



Preparing tourism facilities for crisis: Spatial management of built tourism facilities for community-based tourism in Ayutthaya

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Abstract

The tourism community has been significantly impacted by various crises at both the global and domestic levels. In community-based tourism, the effective spatial management of tourism facilities plays an important role in enhancing a community's resilience and ability to adapt to and recover from crises or shocks. In this study, 19 tourism communities in Ayutthaya were selected to explore and analyze the measures taken to prepare tourism facilities for crises, their effectiveness in minimizing the impact, and active recovery from crises. A total of 53 built community tourism facilities were investigated using multiple logistic regression to analyze predictive variables for the probability of operation during and after a crisis. The results reveal that the opening ratio contributes to a significant relationship with the state of open/reopened tourism facilities owned by the local community.

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Introduction

Tourism is a vital contributor to Thailand's economy and many provinces have made it a priority to develop this sector to attract both domestic and global visitors. Ayutthaya, located about 80 kilometers north of Bangkok, is home to a UNESCO World Heritage Site with its ancient temples, ruins, and historical sites. Due to its historical significance and close proximity to Bangkok, the city attracts millions of domestic and international tourists every year. The spillover effect from tourists visiting the World Heritage Site of Ayutthaya has resulted in increased awareness and demand for community-

based tourism experiences in the surrounding areas (Ongkhluap, 2012). As more visitors come to Ayutthaya, they tend to seek alternative experiences beyond standard tourist attractions, potentially benefiting community-based tourism initiatives in the region. Community-based tourism has been developed in Ayutthaya to create economic opportunities for local people and reduce the negative impacts of tourism on the environment, culture, and local livelihoods (Ratanapongtra & Techakana, 2019). Community-based tourism projects have been established in several local areas of Ayutthaya, offering tours led by local people, showcasing the traditional culture, cuisine, and way of life of Ayutthaya's local communities.

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However, tourism can be negatively impacted by crises such as natural disasters or pandemics (Çınar & Şener, 2021; Ha, 2023; Scott & Laws, 2006). These crises affect the tourism industry and the local communities depending on it. Community-based tourism in Ayutthaya has been severely impacted by COVID-19. The pandemic has resulted in travel restrictions and reduced demand for tourism worldwide, with Ayutthaya being severely affected. Due to the COVID-19 pandemic, many community-based tourism operators in Ayutthaya have been forced to close or reduce their operations to help prevent the spread of the virus. Some of the measures taken by community-based tourism operators to prevent the spread of COVID-19 include implementing strict hygiene and cleaning protocols, limiting the number of guests, and requiring guests to wear masks and practice social distancing (Hellewell et al., 2020; Nagai & Kurahashi, 2022). In addition to the impacts of COVID-19, Ayutthaya is also located in a flood plain, which can significantly impact community-based tourism in the region during the rainy season (Yodsurang et al., 2022). This means that the area is susceptible to flooding, which can cause damage to infrastructure, homes, and businesses, including those involved in community-based tourism.

These crises significantly impact tourism activities and facilities in the built environment which are crucial for tourism development (Maitland & Smith, 2009). Despite the challenges presented by the crisis, community-based tourism operators in Ayutthaya are continuing to adapt and innovate (Minakan, 2004). Many of them still offer an authentic experience, where travelers can learn about Thai culture and traditions from the comfort of their own homes during and immediately after the crisis. It is crucial that tourism facilities are prepared during times of crisis (Jamal & Budke, 2020; Ritchie, 2004), and lessons can be learned from community-based tourism in Ayutthaya.

During the above-mentioned crises, to ensure safety and minimize economic loss, it is essential to have strategies in place to manage and design tourism facilities in readiness for potential challenges. This study focuses on the spatial management of community-based built tourism facilities in Ayutthaya during times of crisis and explores several building designs to analyze the most important factors in preparing these tourism facilities for crises and minimizing the impact on the community-based tourism sector. The analysis results provide a solution for preparing community-based tourism facilities during times of crisis in Ayutthaya, and how the solution could be applied elsewhere to promote sustainable tourism development.

Thus, this paper contributes significantly to the field by addressing the critical issue of spatial management for community-based tourism facilities during crises in Ayutthaya. The unique contribution lies in exploration of building designs and strategies that analyze essential factors to prepare these facilities for crises and minimize their impact on the community-based tourism sector. This study provides practical insights and solutions for ensuring safety, minimizing economic loss, and promoting sustainable tourism development during challenging times. By emphasizing the applicability of findings not only to Ayutthaya but also to other regions, your research offers a valuable contribution to the broader discourse on resilient and sustainable tourism practices.

