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Divergent Development Pathways in Community-Based Forest Tourism under a Common Governance System: A Tourism Area Life Cycle

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ABSTRACT

Understanding the Tourism Area Life Cycle (TALC) in community-based forest tourism is essential for sustainable destination management. Therefore, this study aimed to identify the TALC stage of the Mataram Cultural Forest Tourism area. A mixed-methods approach was employed. Data were collected through interviews with site managers, tourist surveys, questionnaires, direct observation, and document review. The composite index was derived from seven variable groups: visitor numbers, tourist characteristics, attractions, accessibility, amenities, institutional capacity, and community participation. Scores ranged from 12.08 to 61.84, indicating substantial differences in development levels. Bukit Mojo, Bukit Panguk, Pinus Asri, and Lintang Sewu remained at the exploration stage with a declining trend; Seribu Batu was at the involvement stage; Puncak Becici was at the development stage; Pinus Sari was at the consolidation stage; whereas Pinus Pengger showed characteristics indicating a transition toward stagnation. These findings suggest that forest tourism development does not always follow a linear TALC trajectory. Visitor numbers alone cannot fully explain this process. Differences in destination development are more strongly associated with institutional capacity, administrative capability, policy coherence, and community participation. This study demonstrates the heuristic value of TALC and the importance of governance-sensitive forest tourism planning.

1. Introduction

Community-based forest tourism has also been identified as a means to balance objectives related to environmental conservation and community-based local economic development (Giampiccoli and Saayman 2018; Koure et al. 2023). Local communities, if placed at the center of tourism planning and management strategy, would likely see more equitable benefits and reduced pressure on forest resources (Bichler 2021; King and Higgins-Desbiolles 2026). At the national level, approaches that promote community-based strategies are all the more relevant, given that governments may be unable to address forest zones within centralized governance systems (Husseini et al. 2016).

In Indonesia, forest governance reforms have transferred greater authority to local actors, including forest management units (FMUs), to support decentralized, collaborative forest management (Jayadi 2020; Maryudi 2015). Beyond their traditional responsibilities for forest protection and conservation, FMUs are increasingly involved in developing forest ecosystem services, particularly forest tourism, to enhance local livelihoods and promote sustainable forest management (Budihardjo et al. 2019; Salampessy et al. 2024). This expanded role places FMU at the center of forest tourism governance, where institutional capacity, stakeholder collaboration, and community participation are essential for ensuring sustainable destination development. Consequently, understanding how community-based forest tourism develops under FMU governance has become increasingly important, as effective governance can reduce socio-economic vulnerability while supporting long-term forest conservation (Nawrotzki et al. 2017).

The theoretical model of tourism destination transitions through the lifecycle is commonly used to interpret destination development from the exploration stage through maturity to decline (Liang and Lian 2024; Rodrigo et al. 2025). Destination growth/refinement is articulated across stages coined as exploration, involvement, development, consolidation, and stagnation, with potential for revitalization or decline via the TALC. The model has been applied across diverse contexts, including ecotourism destinations (Kastenholz et al. 2021), rural China (Li et al. 2019), and remote South Africa (Giampiccoli and Saayman 2018). These analyses show that destination pathways are shaped by a combination of internal factors (institutional capacity, commercialization strategies, and product development) and external factors (public policy interventions, the evolution of the tourist industry over time, and adaptive capacity to social/environmental change) (Brouder et al. 2017).

Although the tourism area life cycle (TALC) has been widely applied to evaluate destination development, most previous studies have focused on individual destinations rather than comparing multiple destinations within the same governance and ecological setting (Butler 1980; Butler 2024; Coelho 2026). Such intra-area comparisons matter because they examine whether destinations under the same institutional and policy framework necessarily follow similar development trajectories, or whether site-level governance, management capacity, and community participation lead to divergent pathways (Lee and Jan 2025). This issue is particularly relevant in community-based forest tourism, where local stakeholder interactions and institutional arrangements may substantially influence destination evolution, even when the same forest management unit (FMU) governs them (Friedman et al. 2020). However, empirical evidence addressing this issue, particularly in developing countries, remains limited (Rahaju et al. 2026). This disconnect is also evident in recent studies of Indonesian forest tourism, which have primarily examined economic impacts and stakeholder perceptions at an aggregated level (Arif et al. 2025; Suhud et al. 2024), while providing little systematic evidence on variations in development stages among destinations within the same forest tourism area. This study therefore compares the TALC stages of several community-based forest tourism destinations within the same FMU to better understand how local governance and management factors shape destination development.

