Assessing the sustainability of community-based tourism: a case study in rural areas of Hoi An, Vietnam

Thi Huong Ngo¹ and Sibylle Creutz²

Abstract: Community-based tourism (CBT) has become a popular segment of sustainable tourism development worldwide to provide community welfare and empowerment. CBT has been pushed as one of the strategies for poverty alleviation, particularly in marginalized regions and communities. Thus, tourism has also experienced negative impacts creating a developmental conflict. This study proposes an integrated methodological approach that provides solutions for assessing tourism sustainability and advancing CBT development approaches and operations towards sustainability in rural communities in Hoi An, a heritage destination in Vietnam. The assessment is a combination of resident interviews, the fuzzy AHP approach, and the sustainability value of the Barometer of Sustainability. Retrieved from literature review, surveys and expert judgments, twenty-one indicators were selected to assess and evaluate the level of economic, socio-cultural, environmental, and management sustainability at a local scale. The final sustainability index reveals that CBT in Hoi An has overall potential sustainability. Economy, identified as the most critical criterion, ranked third in the sustainability level, while Culture-Society exceeded the potential sustainability score. Critical factors are community development policies, capacity building, full community participation and support, and environmental sustainability. The study contributes to the fragmented knowledge of assessing CBT sustainability and concludes that this is a reliable and feasible approach suggesting critical implications for sustainable development. It will appeal to policymakers, planners, and practitioners seeking more effective tools for planning and developing CBT.

Subjects: Tourism; Development Studies; Sustainable Development; Rural Development

Keywords: sustainable tourism; community-based tourism; sustainability indicators; multi-criteria decision making; FAHP; Hoi An

ABOUT THE AUTHORS
Thi Huong Ngo is a lecturer of University of Science and Education, The University of Danang. Her major teaching and research areas are community-based tourism, sustainable tourism development, responsible tourism, and tourism resources.

Sibylle Creutz has over 20 years of experience as a senior tourism advisor to national and local governments and tourism organizations in Southeast Asia. She is focusing her work on biodiversity, climate change and sustainable tourism development ranging from policy and planning to supporting community tourism enterprises.

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1. Introduction

The concept of sustainable tourism has caught the attention of many scholars. Discussing and providing new theories, practices, methods, and results pursuing innovation and sustainability across different levels has helped destinations to advance sustainable tourism practices in planning and management (Buckley, 2012; Lane, 1994). Despite many countries integrating sustainable tourism into their development strategies and implementation actions, UNWTO has stressed that there is a need to better monitor, share and disclose the sustainable development impacts of tourism (World Tourism Organisation (UNWTO), 2019). Current publications emphasize qualitative, quantitative, and mixed research methods (Santos et al., 2021); However, few approaches apply sustainability assessment methods related to CBT development. This study strives to address this gap by developing an integrated assessment approach that determines a sustainability index to indicate the progress towards sustainability in CBT operations.

Over the last decades, tourism has experienced continued growth, becoming one of the world’s fastest-growing and profitable industries, driving economic growth and development, globally and locally, and is forecast to continue growing (Budeanu, 2005; Lane, 1994; Muresan et al., 2016; Zhu et al., 2017). As a key economic sector in many advanced and emerging economies, tourism has generated higher income, created jobs, stimulated regional development, and supported local communities. However, tourism has caused negative impacts affecting socio-cultural and natural heritage. Environmental damage and pollution, knowledge gaps, governance and resource-use conflicts are substantial threats to the local community. This will reduce the attractiveness of the destination and decrease opportunities for local communities (Gollan et al., 2019; Lo & Janta, 2020).

In recent years sustainability in tourism has emerged as a critical concern. Many countries have started to address environmental and social concerns through national policies and strategies, new partnerships, and promoting sustainable tourism practices across the tourism industry. These measures shall stimulate growth in the long-term while maintaining a balance between environmental protection, promoting economic benefits, establishing social justice, maintaining cultural integrity, and shifting from mass tourism to long-term sustainable solutions (H. C. Choi & Murray, 2010; Juma & Khademi-Vidra, 2019; UNWTO, 2013).

Emerging in the 1970s as an alternative development approach, community-based tourism, has been considered one of the efficient tools for sustainable tourism development, especially in rural areas, suburbs, etc. (Harrison & Schipani, 2007; Lankford & Howard, 1994), fostering empowerment and self-reliance, sustainability, and independence (Cornelissen, 2005; Giampiccoli & Mtapuri, 2015).

For decades CBT has been promoted as a means of development bringing benefits to conservation and local communities, but tourism could jeopardize social welfare and economic growth when not properly planned and managed. Although this model has been given significant attention among researchers, few studies focused on assessing and monitoring its sustainability to further develop CBT without causing undesired ecological and socio-cultural effects. The UNWTO has emphasized that achieving sustainable tourism is a continuous process that requires constant monitoring of impacts, and introducing the necessary preventive and/or corrective measures whenever necessary (World Tourism Organisation (UNWTO), 2019; World Tourism Organization and United Nations Environment Programme, 2005).