Literature Review

Case Description

Ayutthaya's success with community-based tourism serves as a promising case study for other destinations seeking to implement similar initiatives (Pongsangiam, 2021; Ratanapongtra & Nawatnatee, 2021; Staiff et al., 2007). Not only can community-based tourism provide economic and social benefits to local people, but it also helps to promote cultural understanding, sustainable tourism practices, and a greater appreciation for cultural preservation (Asker et al., 2010; Goodwin & Santilli, 2009). With so many tourists visiting the UNESCO World Heritage Site of Ayutthaya, a positive spillover effect is that it provides opportunities for community-based tourism businesses to attract more tourists who may be looking for alternative, off-the-beaten-path experiences (Chantanee et al., 2021).

Ayutthaya's location near the Chao Phraya River makes it vulnerable to flooding during the rainy season, which typically occurs from July to October. Heavy rainfall can cause the river to overflow and flood low-lying areas, including Ayutthaya. Floodwater can damage roads, bridges, and buildings, making it difficult for visitors to access community-based tourism initiatives. The impact of floods can also affect local communities' livelihoods, making it challenging to sustain community-based tourism activities. Local residents who rely on agriculture or fisheries for their livelihoods may face a significant loss of income during the rainy season due to crop damage or the loss of fish stock. Therefore, it is essential for Ayutthaya to have proper flood management plans and regulations to mitigate the impact of flooding on community-based tourism and the wider community.

This can include infrastructure improvements, such as building more robust bridges and roads, as well as implementing early warning systems to help residents prepare for potential floods. There should also be measures in place to protect the natural environment, which plays a crucial role in sustaining community-based tourism.

Community Resilience

The key factors contributing to the active recovery of a tourism community from the impacts of the COVID-19 pandemic, flooding, and other challenges facing the community depend on community resiliency (Chiawo et al., 2023; Okafor et al., 2022; Wongmonta, 2021). For example, a community with strong social connections may be better able to weather the economic impacts of the pandemic and support its residents through difficult times (Higgins-Desbiolles et al., 2022). Similarly, a community with a diverse range of economic activities may be less vulnerable to the negative impacts of economic downturns or other shocks. On the other hand, a community with limited infrastructure or natural resources may have a harder time recovering from the impacts of the pandemic or other challenges. Ultimately, the ability of a community-based tourism destination to survive and recover after the COVID-19 pandemic and other challenges depends on a combination of key factors present in the community and the steps taken to address those factors. However, this industry is not immune to crises such as natural disasters, pandemics, and political instability, among others.

The concept of community resilience when pertaining to spatial distribution can be understood as the ability of a community to cope with and recover from the negative effects of a disruptive event, based on the way in which the community is spatially organized (Maomao et al., 2019). This resilience depends on various factors (Ur Rahman et al., 2021), such as the physical characteristics of the community, the socio-economic status of its inhabitants, and the level of preparedness for natural and man-made disasters, as well as other shocks or stresses, including economic downturns or social unrest. The spatial distribution of a community plays a critical role in determining its resilience (Brunetta & Caldarice, 2020), since certain locations may be more vulnerable to specific hazards or more isolated from resources and assistance during times of crisis.

When assessing the resilience of a community's spatial management, it is important to consider various factors such as access to building facilities, critical

infrastructure, and social networks (Xu et al., 2020). Building facilities are a crucial aspect of community resilience since they enable residents to recover and rebuild after disasters or other shocks. An equitable space with a range of flexibility can help communities to recover more quickly and minimize the impact of structural deterioration (Ahmed Elewa, 2019; Sledge & Thomas, 2019). Similarly, infrastructure such as transportation and communication networks are necessary for effective emergency response and recovery efforts. In addition, social networks and community involvement can provide a support system for residents during difficult times.

Another aspect of community resilience is the ability to adapt to changing environmental conditions, such as those generated by climate change (Carmen et al., 2022). In many cases, this means identifying and addressing vulnerabilities in the spatial management of the community, such as areas prone to flooding, land erosion, or heat waves. By implementing strategies such as open and flexible public shared spaces, communities can mitigate the effects and enhance their resilience. Overall, community resilience in terms of spatial management requires a comprehensive approach that considers both physical and social factors (Saravanan & Garren, 2021). Through careful planning and investment in critical infrastructure, social networks, and economic opportunities, communities can build resilience to shocks and stresses, and improve their ability to recover and thrive in the face of adversity.

