

A FUZZY MULTI-CRITERIA FRAMEWORK FOR THE DEVELOPMENT OF SUSTAINABLE COMMUNITY-BASED TOURISM IN MALAYSIA

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Abstract: Community-based tourism (CBT) is a growing niche market that has positively impacted many developing countries including Malaysia. CBT in Malaysia is recognised as the Malaysian Homestay Experience Programme (MHEP) which is under the coordination of the Ministry of Tourism, Arts and Culture. Previous studies have looked into stakeholders' contributions and the roles they play in the MHEP. However, the sustainability criteria from the multi-stakeholder perspective should be understood. The collaboration between tourism stakeholders is pivotal in understanding their perspective by considering their diverse viewpoints on critical issues and bridging the current knowledge gap. This research aims to investigate how stakeholders could participate more efficiently in developing and employing a sustainable MHEP. This study applied a mixed-method approach and was divided into two phases. The first phase was the multistage qualitative research and the second phase involved a questionnaire survey with structured questions distributed to the multi-stakeholders. Academicians, government agencies, non-governmental organisations, businesses, host communities, homestay coordinators and tourists were involved in the data collection process. The study applied a two-stage methodology by integrating two multi-criteria decision-making techniques, Decision-Making Trial and Evaluation Laboratory and analytic network process to extend the existing evaluation criteria and weightage. The multi-criteria framework will provide stakeholders as decision-makers the ability to devise plans that are sustainable and compatible with conservation and rural development strategies. This study is decisive in helping stakeholders develop sustainable CBT and contribute to government policies, specifically in terms of MHEP development and management aligned with the Malaysia rural development policy. Sustainable CBT can be an efficient rural economic development tool to generate broader economic distribution and create a more comprehensive spatial development. Furthermore, this study also provides valuable insights for tourism policymakers in terms of efficient policy interventions related to CBT in accelerating sustainable development involving environmental, economic and socio-cultural growth.

Keywords: Community-based tourism, MHEP, stakeholders, DEMATEL, ANP.

Abbreviations: Community-Based Tourism (CBT), Malaysia Homestay Experience Program (MHEP), Decision Making Trial and Evaluation Laboratory (DEMATEL), Analytic Network Process (ANP), Multi-Criteria Decision Making (MCDM).

Introduction

Malaysia is a popular international tourist destination and is home to a variety of attractions. In 2021, Malaysia received 13.4 million tourists from all over the world, a sharp rise from 4.3 million tourists in 2020 (Tourism Malaysia, 2022). Malaysia is known for its cultural diversity diverse culture, and it is widely recognised as a secure destination, with friendly people and rich in hospitality.

Community-based tourism (CBT) has been introduced in many developing countries and it is considered as an alternative to mass tourism (Dodds *et al.*, 2018). This form of tourism is one of the approaches for developing responsible rural tourism and reducing poverty (Lee & Jan, 2019), besides being an alternative source of income (Asia-Pacific Economic Cooperation [APEC], 2000). CBT is well known as a growth development tool for the low-income group (Nair & Hamzah, 2015) and a long-term approach is needed to

optimise its benefits for the local community. In Malaysia, CBT is recognised as the Malaysian Homestay Experience Programme (MHEP), coordinated under the Ministry of Tourism, Arts and Culture and supported by other agencies. This programme is successful as the number of registered homestays has rapidly increased every year, from five homestays in 1995 to 223 in 2022. Under MHEP, tourist can experience the daily life of a locality by living together with a host family. This cohabitation practice can be traced back to the early 1970s when a villager of Kampung Cherating Lama in Pahang known as *Mak Long* accommodated drifters at her house and provided them breakfast, lunch and dinner (Pusiran & Xiao, 2013). The MHEP does not only provide a room or accommodation, but promotes authentic Malaysian culture, including cuisines, traditional attires and ways of life (Jabar *et al.*, 2015). Hamzah (2010) defined the MHEP as an activity with itinerary that involves tourists interacting with the local community, besides just staying with the family. Up to December 2021, there are 223 homestays with 372 villages, 4,313 operators and 6,124 rooms that are registered under the Ministry of Tourism, Arts and Culture (Ministry of Tourism, Arts and Culture, Malaysia, 2021). The growing trend shows that that local communities are looking for the opportunity to improve the quality of their lives. The MHEP has been a remarkable success by offering unconventional options of accommodation to tourists who want to experience a unique type of vacation compared with the typical tourism packages. Moreover, the uniqueness of MHEP in Malaysia is the people preserving the traditional culture, which is the biggest gem that tourists can experience (Pusiran & Xiao, 2013). The MHEP does not only satisfy the needs of tourists but also empowers locals to use their knowledge in managing tourism within their own communities, benefitting not only to homestay operators but also to the whole community. Local communities could have their voices heard and provide their ideas and participate in all processes from the formulation of an idea to planning (Bagus *et al.*, 2019), implementation,