Addressing this problem this paper asks if CBT can be sustainable. It aims to provide solutions for advancing CBT development approaches toward sustainability by demonstrating a reliable assessment method to evaluate the sustainability status and point out priority actions to improve the CBT performance in the case study area. The research seeks to answer the following research questions: How can successful CBT initiatives be identified; its sustainability assessed? What criteria are relevant to define the constraints and success of CBT initiatives? How can sustainability
levels be evaluated and sustainability demonstrated, and what are the risks of sustainable CBT development in the research area for sustainable tourism and community development? The research will identify CBT criteria and performance indicators reflecting sustainable CBT in a rural community; demonstrate an evaluation procedure based on the FAHP method, and illustrate the application of this method to CBT initiatives in Hoi An. This includes the following steps (1) Assess and validate sustainability criteria; (2) calculate the importance of weights and the sustainability score by using FAHP and the Barometer of Sustainability (BS); (3) apply the method to Hoi An, and present critical aspects of the CBT operations.

The structure of this study is as follows. Section 2 reviews the literature; Section 3 introduces the research area and describes the methodology, such as data, tools, and methods used; Section 4 presents the study results. The last section covers the main conclusions of this research, its limitations, and future research directions.

2. Literature review
The literature review was conducted through systematic and integrative review of online databases to overview and critically analyze the literature and the main ideas and relationships towards sustainability of CBT with relevance to sustainability and tourism, sustainability in CBT, assessment tools, selection of criteria, and FAHP as demonstrated in Figure 1.

2.1. Sustainable development and the role of tourism
Sustainable development has become the overarching paradigm by the international community since the World Commission on Environment and Development published the Brundtland Report in 1987. It is the guiding principle for advancing human and economic development while maintaining the integrity of the ecosystems and social systems on which the economy depends (Bramwell & Lane, 1993). It is also the foundation of the 2030 Agenda for Sustainable Development and the
Sustainable Development Goals (SDGs) (United Nations, 2015) as an outcome of the 2012 Rio+20 UN Conference on Sustainable Development.

The principles of sustainable development gradually translated into the sustainable tourism development concept that strives to establish a suitable balance between economic, environmental, and social aspects of tourism development (World Tourism Organization, 2004). The prevalent definition of sustainable tourism is “Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment, and host communities” (World Tourism Organization and United Nations Environment Programme, 2019). Sustainable tourism is firmly positioned in the 2030 Agenda as a vital component to ensure the achievements of the Sustainable Development Goals (SDGs) and implementation of the 2030 Agenda for Sustainable Development (World Bank Group, 2017). The UNWTO has outlined the five pillars which are fundamental for tourism development, including (1) sustainable economic growth, (2) social inclusiveness, employment, and poverty reduction; (3) resource efficiency, environmental protection, and climate; (5) cultural values, diversity, and heritage; (5) mutual understanding, peace, and security (World Bank Group, 2017).

Since adopting the SDGs, many countries have started to incorporate the goals into national and local strategies and policies, including references to developing a mechanism to monitor the impacts of sustainable tourism development. However, the UNWTO stressed that there is little science-based evidence available on the tourism impacts, concluding that there is a need to better monitor, share, and disclose the sustainable development impacts of tourism (UNWTO, 2019).

As a community-based development strategy, CBT strives to preserve natural resources, traditional and cultural values, and contribute to socio-economic development by empowering the community in initiating, managing, and operating local tourism ventures. CBT has been considered an effective means to address the negative impacts from mainstream tourism. However, such benefits of CBT initiatives are hardly achievable in practice. Only a few CBT projects maintain their viability in the long term, and numerous CBT projects collapsed after a funding period (Gaitho, 2014; Goodwin & Santilli, 2009; Pham Hong et al., 2021). Rural areas, especially handicraft villages, are vulnerable to negative impacts of tourism as many ecological values and cultural traditions have been deep-rooted in these (Bui et al., 2020; Cerutti et al., 2016; Egbal et al., 2011; De la Torre et al., 2005; Muresan et al., 2016; Pham Hong et al., 2021).

Due to the complex nature of sustainability, its measurement, such as adjusting tourism sustainability indicators to the specific challenges of the destination, is difficult. Many initiatives developed their approach toward the sustainability concept and defined indicators with great divergence over the set of criteria proposed (H. S. C. Niavis et al., 2019; H. S. C. Choi & Sirakaya, 2006). Tailor-made approaches relying on distinctive characteristics of communities and quantifiable indicators based on the multidimensional nature of CBT were considered essential to measure change in CBT projects (H. S. C. Mowforth & Munt, 1998; H. S. C. Choi & Sirakaya, 2006).