The Open Concept and Resiliency

However, despite the challenges faced by community-based tourism (i.e., COVID-19, floods, etc.), community resilience can play a crucial role in mitigating some of the negative impacts. Community resilience refers to the ability of a community to adapt and recover from a crisis or shock. The open-plan concept of space design can contribute to community resilience by providing flexible and adaptable spaces that can be easily modified to suit changing needs (Askar et al., 2021; Elrayies, 2022; Fouda & El Khazendar, 2023). The open concept may also be important for community resilience during natural disasters such as floods. An open-plan design can help tourism communities recover from crises more rapidly by allowing them to reconfigure spaces quickly and easily for different uses. Besides, the open space ratio inside a building can also play a role in community resilience during a crisis such as COVID-19. The wall opening ratio refers to the proportion of open wall areas, such as windows or doors, compared to the total wall area

of a building. A higher wall opening ratio can allow for better ventilation in the building, helping to reduce the risk of airborne transmission of diseases like COVID-19 (Bazant & Bush, 2021). In the context of community-based tourism, where visitors may stay in local homes or guesthouses, a higher wall opening ratio can increase the safety of both visitors and local families. This is because better ventilation can help reduce the risk of COVID-19 transmission, creating a safer living environment for everyone involved. Community resilience and the wall opening ratio inside buildings are important for mitigating the negative impacts of COVID-19 on community-based tourism. By promoting resilience and utilizing design strategies such as higher wall opening ratios, it is possible to create safer and more sustainable tourism practices, benefiting both visitors and local communities.

In addition, this flexibility can help communities respond more quickly and effectively to crises, minimizing the impact of the crisis on the community's tourism industry (Barry et al., 2022). Flooding can make it difficult for tourists to access community-based tourism and the wider community during the rainy season. As a natural disaster, floods can damage and destroy infrastructure, homes, and businesses, including community-based tourism initiatives. By having more openings in the walls, buildings can better withstand the forces of nature, such as earthquakes and hurricanes, reducing damage and loss. Open spaces such as parks and plazas provide alternative areas for people to gather

and use in times of crisis, such as temporary shelters or relief distribution points. This flexibility in space usage can facilitate faster recovery for the community, allowing for a quicker return to normalcy (Al-Humaiqani & Al-Ghamdi, 2023). Additionally, open-plan designs can provide more natural light, better air circulation, and a greater sense of community, contributing to residents' well-being and sense of community cohesion during difficult times.

Methodology

In this study, 19 tourism communities were selected throughout Ayutthaya favored by tourists seeking less crowded and authentic experiences. Ayutthaya is also a significant cultural tourism destination with typically small communities located in agricultural areas near water bodies. Furthermore, compared to other provinces, Ayutthaya demonstrated a quicker recovery from the pandemic, as reported by Prajongkarn et al. (2020). This has led to tourism communities in Ayutthaya Province being selected to study the strategies employed by local communities in managing and developing tourism space during the crisis. Many community-based tourism platforms in Ayutthaya rely on foreign visitors (Wiyati & Yodsurang, 2023), and the significant decline in foreign tourists has caused substantial financial losses for such businesses. These initiatives are often

Table 1 Summary of key findings from literature review

Study	Main Findings
Pongsangiam, 2021	Ayutthaya as a successful case for community-based tourism
Ratanapongtra & Nawatnatee, 2021	Economic and social benefits of community-based tourism
Staiff et al., 2007	Promotion of cultural understanding and sustainable practices
Asker et al., 2010	Positive spillover effects from UNESCO World Heritage Site
Goodwin & Santilli, 2009	Contribution to cultural preservation and sustainable tourism
Chiawo et al., 2023	Key factors for community recovery post-COVID-19 and floods
Okafor et al., 2022	Role of strong social connections in community resilience
Wongmonta, 2021	Diverse economic activities reduce vulnerability to shocks
Maomao et al., 2019	Community resilience related to spatial organization
Carmen et al., 2022	Adaptation to changing environmental conditions
Brunetta & Caldarice, 2020	Role of spatial distribution in community resilience
Ahmed Elewa, 2019	Equitable spaces contribute to quicker community recovery
Sledge & Thomas, 2019	Importance of critical infrastructure for community resilience
Saravanan & Garren, 2021	Holistic approach to physical and social factors in resilience
Askar et al., 2021	Open-plan design contributes to community resilience
Elrayies, 2022	Open concept aids in rapid reconfiguration during crises
Fouda & El Khazendar, 2023	The open concept as a factor in community resilience
Bazant & Bush, 2021	Higher wall opening ratios reduce the risk of disease transmission
Barry et al., 2022	Flexibility in space usage for faster community recovery
Al-Humaiqani & Al-Ghamdi, 2023	Open-plan designs enhance well-being and community cohesion

run by local residents who offer tourists an authentic experience and insight into local culture and customs. Due to the pandemic, many community-based tourism initiatives have had to shut down or reduce their operations (Sann et al., 2023). Figure 1 reveals

visitor numbers in tourism communities in Ayutthaya during the crisis. During the pandemic, many community-based tourism initiatives in Ayutthaya were also devastated by floods, adding to the already challenging situation.