management, monitoring, evaluation and benefit sharing (Schott & Nhem, 2018). CBT is one of the tools that can help and improve the quality of life of the community. To achieve sustainable tourism development, the vital element is the local community itself as indicated by Su *et al.* (2018). CBT can also secure long-term benefits such as education, training, facilities and many more. New development concepts introduce principles that encourage self-reliance and support, self-help, and community empowerment under the pillar of sustainability (Yanes *et al.*, 2019) as well as internal development driven by the local community. To obtain sustainable MHEP development, the contributions of multi-stakeholders at all phases are needed.

The core objectives of the MHEP are to encourage communities to be involved in the tourism sector (Corporate Communications Unit, Ministry of Tourism Malaysia, 2010) and support the economic growth of the local community by creating jobs for locals and benefit all stakeholders. According to Swarbrooke (1999), if stakeholders want to develop a more sustainable form of tourism, should work together. Hardy and Beeton (2001) applied the stakeholder theory on their study in tourism research to understand the stakeholders' group and their perception towards sustainable tourism while Zehrer and Hallmann (2015) examined stakeholders' perspectives of tourism development. There are three broad streams of the stakeholder's approach which are stakeholder perspectives, stakeholder relationships and stakeholder participation (Nguyen *et al.*, 2019). The collaboration among multi-stakeholders can lead to a more effective tourism management.

Research on sustainable tourism have received high attention in recent years (Qian *et al.*, 2018). Some have looked into stakeholders' roles and their contributions towards the MHEP (Aas *et al.*, 2005; Vernon *et al.*, 2005; Byrd, 2007). However, the sustainability criteria from the multi-stakeholder's perspective needs to be understood. The collaboration between tourism stakeholders is pivotal in understanding the stakeholders' perspective by considering their diverse viewpoints on critical issues and bridging

the current knowledge gap. Hence, this study aims to investigate how stakeholders could participate more efficiently in developing and employing a sustainable MHEP and understand the multi-stakeholders’ perspective of the sustainability criteria for the development of CBT in Malaysia. This paper proposes a multi-criteria framework based on the multi-criteria decision-making model. Therefore, the sustainable criteria of CBT are weighed by developing a new fuzzy multi-criteria framework. This framework will provide stakeholders as decision-makers with the ability to devise plans that are sustainable and compatible with conservation and the rural development strategies. This study is decisive in helping stakeholders develop sustainable CBT and contribute to government policies related to rural development, specifically in terms of MHEP development and management aligned with Malaysia’s rural development policy. Understanding sustainable CBT is crucial since it involves multi-stakeholders and operational stakeholders, and the host community will bear the most significant risks if not planned and developed sustainably.

There are several types of stakeholders based on the review of literature on tourism (Mason, 2003; Getz & Timur, 2005) with various typologies. Generally, stakeholders are categorised into six different panels which are the government, special interest groups, tourists, the local community, educational institutions and the industry (Simpson, 2008). To a large extent, this research categorised the multi-stakeholders in CBT as the government, business, academicians, non-governmental organisations, tourists, host communities and homestay operators.

Materials and Methods

Research Design

In this study, the data were collected from literature review, interviews and questionnaires. To obtain the data, two phases were applied which combine the qualitative and quantitative data.

Data Collection

In the first stage, the literature review on the sustainable criteria covering the three pillars of sustainability, which are the socio-cultural, environmental and economic criteria were listed. All the criteria that are related to CBT in Malaysia were selected and turned into a questionnaire. The questionnaire was divided into two sections. Section A includes stakeholder’s information such as the industry sector, period of experience and level of education. Section B consists of pairwise comparison between two main criteria as well as two sub-criteria. The pairwise comparisons of elements used a nine-point scale with nine points awarded if one element was ultimately more important than the other and one point awarded if the two elements were equally important. Table 1 presents an example of the questionnaire’s structure for the main sustainability criteria. The expert responses were based on a comparison scale comprising “Equal” (1), “Weak” (3), “Fairly Strong” (5), “Very Strong” (7), “Absolute” (9) with intermediate values of 2, 4, 6 and 8 to evaluate the criteria.