Therefore, this study applies Butler's tourism area life cycle (TALC) framework to identify the development stages of forest tourism destinations within the Mataram Cultural Forest Tourism Area, a community-based forest tourism region managed by the Notowono Cooperative. The analysis incorporates both internal and external destination factors to examine variations in development among tourism sites under a single governance system and to evaluate whether the

linear developmental stages proposed by the classical TALC model adequately explain the dynamics of community-based forest tourism.

This is original because few previous studies have applied the TALC model to examine differences in development across two or more tourism destinations under a single management authority. In addition, the paper uses a complex composite score of multiple variables, including not just visitation but also nearby attractions, access and amenities; institutional capital; the policy environment for the arts; and community support. Thus, this paper contributes to the TALC literature by showing how "different" and non-standard developmental levels coexist under the same governance.

2. Materials and Methods

2.1. Study Area

This study was conducted in the Mataram Cultural Forest Tourism Area at the Mangunan Forest Management Resort (FMR), which is part of the Mangunan Production Forest Management Units Zone (PFMU) under Yogyakarta Forest Management Units (FMU). The area of Mataram Cultural Forest Tourism area is about 30.41 ha out of the total land area of 570.70 ha, which comprises eight ecotourism objects managed by the community at various stages, with most being dominated by pine (*Pinus merkusii*) and *eucalyptus* (*Eucalyptus* sp.) (Pinus Pengger, Puncak Becici, Pinus Sari, Seribu Batu, Lintang Sewu, and Pinus Asri), as well as two objects dominated by teak (*Tectona grandis*) (Bukit Panguk and Bukit Mojo Forest Tourism Object). **Fig. 1** shows a map of Mataram Cultural Forest Tourism from the Mangunan Forest Management Resort, Yogyakarta Forest Management Units.

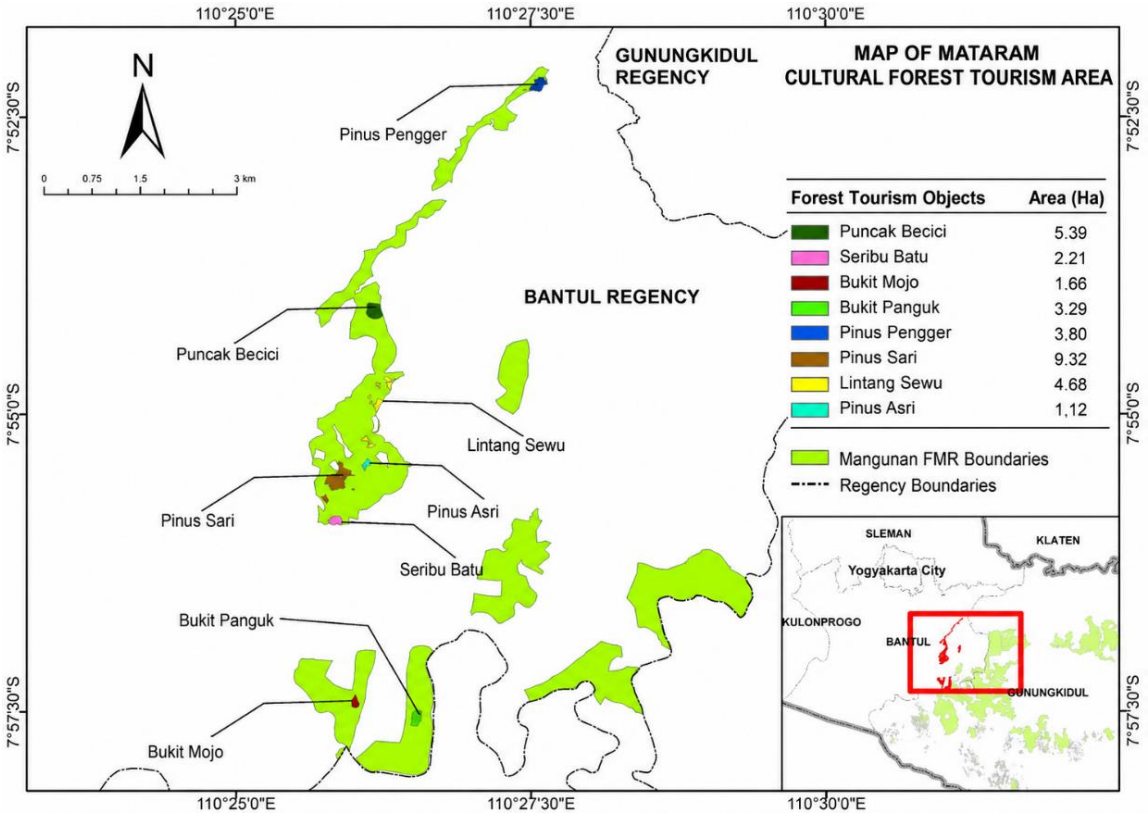

Fig. 1. Research location map.