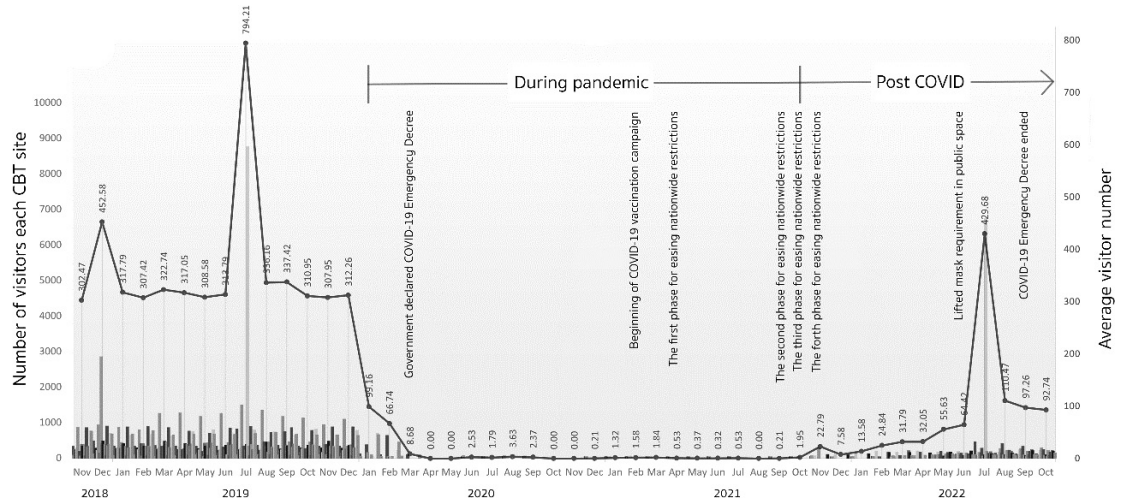


Figure 1 Tourism communities in Ayutthaya and visitor numbers during the crisis

Table 2 Survey factors

Variables	Description	Attributes
Operation	The outcome variable stating the opening or reopening of businesses during and after a crisis period was examined, particularly how the prediction of this variable is influenced by other predictive building factors.	Binary expressing the presence or absence of variables (Yes/No).
Open planning	The state of a specific layout or arrangement of a space that promotes a spacious and fluid environment.	Binary expressing the presence or absence of variables (Yes/No).
Class of owner	Classification or categorization of the individual or entity owning a specific building or room.	Community and villagers, municipality and local authority, and others.
Opening ratio	Measuring the total area of all openings within the space and dividing it by the total wall area.	The percentage of a wall occupied by windows.
Building ventilation	The state of providing fresh air circulation within a specific investigated space. Common attributes are considered as a guideline for limiting indoor airborne transmission of COVID-19 (Bazant & Bush, 2021).	Open and outdoor spaces, limited openings, pavilions, or buildings with openings on all four sides; buildings with openings and air conditioning; buildings with openings and fans; and buildings with openings that can be fully opened (similar to pavilions).
Facility functions	Purpose and role of the facility in supporting tourism-related activities (Ginting & Sasmita, 2018).	Accommodations, restaurants, pavilions, souvenir shops, tourist services, information centers, other facilities.
Facility type	Classification of facilities specifically designed to cater to the needs and preferences of tourists or visitors (Yingju, 2020).	Gathering point, main tourist attractions, and both.
Number of activities	The range of activities that can be engaged in, or accessed within a particular location, facility, event, or program.	Number of activities available in the measured space.
Building function	The primary purpose or intended use of a specific building or structure. This variable describes the main activity or activities for which the building is designed, constructed, and utilized.	Recreational activities, gathering points, offering alms, eating meals, exhibitions, meetings, production and processing of goods, resting, residing, museum, learning spaces, fishing, shops, water play, historical learning center, and sacred places.
Capacity	The maximum number, density, or biomass of a population that a specific area can support sustainably (Hartvigsen, 2022).	Maximum number of users that a specific area can sustainably accommodate.