In recent years debates suggest a more holistic view of sustainability. Researchers have extended the concept to institutional/political, technological, and management dimensions (Azizi et al., 2011; Byrd et al., 2009; H. S. C. H. S. C. Choi & Sirakaya, 2006; García-Melón et al., 2012; Hartmut Bossel, 1999; J. T. G. J. T. G. Ko, 2001; Lin & Lu, 2013; Uzun & Somuncu, 2015). Conservation and management of natural resources, community satisfaction, and welfare were also regarded as prime factors for sustainable tourism assessments (Castellani & Sala, 2010; García-Melón et al., 2012; J. T. G. J. T. G. Ko, 2001; Lin & Lu, 2013). T. G. Ko (2005) developed an approach that outlined an eight-step assessment, including political, economic, socio-cultural, production structure, environmental impacts, ecosystem quality, biodiversity, environmental policy, and management. International institutions, such as the Global Sustainable Tourism Council, the UNWTO, and ASEAN set up systems with core indicators as minimum standards, adding sustainable development/community ownership and management to the three dimensions to
help destinations measure and assess tourism impacts (ASEAN, 2016; GSTC, 2019). Impact indicators will help CBT communities to detect when the acceptable limit of environmental, social or economic change is exceeded.

Vietnamese researchers also contributed sustainability assessments but they did not define STD assessments as a clear research objective. Assessments were integrated into the analysis of the tourism status and development solutions, resulting in unmethodical assessment measures. Researchers applied subjective assessments to actual statistics, rarely using quantitative tools during implementation.

2.2. Sustainable tourism assessment methods and rating scales

One of the first tools to assess the sustainability of tourism was the BS, developed by Prescott-Allen (1997). The BS combines indicators of human well-being (social, economic, and institutional) and ecological (biophysical) well-being that can be used from local to global level. The performance scales expose the level of sustainability for monitoring the sustainable development process. The rating scale is widely used in sustainability assessment studies across various fields (Blancas et al., 2010; García-Melón et al., 2012; J. T. G. J. T. G. Ko, 2001; Lin & Lu, 2013; Uzun & Somuncu, 2015). Further assessment methods applied by researchers range from simple methods, such as 5-point rating scales (Rio & Nunes, 2012), to complex theories and techniques such as the Fuzzy Set Theory (Lin & Lu, 2013), the Grey System Theory (Wang & Pei, 2014), and the Tourism Ecological Footprint (Alvarado et al., 2021; Li & Hou, 2011). The Likert scale is one of the most fundamental and frequently used rating scales in various fields of research where the respondent indicates his degree of agreement and disagreement with a diverse range of statements about some attitude, object, person, or event. Critical is its validity as participants may bias their responses and avoid extreme response categories or try to achieve a better social impression of themselves (Taherdoost, 2019).

Assessment methods require at least one scale of sustainability with clearly identified criteria and measurement variables that best mirror the research objectives. Objective scales use quantitative data and are mostly described by computational functions (Lin & Lu, 2013), while subjective scales relate to personal attitudes and perceptions in favor of qualitative data. Academic literature illustrates that a variety of assessment tools were used in previous research applying either objective or subjective scales. Due to their accuracy and rigor, objective scales have been applied in more fields than subjective scales (Azizi et al., 2011; Blancas et al., 2010; García-Melón et al., 2012; Huang & Coelho, 2017; T. G. T. G. Ko, 2005; Li & Hou, 2011; Lin & Lu, 2013; Rio & Nunes, 2012; Tsaur & Wang, 2007; Uzun & Somuncu, 2015; Wang & Pei, 2014).

One widely used multi-criteria decision-making method is Analytic Hierarchy Process (AHP) proposed by R. W. Saaty (1987) and Saaty (1994a) that measures, orders, ranks, and evaluates decision choices. The analysis breaks down the key decision problem into a hierarchy of sub-problems, uses pairwise comparison of the various alternatives, and synthesizes the preferences. The values of relative importance are rated on a nine-level fundamental scale of judgments. Even though AHP is widely used in decision analysis, modeling the uncertainties inherent in the criteria is not possible (Mosae et al., 2017).

Fuzzy logic refers to uncertainties in the criteria and provides confidence to the decision-makers. The fuzzy AHP is an extension of Saaty’s classical AHP method (R. W. R. W. Saaty, 1987; T. L. Saaty, 1994b) to determine the weights of criteria and priorities of alternatives in a hierarchical structure based on the pairwise comparisons. Pairwise comparisons and pairwise rankings are central to many methods for performing multi-criteria decision analysis, ranking a group of alternatives against each other in pairs. Pairwise comparisons are widely used for decision-making, voting, and evaluating people’s preferences as it simplifies and improves the accuracy of the decision-making and eliminates subjectivity. By aggregating the results of these comparisons, FAHP can help reach informed and reasoned collective decisions and provide a clear rationale for the choices.
made (Kuswandari, 2004; Lin & Lu, 2013). In Vietnam, the FAHP method has been widely used in studies and practice for optimal decision-making in planning, business, society, and management; but there is no evidence that relevant studies applied this method for assessing tourism sustainability.

