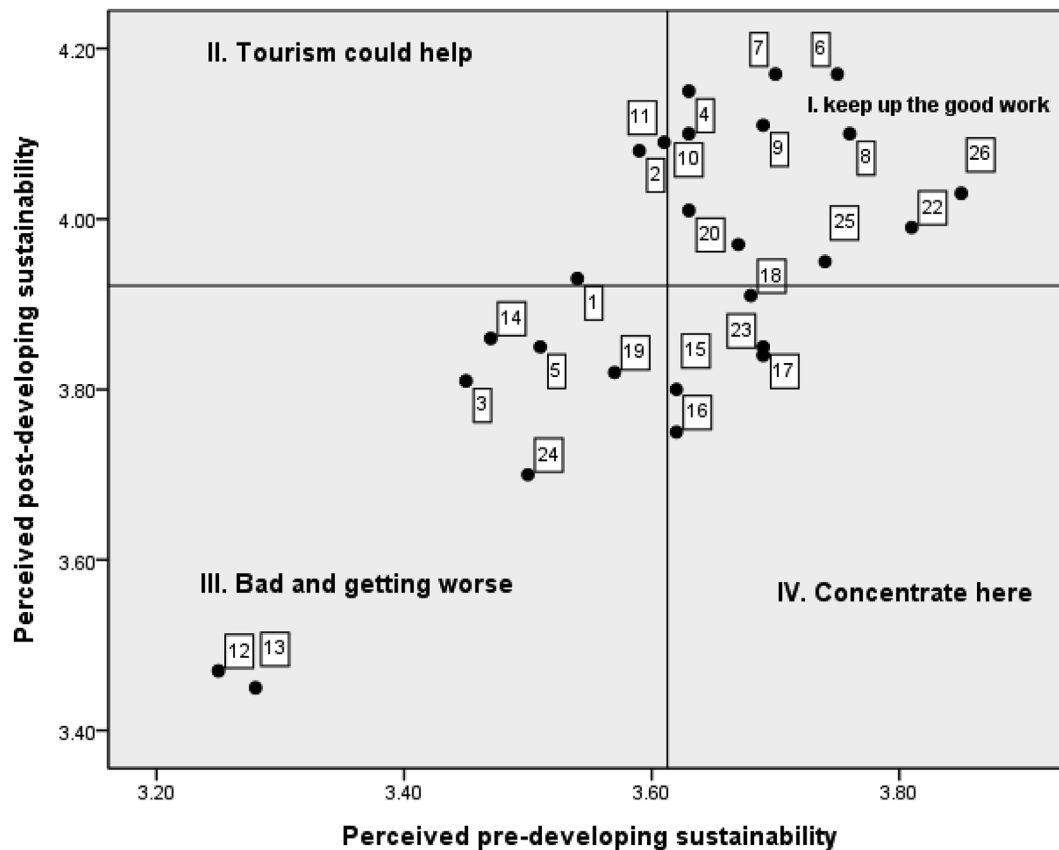


Fig. 2. Pre- and post-developing analysis plot of community-based tourism in development stage.
Note: The number in grid was the statement number of questionnaire (see Table 1).

environmental problems, particularly in the decline stage (Kim et al., 2013). The perceptions of environmental sustainability in the consolidation stage are significantly higher than those in the development and involvement stages, which is consistent with previous studies (Diedrich & García-Buades, 2009; Kim et al., 2013; Long et al., 1990; Vargas-Sánchez et al., 2009). This finding indicates that the number of residents who positively refer to environmental sustainability increases according to the CBT development because of the frequent environmental education programs offered by the government and NGOs. Therefore, residents have a higher environmental consciousness for biodiversity and environmental resources, and their perception of tourism benefits is more positive; thus, they support sustainable tourism (Lee, 2013; Ross & Wall, 1999b).

Both positive and negative perceptions will increase in all stages of CBT development (Long et al., 1990). The main purpose of CBT development is to improve economic, socio-cultural, environmental, and life satisfaction conditions, which influences residents to support CBT development. Thus, the net (i.e., positive minus negative) perceptions of post-development sustainability should be better than those of pre-development sustainability to assure sustainable CBT development (Ap, 1992). The analytical results indicated that the post-development perceptions are significantly greater than pre-development perceptions in terms of the economic, socio-cultural, environmental, and life satisfaction sustainability, which is consistent with the findings of Ap (1992) and Lee (2013) and that these results suggest the promotion of sustainable CBT.