After the questionnaire was structured, the experts were asked to verify the construct, variables and content. Once the conceptual

Table 1: Example of questionnaire

The importance of one main criteria over another										
Main Criteria	A	VS	FS	W	E	W	FS	VS	A	Main Criteria
Env	9	7	5	3	1	3	5	7	9	Eco
Env	9	7	5	3	1	3	5	7	9	SC
Eco	9	7	5	3	1	3	5	7	9	SC

framework was established, three purposely chosen experts in areas of sustainable tourism, tourism development and homestay experience programmes in Malaysia were asked to review the draft 34 sub-criteria of sustainable CBT to ensure that it was consistent with the conceptual framework. In this process, they were requested to evaluate the significance of every item and offer suggestions on how to improve the items with regards to the relevancy of the construct items as well as simplicity of the instructions. Every item was rated by the experts using a 4-point Likert scale (1=not relevant, 2=somewhat relevant, 3=relevant, 4=very relevant). To measure the simplicity of the instructions, a 4-point Likert scale as well (1=Not simple, 2=Item needs some revision, 3=Simple but need minor revision, 4=Very simple). The experts and reviewers were chosen based on their contributions and background in CBT. Two experts from Universiti Teknologi Malaysia and one expert from Politeknik Ibrahim Sultan were involved.

The second phase of data collection involved a questionnaire survey of the structured questions. The respondents or stakeholders need to choose the more important criteria in a line, then, circle the number that represent the degree of importance over another (Table 1). The environmental dimension consists of ten sub-criteria, the economic dimension consist of eight sub-criteria and the socio-cultural dimension consists of sixteen sub-criteria. This study used the purposive sampling method which involves the selection of those who are likely to have the required information that best reaches the objective of the study. The population comprised stakeholders that directly and indirectly involved in CBT in Malaysia. There were 40 respondents divided into the government, business, academician, non-governmental organisation, tourist, host community and homestay operator categories.

Data Analysis

A two-stage of methodology was applied to the data analysis. A hybrid method that combines

Decision-Making Trial and Evaluation Laboratory (DEMATEL) and analytic network process (ANP) was used. After the factors were identified and problems are formulated, the DEMATEL technique was used to detect the complex relationships and build a network relation map (NRM). Then, to achieve the objective of the research, the ANP Was employed. This technique was used to prioritise the criteria and sub-criteria within the decision model, and to find the weights attached to them. In DEMATEL, the scales were from 0 to 4, representing “No influence” (0), “Low influence” (1), “Medium influence” (2), “High influence” (3) and “Very high influence” (4). According to Hsu *et al.* (2013), the main steps of DEMATEL are as follows:

Step 1: The average matrix is calculated after data from the experts were collected. Suppose we have H experts for the data collection and n factors to consider. For the factor evaluation, each expert Was asked to indicate the degree of the inference of factor i on factor j . These pairwise comparisons among the factors are carried out and the responses were provided in a matrix $X^k = [X_{ij}^k]_{n \times n}$, ($1 \leq H \leq k$), in which each of its element a_{ij} includes the responses of between 0 and 4. Then, the average matrix $A_{n \times n}$ can be calculated according to the following formula:

$$A = [A_{ij}]_{n \times n} = \frac{1}{H} \sum_{k=1}^H [X_{ij}^k]_{n \times n} \quad (1)$$

This matrix is also called original average matrix, which includes the initial direct effects that a criterion of the model exerts on and receives from other criteria. From the result of the first step, by drawing an influence map, the causal effect between each pair of criteria in the model can be mapped out.

Step 2: The direct influence matrix is calculated. This is done by normalising the average matrix A . We call this matrix the normalised initial direct-relation matrix D , which is obtained using the following equation. Each element of matrix D is between 0 and 1.

$$D = \frac{A}{S} \tag{2}$$

$$S = \max \left(\max_{j=1}^n a_{ij}, \max_{i=1}^n a_{ij} \right)$$

Step 3: The total relation matrix is computed. This is done using the following equation.

$$T = [t_{ij}] = \sum_{i=1}^{\infty} D^i = D(L - D)^{-1} \quad i, j = 1, 2, \dots, n \tag{3}$$

$$\lim_{k \rightarrow \infty} D^k = [0]_{n \times n}$$

where 0 is the $n \times n$ null matrix and I is the $n \times n$ identity matrix.