Given the growth of international tourism, the role of tourism in sustainable development has been widely discussed from various perspectives in published research, but it is a broad concept still under debate (Bramwell et al., 2017; H. S. C. H. S. C. Choi & Sirakaya, 2006; Mowforth & Munt, 1998). Despite the increasing attention to sustainability, few studies apply systematic appraisal of sustainability. There is not yet, a single method of assessing the sustainability of tourism development that is widely accepted as suitable, and all methods developed have inadequacies (Santos et al., 2021).

3. Materials and methods

3.1. Description of the case study

The site selected is Hoi An, located on Vietnam’s central coast. Recognized as a UNESCO World Heritage Site in 1999, Hoi An is an exceptionally well-preserved town and considered one of the most appealing destinations in Vietnam and even in the world. Besides its old town, Hoi An offers a variety of tourist attractions in its countryside based on its natural and cultural heritage. The research site in rural areas of Hoi An is considered one of the most successful CBT in Vietnam. It is an attractive destination progressing towards sustainable tourism practice, gaining strong guidance and support due to its UNESCO World Heritage and Biosphere Reserve Status. Four traditional craft villages were selected as an empirical case due to their rich cultural and natural resources but vulnerability in sustainability, including Kim Bong Carpentry Village, Tra Que Vegetable Village, Thanh Ha Pottery Village, and the Cam Thanh Ecotourism Area (Figure 2).

Figure 2. Location map of the case study areas.

Source: Authors’ contribution
Run as community-based businesses, the traditional craft villages attract visitors with unique handicraft products based on their long-standing culture. Tourism experiences include sightseeing of heritage and cultural sites and hands-on experiences. Visitors can participate in agritourism activities or learn about craft making in Kim Bong Carpentry Village and Thanh Ha Pottery Village. In Cam Thanh Ecotourism Village, tourists can explore the nipa palm forest by traditional basket boat, watch traditional fishing with casting nets, learn folk songs and enjoy the unique cuisine.

By operating CBT, the communities received a lot of economic, environmental and socio-cultural benefits. However, like many other destinations in the world, developing and managing CBT also faces difficulties and challenges which need further attention. To date, no research has methodically evaluated the CBT performance to provide guidance to government and stakeholders in the transition to tourism sustainability.

3.2. Evaluation framework
This study proposes a methodological approach based on several assessment tools. Criteria and indicators obtained from literature review, surveys and expert discussions, and questionnaires derived from village interviews, were ranked using the fuzzy AHP method (García-Melón et al., 2012; Lin & Lu, 2013; Uzun & Somuncu, 2015) in combination with the sustainability scale of the BS (Prescott-Allen, 1997) and transformed into a sustainability index. FAHP was selected as it measures vague, unclear, and emotion-based variables and determines the sustainability score of the whole model. The sustainability scale used a subjective index system which also draws on the sustainability value of the BS to provide a clear and measurable scale level for tourism sustainability. The research framework and methodology of this study is detailed in Figure 3.

Figure 3. Evaluation framework assessing sustainable CBT Development.
3.2.1. Selection of evaluation criteria

The development of evaluation criteria included a review of relevant criteria from previous studies and surveys in the research area and consultations and discussions with experts, such as tourism scientists, authorities, and tourism businesses, to choose and supplement criteria (ASEAN, 2016; Asmelash & Kumar, 2019; Eshliki & Kaboudi, 2012; GSTC, 2019; Harun et al., 2018; Hong Pham, 2014; Huayhuaca et al., 2010; Lin & Lu, 2013; Long et al., 2012; Miller, 2001; Peters et al., 2018). Selection of the most appropriate criteria started with identifying criteria related to the four dimensions. The most relevant criteria were arranged in a four-level hierarchical structure with sustainability as the overall goal, descending from four related key criteria, including Economy, Culture–Society, Environment, and Community & Tourism Development, to eight subcriteria and twenty-one indicators. Each criterion refers to the higher-level attributes (T. L. Saaty, 1994a). Criteria are determined from the largest to the smallest level (Figure 4).

3.2.2. Criteria weights of importance calculated by the FAHP

To calculate the weights of criteria (level of importance) in the hierarchy structure and to rank the criteria the authors employed the FAHP method outlined by R. W. Saaty (1987) and Saaty (1994a). The process followed the six steps below (Figure 5):

Figure 4. The proposed hierarchical system of criteria for sustainable CBT in the study area.

Figure 5. The process of determining the criteria weights by FAHP.
Define the CBT sustainability problem, identify criteria and create a decision hierarchy

The decision hierarchy draws on the expert’s judgment.

Construct scored-pairwise comparison matrices and importance of weights

The criteria with the highest overall impact on sustainable CBT development are identified by creating pairwise comparison matrices (Table 1), calculating the criteria weights and determining the relevant importance of each criterion to the overall goal (Chang, 1996; Chen & Hwang, 1992).