Thus, this study focuses on the period when communities faced crisis and aims to investigate how their spatial management strategies enabled them to overcome these challenges and remain resilient. Based on the context, the relevant criteria for respondents in this study would likely include individuals involved in managing or operating community-based tourism initiatives in Ayutthaya. These could be managers, owners, or individuals with significant experience in the field, so respondents with direct involvement in these strategies would be key informants.

Data Collection

A rapid survey was conducted to collect data from the community to obtain a general overview of the situation or identify broad relationships between variables. Information was gathered on the physical characteristics of 68 activities within 53 built tourism facilities in 19 tourism communities in Ayutthaya Province and their ability to accommodate tourists. The rationale behind the selection of this specific number, 53, stems from it representing the entirety of existing tourism facilities in the observed communities. Opting to include all available tourism facilities as samples was a strategic decision to ensure a holistic and representative view of the community-based tourism landscape. The selection was meticulously carried out by visiting each site and conducting surveys based on the activities offered by the community. This approach ensures that the sampled facilities accurately reflect the diversity and characteristics of the broader tourism infrastructure in the region.

The open space or opening ratio of tourism facilities in community-based tourism was analyzed using quantitative methods by measuring the length, width, and height of the space and calculating the total floor area. The opening ratio can then be calculated by measuring the actual size of the space. The open area includes doors, windows, and any other openings that connect the space to the outside. The measurements are then recorded and analyzed. The analyzed data can then be interpreted to determine the potential impact of the opening ratio on the facilities.

Data Analysis

Analyzing the opening space or opening ratio in community-based tourist facilities can provide valuable insight into their design and functionality. Using quantitative methods such as space measurement, ratio calculation, statistical analysis, comparison with industry

standards, and interpretation of results can help to identify potential areas for improvement and ensure the facilities are meeting industry guidelines.

In this study, the logistic regression model was constructed with independent variables believed to be related to the opening or reopening of businesses during and after the crisis. This allows estimation of the probability that a business will open or reopen based on the values of these predictors. The logistic regression model could also be used to test whether the effect of any given predictor on the likelihood of opening or reopening is statistically significant and identify any possible interactions or nonlinear effects that might be present. The results of the logistic regression analysis can provide insight into which factors are most likely to influence the opening or reopening of businesses, and how these factors might interact with each other to affect the outcome.

Results

The result presented the findings obtained from the architectural spaces and their dimensions recorded according to the survey. [Figure 2](#) revealed a visual representation of the survey results. The figure prominently displays the opening facilities in black, while those that did not open were depicted in grey, providing a clear visual distinction between the two categories. The data were collected to assess the impact of building factors on the spatial management of tourism facilities and their influence on the state of tourism operations in order to illustrate the key findings and insights derived from the next step of analysis.

[Table 3](#) demonstrates the descriptive statistics. Among the attributes found in 53 samples, 24 (45.28%) sampled infrastructures were open or partially open during the period. Most of them (31 buildings) were using an open-plan space layout, accounting for 58.49 percent. Forty (75.47%) of the infrastructures were owned by local people, and the remainder by governmental authorities. According to the collected data, the distribution of tourism facilities based on typology was 47.17 percent with gathering points, and accounting for 18.87 percent of the reported numbers was main tourist attractions. Gathering points and main tourist attractions combined amounted to 33.96 percent. These reported percentages highlight the diversity of tourism facilities, with significant emphasis on main tourist attractions. However, gathering points also play a valuable role in supporting tourism activities and enhancing the overall visitor experience.