By calculating T, interesting results can be obtained by the sum of its rows and sum of its columns. This is done by the following equations. In Equations (5) and 6, we calculate the $C = (\sum_{j=1}^n t_{ij})_{n \times 1}$ and to $R = (\sum_{i=1}^n t_{ij})_{1 \times n}$ obtain the total effects, both direct and indirect, a factor receives from the other factors, and the total effects, both direct and indirect, exerted by a factor on the other factors.

$$T = [t_{ij}]_{n \times n} \quad i, j = 1, 2, \dots, n \tag{4}$$

$$C = \left(\sum_{j=1}^n t_{ij} \right)_{n \times 1} \quad i = 1, 2, \dots, n \tag{5}$$

$$R = \left(\sum_{i=1}^n t_{ij} \right)_{1 \times n} \quad j = 1, 2, \dots, n \tag{6}$$

Accordingly, the degree of importance that a factor plays in the system (the total sum of effects given and received) is shown by $R+C$. In addition, $R-C$ shows the net effect, indicating that if $R-C$ is positive, it is a net causer and if $R-C$ is negative, it is a net receiver. Having these values, we can draw up a causal relationships diagram to better illustrate the results of DEMATEL. A general framework of the methodology is depicted in Figure 1.

Results and Discussion

Following data collection from 40 experts who have experience regarding the problem under investigation, DEMATEL was applied on the data to detect the complex relationships and to build an NRM for main factors. The DEMATEL technique is a powerful multi-criteria decision-making technique used to solve decision-making problems.

Results of DEMATEL

In the first step of data analysis by DEMATEL, the average matrix $A = [A_{ij}]_{n \times n} = \frac{1}{H} \sum_{k=1}^H [X_{ij}^k]_{n \times n}$ was calculated. From the result of the first step, by drawing an influence map, the causal effect between each pair of the criteria in the model

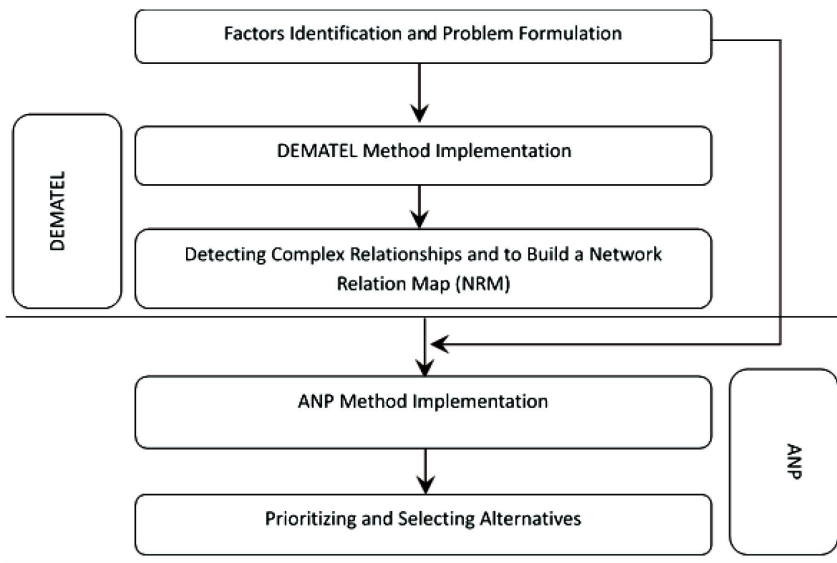


Figure 1: A general framework of the methodology

can be mapped out. In the second step, the direct influence matrix is calculated by Equation (1):

$$D = \frac{A}{S} \tag{1}$$

$$S = \max(\max \sum_{j=1}^n a_{ij}, \max \sum_{i=1}^n a_{ij})$$

This was done by normalising the average matrix. In the last step, total relation matrix is calculated. In addition, and were calculated in this step. The matrix is computed by Equation (2):

$$T = [t_{ij}] = \sum_{i=1}^{\infty} D^i = D(L - D)^{-1} \quad i, j = 1, 2, \dots, n \tag{2}$$

By calculating T, we obtained the total effects, both direct and indirect, that a factor receives from the other factors, and the total effects, both direct and indirect, exerted by a factor on the other factors. The results of R+C and R-C are presented in Table 2.