Scholars have intensively assessed sustainability indicators (e.g., Choi & Sirakaya, 2006; Lee & Hsieh, 2016), the impacts of tourism on local communities (e.g., Yoon et al., 2001), models of CBT (e.g., Okazaki, 2008), operationalization of sustainability in regional tourism planning (e.g., Ahn et al., 2002), and residents' perceptions of tourism impacts as indicators of destination decline (Diedrich & García-Buades,

2009).

Although Okazaki (2008) explored the model of community participation to demonstrate residents' empowerment in different TALC stages, residents' perceptions were not introduced in her model. Shakeela and Weaver (2018) compared two communities in different TALC stages (e.g., exploration and consolidation) and indicated that the more residents were involve in tourism, the more positive residents' perceptions were. Diedrich and García-Buades (2009) compared residents' perceptions in different stages of the life cycle in developing countries, indicating that residents' perception may be an indicator for predicting the future development of destinations. Hunt and Stronza (2014) also compared residents' perceptions in developing countries, suggesting that the stages of the life cycle in developing countries are different than those of other parts of the world. However, the differences between pre- and post-development perceptions in the different stages of CBT in developed countries remains debated. Such a comparison is useful for identifying how these perceptions change as well as for making adjustments based on the results of the IPA (Ahn et al., 2002; Boley et al., 2017; Frauman & Banks, 2011). This study thus used Taiwan as an example to assess the sustainability of CBT. The empirical findings of an assessment of the pre- and post-development analysis and comparison of the three different development stages indicate various managerial strategies that could be adopted based on different stages of CBT development to help CBT managers improve residents' perceptions and encourage sustainable tourism development (Boley et al., 2017). This study thus fills the research gap and contributes to the literature.

5.2. Managerial implications

In the involvement stage, residents have limited interactions with tourists and thus have less of an understanding about CBT development than they do in the development and consolidation stages, which is in

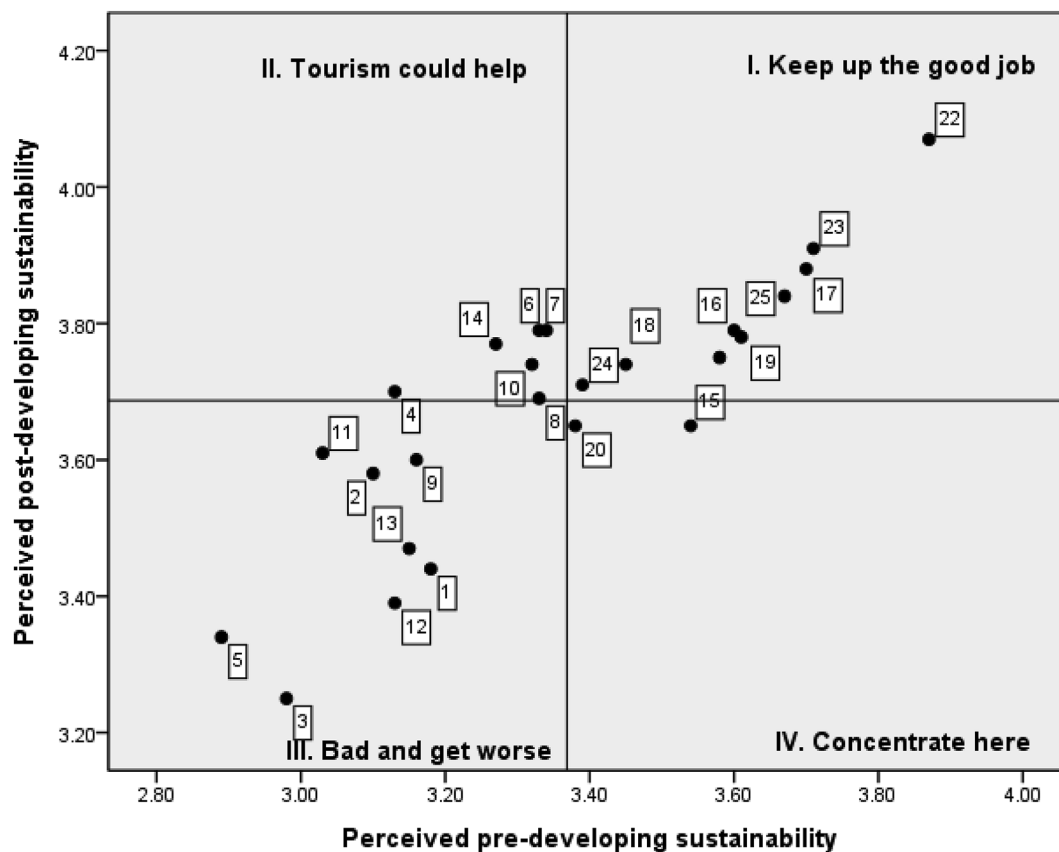


Fig. 3. Pre- and post-developing analysis plot of community-based tourism in involvement stage.