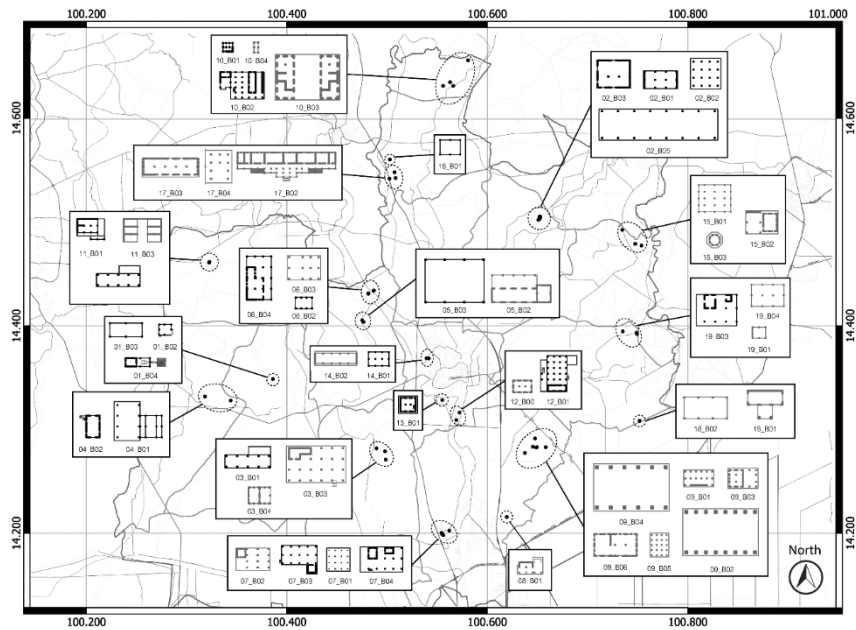


Figure 2 Operational state of built tourism facilities for tourism community in Ayutthaya

Table 3 Descriptive Statistics of Variables

Variable	Grand total	Percentage	
Operation	24	45.28%	
Availability of open-plan layout	31	58.49%	
Class of owner			
Community and villagers	40	75.47%	
Municipality and local authority	12	22.64%	
Other	1	1.89%	
Class of facility			
Gathering point	10	18.87%	
Main tourist attractions	25	47.17%	
Gathering point and main tourist attractions	18	33.96%	
Class of original facility's function			
Accommodations	3	5.66%	
Restaurants	2	3.77%	
Pavilions	11	20.75%	
Souvenir shops	1	1.89%	
Tourist services	9	16.98%	
Information centers	21	39.62%	
Other facilities	6	11.32%	
Building function change, comparing Pre/Post-COVID	4	7.54%	
Class of building ventilation			
Open space, outdoor	5	9.43%	
Limited opening	2	3.77%	
Pavilions or buildings with openings on all four sides	23	43.40%	
Buildings with openings and air conditioning	10	18.87%	
Buildings with openings and fans	9	16.98%	
Buildings with openings that can be fully opened (similar to pavilions)	4	7.55%	
	max	min	mean
Number of activities	4 activities	1 activity	1.28
Opening ratio	100%	10%	64.72
Capacity – Pre-COVID	100 people	8 people	30.62
Post-COVID	100 people	4 people	18.58

The figures reported for the original function of the building indicate that most were previously information centers (39.62%), followed by pavilions (20.75%) and tourist services (16.98%). However, a 7.54 percent difference in building function can be observed when comparing the pre- and post-COVID periods. Among the population surveyed, according to the building ventilation data, pavilions or buildings with openings on all four sides account for 43.40 percent, followed by buildings with openings and air conditioning (18.87%), and buildings with openings and fans (16.98%). These top three ventilation types suggest a preference for natural ventilation with a combination of natural and mechanical ventilation methods. This reflects an understanding of the importance of proper airflow and ventilation in maintaining a comfortable indoor environment.

Among the surveyed population, buildings could accommodate a maximum of four activities. On average, the number of activities per building was found to be 1.28. The opening ratio of the collected data ranged from a minimum of 10 percent to a maximum of 100

percent. The mean opening ratio was calculated to be 64.72 percent. According to the comparison between the carrying capacity in pre- and post-COVID periods in Table 2, it is evident that the maximum capacity remains unchanged. However, a significant average change can be observed, with a decrease from 30.62 to 18.58 people (40% decreasing). This indicates a substantial reduction in the average sustainable capacity of the facility under study.

Figure 3 demonstrates the correlation matrix of all variables. However, to reduce the dimensions of the variable to be calculated, two highly correlated variables exceeding 0.80 (Hair et al., 2010) were removed before training the model to improve the learning process without significantly affecting the model's performance (Johansson Lannge, 2021). Besides, Akande et al. (2015) proposed an alternative approach for variable selection based on removing a correlation of less than 0.35 with the dependent variable. Thus, the facility's function, facility type, building function (both pre- and post-COVID), and carrying capacity (both pre- and post-COVID) variables have been removed.