According to the degree of importance (R+C), the environmental dimension is the highest, followed by the socio-cultural dimension and the economic dimension with the influence rates of 8.084, 7.741 and 6.561, respectively. Each expert determined the importance of each criteria. This table further reveals that the environmental and socio-cultural factors are the two crucial factors that affect the economic dimension directly. Moreover, according to the results, the negative value (-1.031) for R-C for the socio-cultural factor reveals that this factor is completely a net receiver factor, with the environmental (0.701) and economic (0.331) factors being the net causers. This shows that the socio-cultural factor highly receives inferences from the other factors. To show the results of DEMATEL better, a causal diagram of the relationships is shown in Figure 2. This diagram better shows the importance of the factors. To draw the important relationships and to determine the NRM, we considered a threshold

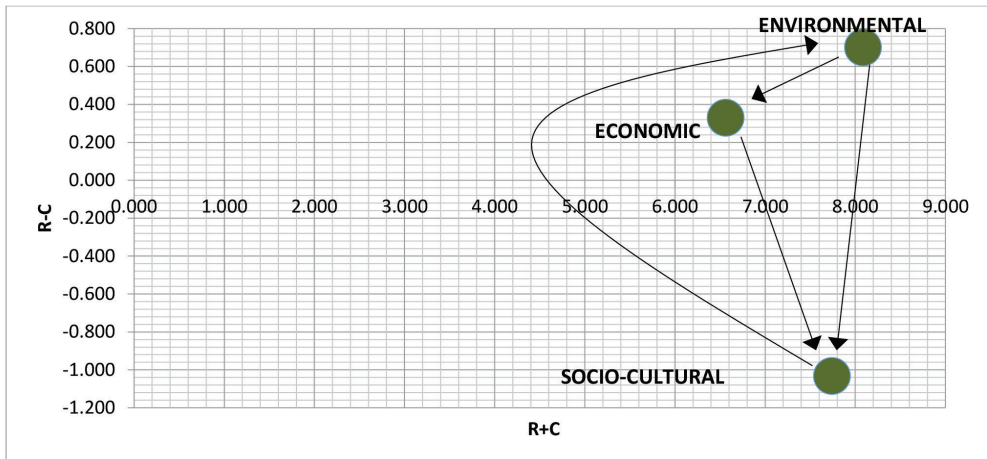


Figure 2: The causal diagram

Table 2: Final results of the analysis

Factors	R	C	R+C	R-C
Environmental	4.393	3.692	8.084	0.701
Socio-cultural	3.355	4.386	7.741	-1.031
Economic	3.446	3.115	6.561	0.331

value ($\beta=0.496$), which is obtained from the average of T matrix.

Results of the ANP

The ANP is used for network analysis (Bayazit & Karpak, 2007; Gencer & Gürpınar, 2007). The ANP, which is similar to the analytic hierarchy process method is designed to select the most appropriate alternatives based on multiple criteria. It is also used to weigh the criteria and sub-criteria.

In the previous section, we found the causal relationships between the main factors of the decision-making model. In this section, we provide the results of the ANP technique. As can be seen from Table 3, the decision model has three main criteria which are the economic, environmental and socio-cultural dimensions. The sub-criteria of the model, meanwhile are Xcarrying capacity, environmental purity, physical integrity, natural

resources, environmental awareness, protection of the natural ecosystems, development control, environmental legislation, environmental policy, visitor management, financing, employment quality, economic capacity, local prosperity, nature of demand, economic feasibility, financial leakage, economic opportunities, socio-cultural policy, leadership, collaboration, technology, training and education, planning, effective communication, stakeholders, local control, community well-being, socio-equity, community participation, knowledge, infrastructure, quality of life, and behavioural codes. Instead of developing a hierarchy, ANP allows the decision-maker to build a network. This allows the examination of the interconnection between the criteria in the model. Determining the relationships in the network structure or determining the degree of interdependence between the criteria and the alternatives is one of the most vital functions of the ANP technique.

Table 3: The main criteria and sub-criteria

Criteria	Sub-criteria
Environmental (C1)	S11 = Carrying capacity S12 = Environmental purity S13 = Physical integrity S14 = Natural resources S15 = Environmental awareness S16 = Protection of the natural ecosystems S17 = Development control S18 = Environmental legislation S19 = Environmental policy S110 = Visitor management
Economic (C2)	S21 = Financing S22 = Employment quality S23 = Economic capacity S24 = Local prosperity S25 = Nature of demand S26 = Economic feasibility S27 = Financial leakage S28 = Economic opportunities

Socio-cultural (C3)	S31 = Socio-cultural policy S32 = Leadership S33 = Collaboration S34 = Technology S35 = Training and education S36 = Planning S37 = Effective communication S38 = Stakeholders S39 = Local control S310 = Community well-being S311 = Socio-equity S312 = Community participation S313 = Knowledge S314 = Infrastructure S315 = Quality of life S316 = Behavioural codes
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The implemented decision model in Super Decisions software is presented in Figure 3. The aim of the ANP is to identify the importance of the main factors and sub-factors of the model. To do so, 40 experts performed pairwise comparisons of these factors. The expert responses were based on Saaty’s comparison scale (Table 4), ranging from “Equal Importance” (1), “Moderate Importance” (3), “Strong Importance” (5), “Very Strong Importance” (7), “Absolute (extreme) Importance” (9), with intermediate values of 2, 4, 6 and 8 to evaluate the criteria. The data

were considered in pairwise matrices. In each matrix, the element $c_{ij} = 1$, for each element the data was represented as $c_{ji} = 1/c_{ij}$. To get the normalised weights, the geometric mean was used (Mikhailov, 2004).