Where “TC” are the criteria, “n” is the number of criteria, and “a” is the relative importance score given by experts’ evaluation.

The importance of the pair-criteria is scored by experts on Saaty’s fundamental rating scale (R. W. W. Saaty, 1987) as shown in Table 2.

Construct a Matrix of fuzzy numbers for pairwise comparisons at each hierarchy level

The weights of the nine-level rating scale are converted to triangular fuzzy numbers (Figure 6) to represent the relative importance among the hierarchy’s criteria (Chang, 1996; Emrouznejad & Ho, 2017). Then the importance of each pair criteria is transformed into a triangular fuzzy scale shown in Table 3.

Calculate the weights of criteria using fuzzy geometric mean value for each criterion

The calculation in equations 1 and 2 applies a formula outlined by Buckley (2012).

### Table 1. Pairwise comparison matrix

|   | TC₁   | TC₂   | ...   | TCₙ   |
|---|-------|-------|-------|-------|
| TC₁ | 1     | a₁₂   | ...   | a₁ₙ   |
| TC₂ | a₂₁   | 1     | ...   | a₂ₙ   |
| ... | ...   | ...   | ...   | ...   |
| TCₙ | aₙ₁   | aₙ₂   | ...   | 1     |

### Table 2. The importance of criteria based on Saaty’s fundamental rating scale

| Scale of importance | Definition                          | Scale of importance | Definition                        |
|---------------------|-------------------------------------|---------------------|-----------------------------------|
| 1                   | Equal importance                    | 6                   | Strong plus importance            |
| 2                   | Weak importance                     | 7                   | Very strong importance            |
| 3                   | Moderate importance                 | 8                   | Very, very strong importance      |
| 4                   | Moderate plus importance            | 9                   | Extreme importance                |
| 5                   | Strong importance                   |                     |                                   |
\[ r_j = (a_{i1} \times a_{i2} \times \ldots \times a_{im})^{\frac{1}{m}} \]  \hspace{1cm} (1)

\[ w_j = r_j \times (r_1 + r_2 + \ldots + r_n)^{-1} \]  \hspace{1cm} (2)

Where

- \( r_j \) is the geometric mean of the fuzzy number vector
- \( w_j \) is the fuzzy weight of the \( j \)th criterion
- \( w_j = (l_{w_j}, m_{w_j}, u_{w_j}) \), and \( l_{w_j}, m_{w_j}, u_{w_j} \) indicate the lower, medium, and upper values of the weights in the fuzzy triangle.

**Defuzzify the fuzzy weights of criteria**

Since \( w_j \) are still fuzzy triangular numbers, each criterion is defuzzified by applying equation 3 using the Center of Area Method (Chou et al., n.d.).

\[ W_j = \frac{l_{w_j} + m_{w_j} + u_{w_j}}{3} \]  \hspace{1cm} (3)

where, \( W_j \) is the real weight of the \( j \)th criterion. \( W_j \) represents a non-fuzzy number.

**Normalize the actual weights of criteria**

\( W_j \) is normalized by following equation 4, dividing each criterion weight \( W_j \) for the summation of all criteria’s weights.

\[ N_j = \frac{W_j}{\sum_{j=1}^{n} W_j} \]  \hspace{1cm} (4)

in which, \( N_j \) is the normalized weight of the \( j \)th criterion

\( n \) is the total number of criteria.
3.2.3. Surveys, reliability of the scale, and calibration of the criteria

Secondary and primary data taken from annual reports and statistics provided an initial overview of the destination status, the level of local community support, the present performance of tourism, and strategies for destination development. A questionnaire was developed to determine the socio-demographic profile of the rural residents and local people’s perception of CBT sustainability; then pre-tested by volunteers for its feasibility and suitability and adjusted to achieve the highest accuracy.

From May to October 2020, surveys and resident interviews were conducted in four villages involved in tourism in Hoi An. Respondents were selected based on their age, gender, and residence, matching population distribution using convenience sampling with an error of ± 10% due to the difficulty of data collection (Table 4). The number of male is higher as tourism activities are significantly related to carpentry, basket boating, fishing, etc.

The sample size met the recommendation of a minimum subject-to-item ratio of at least 5:1 in exploratory factor analysis (Comfrey & Lee, 1992; Heckler 1996; Saunders et al., 2009). Two interviewers and one observer from the author group conducted face-to-face interviews with 215 rural residents involved in tourism activities with a validity of 179, meeting the sample size (Hair et al., 1998). Each respondent represented one household engaged in tourism. A 5-point Likert scale was used to measure the respondents’ attitudes for 21 variables, ranging from 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, to 5 = strongly agree.