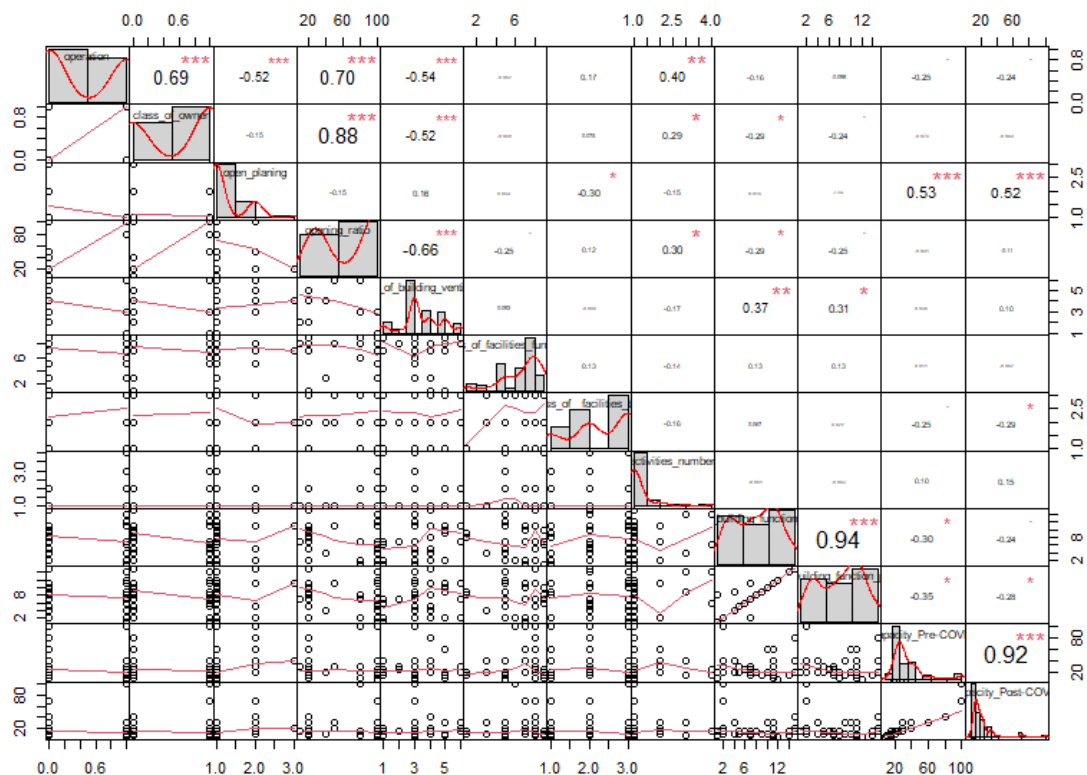


Figure 3 Correlation matrix of variables loaded from the Performance Analytics R package

Source: Peterson and Carl (2020)

In this study, the Generalized Linear Model (GLM) with the stepwise multiple logistic regression technique was implemented to select the significant variables for inclusion in the equation (R Stats Package, 2020). This method allows for the selection of important variables without prior knowledge of their ranking within the variables (Vorapongsathorn, 1990). Table 4 shows the results of building factors on the investigated operation of community-based tourism facilities in Ayutthaya by multiple logistic regression analysis. The results indicated that the opening ratio and class of owner had a statistically significant effect on operation probability at the 0.01 level. The number of activities, availability of open-plan layout, and class of building ventilation had no statistically significant effect on operation probability. Thus, the logistic regression equation results are as follows (Equation (1)):

$$\text{Logit (operation probability)} = 16.353 + 0.111 (\text{opening ratio}) - 23.640 (\text{class of owner}) \quad (1)$$

The predict function in R (Leeper, 2019) was then implemented to predict the probability of tourism facilities being in operation and provided about 98.11 percent accuracy.

Out of the 11 predictors examined, only two showed a significant association with the outcome variable, namely, the opening ratio and class of owner. The coefficient estimate for the opening ratio variable is 0.111, indicating a positive relationship. This means that as the opening ratio increases, the probability of the building being operated also increases. On the other hand, the coefficient for the variable “Class of owner” is -23.640, indicating a negative relationship. This means that as the class of owner increases (shifting from community and villagers to the municipality and local authority), the probability of the building being operated decreases. Table 5 shows the concept used to interpret the logistic beta coefficients. According to the probability of operation from the logistic regression results, the regression coefficient for the opening ratio is 0.111. This suggests that for every percentage increase in the opening ratio, the odds of the building being in operation increase by 0.111 times. For instance, if the opening ratio reaches 100 percent and the building is owned by the community and villagers, it will influence the odds of being in operation by 3.81 times. However, the minimum threshold required for the building to be operational is influenced by an opening ratio of 74.66 percent.