Table 5 shows the weights of the main factors obtained from the analysis which are 0.698, 0.228 and 0.075 for the environmental, socio-cultural and economic dimensions, respectively. From the results, the environmental dimension was determined to be the most important factor in the main group, followed by the socio-cultural

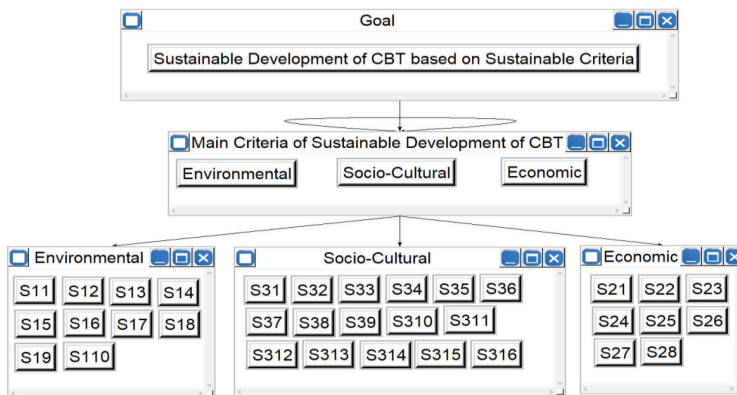


Figure 3: The decision model implemented in the Super Decisions software

Table 4: The scale for the comparison task in the ANP

ENVIRONMENTAL									ECONOMIC								
9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
ENVIRONMENTAL									SOCIO-CULTURAL								
9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	
ECONOMIC									SOCIO-CULTURAL								
9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	

Table 5: The weights for the environmental, economic and socio-cultural factors

Main Factors	Economic	Environmental	Socio-cultural	Weights
Environmental	7.424	1.000	3.864	0.698
Socio-cultural	3.845	0.259	1.000	0.228
Economic	1.000	0.135	0.260	0.075
Inconsistency = 0.051				

and economic dimensions. The inconsistency of the expert pairwise comparisons is 0.051, which is <0.1.

In the final step of the ANP, the limit supermatrix was formulated. This matrix considered the weights of all criteria of the decision model altogether. The results of the final weights of criteria and sub-criteria are shown in Table 6. From this table, the environmental dimension was determined to be the most important factor in the main group, followed by socio-cultural and economic dimensions. The importance of the sub-criteria of the environmental dimension according to the weight is led by carrying Capacity, followed by environmental purity and environmental policy. Under the economic dimension, financing, employment quality and economic capacity are the most important factors. Finally, for the socio-cultural dimension, collaboration, leadership and technology obtained the higher weights in relation to the other factors.

In this study, it was found that the environmental and socio-cultural dimensions are the two important factors that affect the

economic dimension directly in term of the degree of importance. Therefore, this research suggests that these criteria must be highlighted more in the development of sustainable CBT, as the results suggest that by focusing on the environmental and socio-cultural dimensions, the economic dimension will be significantly enhanced. According to Angelevska-Najdeska and Rakicevik (2012), the stability and long-term sustainability of CBT development are primarily dependent on the environmental capacity. Hence, activities that have an effect on natural resources or the environment eventually diminishes a tourist site’s attractiveness and will have an impact on the number of visitors and revenue. Effective planning and the utilisation of environmental resources also plays a key role. Furthermore, to ensure the success of sustainable CBT through homestay programmes, the results of this research must be converted into an action plan.

Conclusion

This study’s main aim was to provide a framework for the sustainability criteria for the development