The internal consistency of every component was measured by Cronbach’s alpha reliability coefficient that was computed using SPSS 23 statistics. A coefficient higher than 0.6 was regarded as reliable (Burgess & Steenkamp, 2006; Muresan et al., 2016).

| Variables                      | Number of respondents | %    |
|--------------------------------|-----------------------|------|
| Gender                         |                       |      |
| Male                           | 102                   | 57.0 |
| Female                         | 77                    | 43.0 |
| Length of residence            |                       |      |
| <20 years                      | 57                    | 31.8 |
| >20 years                      | 122                   | 68.2 |
| Education                      |                       |      |
| Less than high school          | 72                    | 40.2 |
| High school and above          | 105                   | 59.8 |
| Tourism income accounted       |                       |      |
| <50%                           | 92                    | 51.4 |
| ≥ 50%                          | 87                    | 48.6 |

| Table 5. Sustainability scale |
|--------------------------------|
| Likert scale coding score | Likert scale | Points on BS scale | Performance level BS | Sustainability status |
|---------------------------|--------------|--------------------|----------------------|-----------------------|
| 10                        | 1            | 1–20               | Bad                  | Unsustainable         |
| 30                        | 2            | 21–40              | Poor                 | Potential unsustainable |
| 50                        | 3            | 41–60              | Medium               | Medium sustainable    |
| 70                        | 4            | 61–80              | OK                   | Potential sustainable |
| 90                        | 5            | 81–100             | Good                 | Sustainable           |
In addition, questionnaires were sent to sixteen experts, like tourism authorities, tourism businesses, and academics, to determine the weights of criteria by applying the FAHP method.

3.2.4. Identification of the sustainability score

Based on FAHP and the community survey results, a general formula was applied that generated the sustainability score. The sustainability score was associated with the sustainability goal, the key criteria, and the degree of meeting the requirements of subcriteria and indicators. It was calculated based on the following general formula proposed by the authors:

\[ S = \sum_{i=1}^{n} M_i \times w_i \]

where, \( S \) represents the sustainability tourism score \((0 \leq S \leq 100)\)

\( M_i \) represents the mean score of local people assessments for the indicator \( i \)

\((0 \leq M_i \leq 100)\)

\( w_i \) is the weight of indicator \( i \) \((0 \leq w_i \leq 1)\) retrieved from equations 3 and 4 after normalization of the actual weight for each criterion.

The result of the sustainability score has been combined with the standard assessment table 5 of the BS (Prescott-Allen, 1997) and a five-level Likert rating scale. Table 6 presents the different levels of sustainability on a sustainability scale.

The sustainability scale illustrates the average values in the ranges of sustainability, with the assumption that tourism models are neither sustainable (sustainability score 100) nor unsustainable (sustainability score 0). To reach a necessary level of potential sustainability (61–80 points) all criteria assessed should reach at least a score of 70.

4. Results and discussion

The overall sustainability status of CBT initiatives was determined by categorizing the four dimensions into eight subcriteria and twenty-one indicators (Economy 5, Culture-Society 4, Environment 4, and Community and tourism development 8). Based on pairwise comparisons the relevant importance of each criterion was identified, and results did not show much deviation. Economy was the most important dimension (0.270); Culture-Society and Environment ranked equally (0.252), while Community and tourism development had the lowest value (0.224). At the indicator level, income stability reached the highest score, while income distribution received the lowest priority (Table 6). As a result of Cronbach’s Alpha reliability test, all key criteria reached a coefficient higher than 0.7, indicating high reliability of each component (Table 7).

The final sustainability index indicates that CBT in rural areas of Hoi An is approaching potential sustainability (70), achieving an average score of 69.88. Culture-Society received the highest potential-sustainability score, followed by Economy, Environment, and Community and tourism development (Figure 7).

The sustainability scores for each criterion, summarized in Figure 8, clearly indicate benefits and priority issues in the CBT villages to be addressed by the tourism industry.

This methodological approach showed reliable results in assessing the overall sustainability status of CBT initiatives from a communities’ perspective. The selected criteria proved feasible and fully representative to cover the most relevant aspects of sustainable CBT development in Hoi An. Information consolidated through questionnaires, village interviews, and previous observations of the authors (Pham Hong et al., 2021) were included in the process. New jobs, especially for young people and women, have raised income; health, education, and quality of life have
| Key Criteria          | Priority | Subcriteria                      | Priority | Indicators                                                                                                                                 |
|----------------------|----------|----------------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Economy              | 0.271    | Income stability                 | 0.667    | Thanks to CBT development the household income is more stable than before                                                                 |
|                      |          |                                  |          | Tourism has created new jobs for local people                                                                                              |
|                      |          |                                  |          | Tourism-based income is better than that from traditional jobs                                                                              |
|                      | Income distribution | 0.333  | Local people receive most of the tourism revenue                                                                                           |
|                      |          |                                  |          | Policies on tourism taxes are reasonable                                                                                                   |
| Culture - Society    | 0.252    | Conservation of local cultural values | 0.493   | Tourism helps to restore and preserve traditional cultural values                                                                          |
|                      |          |                                  |          | Tourism makes people feel proud of their local culture                                                                                     |
|                      | Quality of life | 0.507  | Tourism helps community to have a better life                                                                                              |
|                      |          |                                  |          | Security is guaranteed                                                                                                                     |
| Environment          | 0.252    | Tourism impact on the environment | 0.531   | Tourism development makes the scenery more beautiful                                                                                         |
|                      |          |                                  |          | Garbage is handled well                                                                                                                     |
|                      | Environmental awareness | 0.469  | Local authorities introduced many environmental protection policies                                                                     |
|                      |          |                                  |          | People are more aware of protecting the local environment                                                                                    |