Note: The number in grid was the statement number of questionnaire (see Table 1).

accordance with the findings of Hunt and Stronza (2014) and Uysal et al. (2012). For residents, interacting with tourists and providing recreational and leisure services may be new experiences; thus, managers should encourage and invite residents to participate in planning tourism development (Hunt & Stronza, 2014). Involving residents in tourism planning may provide the best method of developing tourism because residents are sensitive to the meanings and value of local natural and socio-cultural resources (Nicholas et al., 2009). Conversely, because few services were provided by a few residents in this stage, the economic benefits to all residents appear to be limited (Uysal et al., 2012). Therefore, the residents also did not perceive many economic benefits from CBT in the involvement stage. Therefore, managers must ensure that direct employment is provided to residents to ensure that tourism revenue is distributed among a greater number of residents (Hunt & Stronza, 2014). The pre- and post-development analysis of the involvement stage reveals that residents were satisfied with their quality of life and believed tourism could provide socio-cultural benefits and increase their environmental awareness. However, residents did not perceive economic benefits from tourism; in addition, they believed it harmed their health, which indicated that tourism development may be dominated by a few residents. Increasing communication with residents, providing direct employment for residents, and protecting local natural resources will help establish a sustainable development mechanism.

In the development stage, the community attractions have been developed and begun attracting an increased number of tourists (Uysal et al., 2012). Moreover, the residents' positive and negative perceptions of CBT have increased rapidly after the involvement stage (Vargas-Sánchez et al., 2009). Although community development has been changed by tourism, these changes may not be expected by residents; thus, reducing these residents' negative perceptions are crucial (Uysal et al., 2012). The pre- and post-development analysis of the

development stage revealed that residents were satisfied with their quality of life and socio-cultural benefits. The residents also understood that tourism may provide certain economic benefits; however, they did not tend to participate in the investment opportunities. Although environmental problems caused by tourists were also a concern in this stage, residents worried about health, safety, family, and leisure problems caused by CBT development. The empirical results indicated that residents were suspicious of tourism benefits despite the observed economic, socio-cultural, and quality of life benefits, which consists with the findings of Long et al. (1990) and Diedrich and García-Buades (2009). Consequently, residents may not accept additional development if these negative perceptions are greater than the social carrying capacity (Long et al., 1990). CBT managers may plan tourism-specific activity areas that are separate from residential living areas to assure the quality of resident living areas (Ahn et al., 2002). In addition, managers should encourage residents to implement environmental conservation activities to increase biodiversity and tourism attractions. The attractions will be improved by protecting natural and socio-cultural resources, thereby educating tourists on environmentally responsible behaviors (Lee et al., 2013). Thus, these negative perceptions may be mitigated and thereby assist in sustainable CBT development.

In the consolidation stage, many residents' revenue is derived mainly from tourism because many tourists now visit their community (Butler, 1980; Uysal et al., 2012). Several studies have suggested that negative perceptions attained the highest level in this stage because of tourists' inappropriate behavior (Diedrich & García-Buades, 2009; Uysal et al., 2012). Thus, managers should assess the specific negative perceptions to prevent them from outweighing the positive perceptions to ensure sustainable CBT development.

The pre- and post-development analysis of the consolidation stage indicated that residents remained satisfied by their quality of life, had increased their environmental awareness and believed that tourism

could provide economic and socio-cultural benefits to their community. Compared with the involvement stage, in the consolidation stage, the residents have fully recognized the economic and socio-cultural benefits, which is consistent with the results of Kim et al. (2013) and Uysal et al. (2012). However, the residents remained concerned about environment problems and personal well-being (e.g., health, safety, family, leisure, spiritual life, culture life, and standard of living) in this stage. Furthermore, the residents also perceived crowding, crime, and leisure problems in the consolidation stage, indicating that residents' daily lives may be disturbed by the tourist activities. Proactive monitoring and adaptive management of the social carrying capacity and limits of acceptable change framework of the recreation and tourism settings to achieve the CBT quality of tourists' experiences are the managerial recommendations at this stage (Frauman & Banks, 2011; Kim et al., 2013; Long et al., 1990; Lundberg, 2015). Therefore, to provide tourism-specific activities and protect the environment and culture, environmental education for tourists could be implemented as part of their recreation experiences, which would also help improve the sustainability of tourism (Lee & Jan 2015a, b).