Table 6: The final weights of the criteria and sub-criteria

Criteria	Weight
Environmental	0.462
Socio-cultural	0.385
Economic	0.154
Environmental sub-criteria	Weight
S11 = Carrying capacity	0.232
S12 = Environmental purity	0.177
S19 = Environmental poolicy	0.171
Socio-cultural sub-criteria	Weight
S33 = Collaboration	0.152
S32 = Leadership	0.128
S34 = Technology	0.111
S35 = Training and education	0.110
Economic sub-criteria	Weight
S21 = Financing	0.348
S22 = Employment quality	0.204
S23 = Economical capacity	0.136

of sustainable CBT. Aas *et al.* (2005), Vernon *et al.* (2005) and Byrd (2007) have looked into the roles of that stakeholders play and their contributions. Schott and Nhem (2018) built upon the study on CBT and its benefits for the local community. The growing literature on the subject in the past 30 years has allowed the main criteria be determined for analysis (He *et al.*, 2021). Therefore, in bridging the current literature gap, this study fulfils the objective of developing a multi-criteria framework for the development of sustainable CBT based on the multi-stakeholder's perspective. To identify the main criteria of CBT, a thorough literature review and the perceptions of multi-stakeholders were gathered through a questionnaire. The survey resulted in three main criteria and 34 sub-criteria and they were weighed according to the degree of importance. To identify the degree of importance and weightage of the criteria, a hybrid method was applied by combining two MCDM techniques. DEMATEL was used to detect the complex relationships and ANP was used to prioritise and find the weightage.

The expansion of registered MHEP is a good sign of the growing demand for CBT. The collaboration among multi-stakeholders is important to sustain the development. The MHEP has huge potential and could benefit not only local communities but also all stakeholders involved directly or indirectly. Future studies should focus on the establishment of a framework for sustainable development in CBT that encompasses new-found sustainability criteria. It should add a new approach and technique to CBT planning, incorporating traditional sustainability concepts, as well as contribute to a more recent work on the MHEP. If the MHEP is to continue making a positive contribution to sustainable CBT development, it is vital to have a better understanding of this dependence.

Although this study makes a significant contribution to the development of CBT in Malaysia, there are limitations that can be further explored in the future. This study contributes to expansion of the existing literature on sustainable CBT, focusing on the MHEP. It can also be used as key explanations and provide views on

several different aspects which are the economic, environmental and socio-cultural dimensions. It is safe to assume that in terms of competitiveness and sustainability, the criteria required for CBT through homestay programmes to be successful has been empirically established. The criteria can be a basis to evaluate the performance of the MHEP, which in turn may assist in decision-making its improvement. There were methodological limitations, as the group of stakeholders were limited to the government, businesses, academicians, non-governmental organisations, tourists, host communities and homestay operators. Besides, the complete framework developed in this research through MCDM has not been subsequently tested qualitatively or quantitatively in all registered homestays in Malaysia. Future research could be undertaken to test, understand and refine the model and its use in developing sustainable CBT through homestay programmes in Malaysia.

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References

- Aas, C., Ladkin, A., & Fletcher, J. (2005). Stakeholder collaboration and heritage management. *Annals of Tourism Research*, 32(1), 28-24.
- Amran, H. (2010). *Malaysia homestay from the perspective of young Japanese tourist: The quest for Furusato*. CIPD Monograf 2.UTM, Skudai.
- Angelevska-Najdeska, K., & Rakicevik, G. (2012). Planning of sustainable tourism development. *Procedia - Social and Behavioral Sciences*, 44, 210-220. <https://doi.org/10.1016/j.sbspro.2012.05.022>
- Asia-Pacific Economic Cooperation (APEC). (2000, July 6). *2000 APEC tourism ministerial meeting: Seoul declaration on an APEC tourism charter*. https://www.apec.org/Meeting-Papers/Sectoral-Ministerial-Meetings/Tourism/2000_tourism
- Bagus, S. I., Imade, S. U., Nyoman, S. I. A., & Putu, W. S. N. (2019). Community based tourism as sustainable tourism support. *Russian Journal of Agricultural and Socio-Economic Sciences*, 94(10), 70-78. <https://doi.org/10.18551/rjoas.2019-10.09>
- Bayazit, O., & Karpak, B. (2007). An analytical network process-based framework for successful total quality management (TQM): An assessment of Turkish manufacturing industry readiness. *International Journal of Production Economics*, 105(1), 79-96.
- Byrd, E. T. (2007). Stakeholders in sustainable tourism development and their role: Applying stakeholder theory to sustainable development. *Tourism Review*, 62(2), 6-13. <https://doi.org/10.1108/16605370780000309>
- Corporate Communications Unit, Ministry of Tourism Malaysia. (2010, April 19). *Homestay e-marketing promotion launched*. <https://www.tourism.gov.my/media/view/homestay-e-marketing-promotion-launched>
- Dodds, R., Ali, A., & Galaski, K. (2016). Mobilizing knowledge: Determining key elements for success and pitfalls in developing community-based tourism. *Current Issues in Tourism*, 21(13), 1547-1568. <https://doi.org/10.1080/13683500.2016.1150257>
- Getz, D., & Timur, S. (2005). Stakeholder involvement in sustainable tourism: Balancing the voices. In W. Theobald (Ed.), *Global tourism* (3rd ed., pp. 230-247). Butterworth Heinmann.
- Hardy, A., & Beeton, R. J. (2001). Sustainable tourism or maintainable tourism: Managing resources for more than average outcomes. *Journal of Sustainable Tourism*, 9(3), 168-192.