(Continued)
improved; there is a high sense of local ownership, and safeguarding cultural and natural heritage is particularly important. The most relevant issues expressed by community members include equitable income distribution, community involvement/participation in destination planning, skills development, good management, and diversification of tourism markets. In summary, the risks and challenges were as follows:

### 4.1. Income stability and distribution

- People gain income from souvenir sales, accommodation and food services, but the revenue has reached a certain peak, then stagnated. Despite increasing revenue from ticket sales, income is stagnating.

- Although tourism has created new jobs, there is no fair distribution of work across the villages.

- Craft villages lack space to extend tourism services.

- As tourism is seasonal, revenue is not consistent throughout the year, even though, tourism revenue is more stable than in the past. The tourist market in Hoi An depends mainly on Chinese and Korean visitors, so the fluctuation in visitor numbers will affect future income sustainability.

| Table 6. (Continued) |
|-----------------------|
| Community and tourism development | 0.224 |
| Community support for tourism development | 0.599 |
| Local people want more tourists to visit the area | 0.187 |
| People support tourism as a key driver for local development | 0.260 |
| People support the development of local tourism facilities | 0.229 |
| Willingness to engage in local tourism | 0.145 |
| Willingness to participate in future tourism development planning in Hoi An | 0.179 |
| Community development policies | 0.401 |
| Local people attend foreign language classes and tourism services training | 0.435 |
| Local people are trained in developing tourism products | 0.401 |
| Local people receive other government support for tourism activities | 0.163 |
Table 7. Result of Cronbach’s Alpha reliability test

| Key Criteria/Subcriteria/Indicators                          | Cronbach’s Alpha | Corrected Item-Total Correlation |
|-------------------------------------------------------------|------------------|----------------------------------|
| **ECONOMY**                                                 |                  |                                  |
| Income stability                                            | 0.841            |                                  |
| Thanks to CBT development the household income is more stable than before |                  | 0.684                            |
| Tourism has created new jobs for local people               |                  | 0.694                            |
| Tourism-based income is better than that from former traditional jobs |                  | 0.712                            |
| **Income distribution**                                     |                  |                                  |
| Local people receive most of the tourism revenue            |                  | 0.577                            |
| Policies on tourism taxes are reasonable                     |                  | 0.593                            |
| **CULTURE AND SOCIETY**                                     | 0.771            |                                  |
| Conservation of local cultural values                       |                  |                                  |
| Tourism helps to restore and preserve traditional cultural values |                  | 0.648                            |
| Tourism makes people feel proud of their local culture      |                  | 0.674                            |
| **Quality of life**                                         |                  |                                  |
| Tourism helps community to have a better life               |                  | 0.506                            |
| Security is guaranteed                                      |                  | 0.525                            |
| **ENVIRONMENT**                                             | 0.825            |                                  |
| Tourism impact on the environment                           |                  |                                  |
| Tourism development makes the scenery more beautiful         |                  | 0.557                            |
| Garbage is well handled                                     |                  | 0.696                            |
| **Environmental awareness**                                 |                  |                                  |
| People are more aware of protecting the local environment   |                  | 0.690                            |
| Local authorities introduced many environmental protection policies |                  | 0.748                            |
| **COMMUNITY AND TOURISM DEVELOPMENT**                       | 0.721            |                                  |
| The local residents’ support for tourism development        |                  |                                  |
| Local people want more tourists to visit the area           |                  | 0.574                            |
| People support tourism as a key driver for local development |                  | 0.577                            |
| People support the development of local tourism infrastructure |                  | 0.536                            |
| Willingness to engage in local tourism                      |                  | 0.413                            |
| Willingness to participate in future tourism development planning of Hoi An |                  | 0.499                            |
| **Community development policies**                          |                  |                                  |
| Local people attend foreign language classes and tourism service trainings |                  | 0.649                            |
| Local people are trained in developing tourism products     |                  | 0.576                            |
| Local people receive other government support for tourism activities |                  | 0.469                            |
4.2. Conservation of local values and quality of life

- There is an increasing risk of losing traditional crafts and music despite tourism has built a high sense of pride and heritage in the community. Only few high skilled artisans remain, most of them are elders. To date, more than 80% of the ceramic products are standard articles requiring less craftsmanship, preserving the uniqueness of the village products is therefore particularly important.