5.3. Research limitation and future research

Despite the contributions of this paper, several limitations should be addressed in future research. First, although this study provides in-depth knowledge by comparing residents' perceptions across different stages of CBT development, essential factors that determine sustainability, such as the perspectives of tourists and the effects on the environment/biodiversity, have not been assessed in this study (Lee & Hsieh, 2016; Ross & Wall, 1999a, b). To overcome this shortcoming, future studies should survey tourists' environmentally responsible behavior and examine how tourism development affects the natural environmental resources, biodiversity, and ecological system health in different stages of CBT development.

Second, the residents' perceptions were measured based on four dimensions (economic, socio-cultural, environmental, and life satisfaction) in this study. However, Choi and Sirakaya (2006) argued that the political issues related to CBT also involve residents' participation, regulations, and stakeholder collaboration (Choi & Sirakaya, 2006). To overcome this shortcoming, further assessment of the technological issues, such as transportation, information, communication technology, and stakeholder collaboration, is warranted (Choi & Sirakaya, 2006; Lee & Hsieh, 2016).

Finally, this study focused on the perspective of local residents using a self-reported questionnaire survey distributed across one year that did not actually examine the sustainability impacts; thus, some psychological or emotional attitudes toward tourism development may not be appropriately reflected in this quantitative research approach (Hunt & Stronza, 2014). To overcome this limitation, future research should focus on assessing the interactions among stakeholders on a long-term basis using qualitative approaches, such as in-depth interviews, focus groups, participatory observations, and ethnography, to better elucidate the sustainability of CBT development (Hunt & Stronza, 2014; Wearing et al., 2010). Moreover, using a long-term study to assess the economic, socio-cultural, environmental, and well-being changes and the integrity of natural areas is needed to actually examine the sustainability impacts (Lee & Hsieh, 2016; Ross & Wall, 1999a, b).

6. Conclusion

The empirical findings indicate that sustainable CBT could be achieved using different managerial strategies at different stages because residents' perceptions vary across the development stages.

Although CBT development leads to the accumulation of wealth and the increased consumption of resources, it may not maximize the happiness of residents or safeguard the environment and local culture. Therefore, by extending the knowledge of CBT development, this study

makes a significant contribution to the CBT development literature.

Based on the pre- and post-development analyses, a series of valuable managerial implications are drawn among the three stages of CBT. In the involvement stage, managers should focus on distributing economic benefits to residents and protecting the community's natural environment by educating residents and promoting their ability to provide tourism and hospitality services, such as by offering ecotourism programs, environmental interpretation services, local cuisine, bed-and-breakfast facilities, and arts and crafts products. By providing tourism-related job opportunities, residents may acquire revenue from tourism. Furthermore, managers should apply recreational opportunity spectrum theory to plan trails for tourists to enable them to appreciate the natural and cultural resources. Signs and interpreters can be used to educate and remind tourists to engage in environmentally responsible behavior. In the development and consolidation stages, the threshold of the social carrying capacity and issues related to local environmental conservation must be monitored. Moreover, managers should develop and plan zones for recreational areas and residential areas to separate tourist activity areas from residential areas to prevent disruptions to residents' daily lives by tourists.

The study concludes that residents' perceptions involve different factors across stages; thus, managers should consider the development opportunities and then adopt appropriate development strategies in various development stages. This study's findings elucidate the managerial implications of CBT development, providing meaningful recommendations for future study directions. Thus, this study extends the knowledge of CBT development and makes a significant contribution to the CBT development literature.

Author contributions

All listed authors have contributed directly to this paper. Tsung Hung LEE was responsible for the study conception and design. Tsung Hung LEE and Fen-Hauh JAN performed the data collection, data analysis and writing of the manuscript. All authors were responsible for carrying out critical revisions of the paper for content.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.tourman.2018.09.003>.

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