- He, J., Huang, Z., Mishra, A. R., & Alrasheedi, M. (2021). Developing a new framework for conceptualizing the emerging sustainable community-based tourism using an extended interval-valued Pythagorean fuzzy SWARA-MULTIMOORA. *Technological Forecasting and Social Change*, *171*, 120955. <https://doi.org/10.1016/j.techfore.2021.120955>
- Hsu, C.-W., Kuo, T.-C., Chen, S.-H., & Hu, A. H. (2013). Using DEMATEL to develop a carbon management model of supplier selection in green supply chain management. *Journal of Cleaner Production*, *56*, 164-172.
- Jabar, F. A., Azwan Muhamed, M. F. A., Syed Wahid, S. N., Mat Dangi, M. R., & Paino, H. (2015). Current homestay policy in Malaysia. "Adapting quality in homestay policy". *Advanced Science Letters*, *21*(5), 1534-1537. <https://doi.org/10.1166/asl.2015.6094>
- Lee, T. H., & Jan, F. H. (2019). Can community-based tourism contribute to sustainable development? Evidence from residents' perceptions of the sustainability. *Tourism Management*, *70*, 368-380. <https://doi.org/10.1016/j.tourman.2018.09.003>
- Mikhailov, L. (2004). Group prioritization in the AHP by fuzzy preference programming method. *Computers & Operations Research*, *31*(2), 293-301.
- Ministry of Tourism, Arts and Culture, Malaysia. (2021). *Program pengalaman homestay Malaysia*. Ministry of Tourism, Arts and Culture Malaysia. <https://motac.gov.my/program/pelancongan/homestay>
- Nair, V., & Hamzah, A. (2015). Successful community-based tourism approaches for rural destinations. *Worldwide Hospitality and Tourism Themes*, *7*(5), 429-439. <https://doi.org/10.1108/whatt-06-2015-0023>
- Nguyen, T. Q. T., Young, T., Johnson, P., & Wearing, S. (2019). Conceptualising networks in sustainable tourism development. *Tourism Management Perspectives*, *32*, 100575. <https://doi.org/10.1016/j.tmp.2019.100575>
- Pusiran, A. K., & Xiao, H. (2013). Challenges and community development: A case study of homestay in Malaysia. *Asian Social Science*, *9*(5), 1-17. <https://doi.org/10.5539/ass.v9n5p1>
- Qian, J., Shen, H., & Law, R. (2018). Research in sustainable tourism: A longitudinal study of articles between 2008 and 2017. *Sustainability*, *10*(3), 590. <https://doi.org/10.3390/su10030590>
- Schott, C., & Nhem, S. (2018). Paths to the market: Analysing tourism distribution channels for community-based tourism. *Tourism Recreation Research*, *43*(3), 356-371. <https://doi.org/10.1080/02508281.2018.1447837>
- Simpson, M. C. (2008). Community benefit tourism initiatives—A conceptual oxymoron? *Tourism Management*, *29*(1), 1-18. <https://doi.org/10.1016/j.tourman.2007.06.005>
- Su, L., Huang, S. S., & Pearce, J. (2018). How does destination social responsibility contribute to environmentally responsible behaviour? A destination resident perspective. *Journal of Business Research*, *86*, 179-189. <https://doi.org/10.1016/j.jbusres.2018.02.011>
- Swarbrooke, J. (1999). *Sustainable tourism management*. Cabi.
- Tourism Malaysia. Malaysia Tourism Statistic in Brief. <https://www.tourism.gov.my/statistics>
- Vernon, J., Essex, S., Pinder, D., & Curry, K. (2005). Collaborative policymaking: Local sustainable projects. *Annals of Tourism Research*, *32*(2), 325-345.
- Yanes, A., Zielinski, S., Diaz Cano, M., & Kim, S. (2019). Community-based tourism in developing countries: A framework for policy evaluation. *Sustainability*, *11*(9), 2506. <https://doi.org/10.3390/su11092506>
- Zehrer, A., & Hallmann, K. (2015). A stakeholder perspective on policy indicators of destination competitiveness. *Journal of Destination Marketing & Management*, *4*(2), 120-126. <https://doi.org/10.1016/j.jdmm.2015.03.003>