4.3. Tourism impacts on the environment and environmental awareness

- Despite regular garbage collection, classification and participation in environmental cleaning activities, waste treatment is still a big issue in all villages.
  - The problem of air pollution caused by the use of firewood for the burning process persists in Thanh Ha Pottery Village, affecting health and the natural environment.
  - Large numbers of tourists cause noise pollution that affects the Cam Thanh ecosystem.

4.4. Community support for tourism development and community support policies

- Part of the existing infrastructure has not been built properly and needs further enhancement.
  - Due to lack of capacity the people are reluctant to participate/take a key role in local tourism development planning and implementation and engage in new tourism businesses.
  - Training quality needs to be improved, and further training is needed, e.g., in tourism services, monitoring and evaluation, and risk management, with a more just selection of participants from different villages.
  - Government should address and support needs of all CBT communities.
5. Policy and managerial implications
The study identified tourism impacts and risks for community development that require external assistance to assist the process and enhance the success of CBT. Collaborative engagements with stakeholders are crucial requirements for sustainability, and government plays an important role (Giampiccoli & Saayman, 2018). In this context, the government needs to develop, follow and enforce policies that empower the community and enhance its capacities. Government should define a common standard for CBT development in Vietnam and develop policies in line with national, regional, and local tourism development strategies that protect natural and cultural heritage putting special emphasis on the unique values and features of the destination.

Additionally, management policies and proven monitoring mechanisms assessing the overall tourism impact and evaluating its sustainability need to be established and implemented. External parties can assist the community to perform monitoring and evaluation functions. To strengthen destination competitiveness, local governments should address conflicts of interest between communities or households participating in tourism or not engaging in activities to ensure social cohesion and preserve common values and natural assets. Facilitating the timely implementation of policies for financial support of communities and businesses, and assistance in job creation and quality training customized to the needs will empower the community to manage and sustain tourism in the area in the long term.

6. Conclusion
Tourism is a growing and relevant sector in many destinations. Although CBT has been considered a sustainable development model for the tourism industry, concerns about the negative impacts on the community arise. However, there is limited research available measuring its benefits and risks and the progress of CBT towards sustainability to identify priority actions that ensure long-term sustainability. This study uses an integrated approach by developing relevant criteria, elaborating a questionnaire used in village interviews, applying the fuzzy AHP and the BS ranking the importance of criteria, and finally computing a sustainability score for all criteria. The results prove that the proposed methodological assessment approach provides reliable data to reflect the situation in the target communities. The research guides tourism authorities and actors to gain a deeper understanding of problems within the community, paving the way to improve their perception and address the shortcomings identified in planning and management of CBT. Key findings reveal:

- All key areas (Economy, Culture-Society, Environment, and Community planning and tourism) reached a potentially sustainable level. That indicates, tourism has increased social welfare and efficient resource management. It shows, too, the role of CBT as a catalyst for inclusive community development in rural areas of Hoi An. The community puts great emphasis on safeguarding heritage and preserving local identity.

- It seems crucial to enhance community empowerment and transparency by improving education and skills, actively involving local people in destination planning, and increasing the ability to manage risk and crisis. That will ensure efficient and effective management of the community’s natural and cultural resources and strengthen community capacity to start new or upscale tourism businesses, products & services.

- Based on the results, this integrated methodical approach proves to be suitable, and overall results are reliable. The results established the adequacy and usefulness of the proposed FAHP model in ranking sustainability criteria. The sustainability index builds a more comprehensive picture of the community situation pointing out key issues that need immediate action.

- The criteria selection must be tailored to each destination as each tourism stakeholder has different requirements concerning the criteria. All relevant tourism actors need to be integrated into the CBT assessment. In that way, appropriate recommendations and solutions can be put forward to the government, private sector, and the community to promote inclusive community development and ensure the destinations’ long-term sustainability. The authors suggest replicating this approach in other destinations to verify and adjust the results in a different CBT environment.
6.1. Due to time and resource constraints, this case study has some limitations

This sustainability assessment was limited to the community's perspective targeting residents involved in tourism activities. To reflect the situation more accurately, the evaluation should include all relevant stakeholders, including residents not involved in tourism, the private sector, the government and tourists. This holistic approach customized to the destination is a subject that should be addressed in further research.

The present research relied on convenience sampling but was applied with caution to keep a suitable error about the composition of the population. Further research should use other sampling techniques that allow generalization of the results to the entire population.

The definition of adequate, robust, and viable criteria that reflect the local situation proved difficult. It will be necessary to consider new elements of sustainability and to include more specific indicators characterizing the complex processes influencing sustainable tourism development.

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Author details
Thi Huong Ngo*
E-mail: huongqn.sp@gmail.com
ORCID ID: http://orcid.org/0000-0003-3900-0502
Sibylle Creutz†
1 The University of Da Nang, University of Science and Education, Vietnam.
2 Senior Tourism Advisor in Official Development Cooperation, Germany.

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