Table 4 Effects of building factors on the consequence (Step: AIC = 16.94, operation ~ opening_ratio + class_of_owner)

Variables	df	Deviance	AIC	LRT	Pr(>Chi)
<none>		10.942	16.942		
+ activities_number	1	10.146	18.146	0.796	0.3723
+ open_planning	1	10.803	18.803	0.139	0.7088
+ class_of_building_ventilation	1	10.929	18.929	0.014	0.9071
- class_of_owner	1	35.773	39.773	24.830	6.260e-07***
- opening_ratio	1	53.841	57.841	42.898	5.766e-11 ***

Note: Signif. codes: 0 ‘***’ .001 ‘**’ .01 ‘*’ .05 ‘.’ .1 ‘ ’ 1

Call: glm (formula = operation ~ opening_ratio + open_planning, family = binomial(), data = Data.omit)

Coefficients:

(Intercept)	opening_ratio	Class of owner
16.353	0.111	-23.640

Degrees of Freedom: 52 Total (i.e., Null); 50 Residual
Null Deviance: 73
Residual Deviance: 10.94 AIC: 16.94

Table 5 Interpreting the probability of operation

Coefficients	opening_ratio	Probability of operation	
		class of owner	
16.353	0.111	-23.64	
	Percentage	Community and villagers (1)	Municipality and local authority (2)
	100	3.81	-19.83
	74.66	1.00	-22.64
	70.16	0.50	-23.14
	65.65	0.00	-23.64

Discussion

This discussion highlights the significance of community-based tourism in the recovery of the tourism industry, particularly in Ayutthaya province of Thailand, following the COVID-19 pandemic, floods, and possibly other unprecedented events. The study examined the impact of the spatial management of tourism facilities on building factors and their influence on the state of tourism operations during and after a crisis. The findings reveal that the opening ratio has a notable effect on the operation of tourism facilities, particularly when owned by the community and villagers. Consequently, it is essential for tourism communities to proactively prepare their facilities for unforeseen crises by developing resilient tactics and implementing suitable spatial management strategies. This will contribute to the enhancement of tourism facilities in community-based tourism. By adapting to these tactics, the overall quality of community-based tourism facilities can be improved to ensure effective management in the face of future challenges.

This study contributed to the pivotal role of the opening ratio in shaping the resilience of community-based tourism facilities during crises. By demonstrating the influence of this factor on the operation of facilities, the research underscores the significance of spatial management in the context of unforeseen challenges.

These findings align well with prior studies, indicating that the opening ratio of a building significantly influences its resilience (Fairuz et al., 2020; Hashem Alqahtani & Eldeen Elgizawi, 2020; Paulichen et al., 2020; Shimonosono et al., 2022). Besides, they offer nuanced insights into the specific dynamics at play in Ayutthaya's community-based tourism. While corroborating established principles, such as the importance of flexible spaces, our results introduce unique considerations for the local context. Similarly, in the context of the COVID-19 pandemic, flexible architectural plans and practices were implemented to create spaces that can quickly adapt to crises and future changes (Higuera et al., 2021). Additionally, the integration of flexible spaces with community resilience is essential for ensuring the quality of life and sustainable tourism development during disasters and crises (Erda, 2015). These findings not only enrich the academic discourse but also provide actionable insights for practitioners and policymakers involved in community-based tourism resilience planning.

Conclusion and Recommendations

As the world begins to recover from the COVID-19 pandemic, community-based tourism is expected to play an important role in the revival of the tourism industry in Ayutthaya and other parts of Thailand. Each tourism community should prepare its facilities for an unprecedented crisis in the future. The objectives of this research were to test the building factors on the spatial management of built tourism facilities affecting the state of open/reopened tourism operations during the period under investigation. The results showed that the opening ratio influenced the operation of tourism facilities owned by the community and villagers. Fostering the design and creation of buildings with additional openings such as pavilions or buildings, can provide opportunities for resilience during times of crisis. These flexible spaces can be adapted to open/reopen in response to various crises, allowing communities to diversify their tourism offerings and adapt to changing circumstances. Tourism facilities in community-based tourism can then develop the quality of their spatial management by adopting this resilience tactic.

However, it is important to consider some external factors in applying opening ratio tactics to community-based tourism infrastructure. These factors include government regulations and policies, available resources and business costs, competitiveness in terms of market demand and identity, accessibility, and so on. These factors might have an impact on the success and sustainability of the initiative. Addressing these concerns will ensure a more comprehensive and effective approach to community-based tourism in future investigations.

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Conflict of Interest

The author declares that there is no conflict of interest.

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