2.2. Methods

This study uses a mixed-methods research design that combines quantitative and qualitative approaches. The study aims to identify the tourism area life cycle (TALC) stage of the destination by examining its development within the TALC framework, comprising the exploration, involvement, development, consolidation, stagnation, and decline/rejuvenation stages, through a qualitatively driven mixed-methods approach (Almeida 2018; Creswell and Creswell 2018). For the qualitative component, data were collected through field observation, in-depth interviews, and document analysis; quantitative data were obtained from secondary sources and used primarily to support descriptive statistical analysis. Primary data were collected through purposive interviews with 10 key informants, selected for their direct involvement in establishing and developing the Mataram Cultural Forest Tourism Area. The informants included the Head of the Yogyakarta Forest Management Unit (FMU), the Chairwoman of the Notowono Cooperative, site managers, a cooperative supervisor who formerly served as the FMU Head, and other stakeholders who played key roles in planning, managing, and developing the tourism area. The field observation focused on infrastructure, management characteristics, and site nature. Secondary data were sourced from the Notowono cooperative, government reports, and available literature. Seven variable groups were selected to assess the various management development stages: 1) Visitor number; 2) Attractions; 3) Accessibility; 4) Amenities; 5) Institutional capacity; 6) Tourist characteristics; and 7) Community participation. Each variable group comprises numerous indicators derived from primary and secondary sources, including tourist survey data, field observations, and document analysis. **Table 1** shows the constructed categories from the primary source of interviews.

The group weights are supported by both conceptual and empirical justification grounded in the literature on tourism destination development and community-based tourism (Nardo et al. 2005; Song et al. 2012). Weights were assigned to reflect the relative importance of each variable group in developing forest tourism management. Indicators were scored on an ordinal scale using questionnaires, interviews, and observations, and normalized to avoid unit-of-measurement differences or dominance by any one variable.

To ensure consistency across indicators and variable groups, each indicator was scored on a five-point ordinal scale ranging from 1 (least developed) to 5 (most developed). Higher scores indicate more advanced empirical conditions at the site level. Variable scores were calculated proportionally using Equations 1–2.

$$SE_1 = \frac{LS}{NV}(i \ldots n) \quad (1)$$

$$SE_h = \frac{HS}{NV}(i \ldots n) \quad (2)$$

where SE_l is the lowest possible score of a variable group, SE_h is the highest possible score of a variable group, NV is the number of indicators within a variable group, LS is the minimum indicator score (1), and HS is the maximum indicator score (5).

This formulation ensures that each indicator's contribution within a variable group is proportional, preventing variable groups with more indicators from automatically yielding higher composite scores. Accordingly, the score for each variable group was calculated by summing the normalized scores of all indicators in that group, as shown in Equation 3.

$$SK_i = \sum_{j=1}^{Ni} S_{ij} \quad (3)$$

SK_i is the weighted score of the *i*-th variable group, S_{ij} is the score of the *j*-th indicator within the *i*-th variable group, and N_i is the number of indicators in the *i*-th variable group.

The weighted score for each variable group was calculated using Equation 4.

$$SST_i = SK_i \, x \, W_i \quad (4)$$

where SST_i is the weighted score of the *i*-th variable group, SK_i is the composite score of the *i*-th variable group, and W_i is the assigned weight of the *i*-th variable group.

The weighted score reflects each variable group's relative contribution to the overall level of tourism development at the site level.

Table 1. Data analysis methods based on score calculation and percentage distribution of variable scores for each tourism site

No	Variables Group	Percentage (%)
1.	Visitor Numbers	20
	a. Average number of visitors over the last two years	
2.	Attractions	15
	b. Number of tourist attractions	
	c. Diversity of tourist attractions	
3.	Accessibility	15
	d. Length of roads accessible by four-wheeled vehicles	
	e. Type of transportation to and from the tourism area	
	f. Frequency of transportation services to and from the destination	
4.	Amenities	15
	g. Number and types of hotels/accommodation facilities	
	h. Number of rooms in hotels/accommodation facilities	
	i. Number and types of restaurants	
	j. Number of travel agencies	
5.	Institutional Capacity	15
	k. Availability of regulations governing tourism area planning	
	l. Availability of tourism area development plans	
	m. Implementation of development action programs	
6.	Tourist Characteristics	10
	n. Visit frequency	
	o. Type of travel (group or individual)	
	p. Average length of stay in the tourism area	
	q. Highest level of education attained	
	r. Age	
	s. Place/country of origin	
7.	Community Participation	10
	t. Percentage of residents employed in the tourism sector	
	u. Percentage of residents owning tourism-related businesses	
	Total	100

The differences in weights, expressed as percentages, reflect the judgments of the purposively selected key stakeholders on the relative importance of each element, factor, or condition within the variables. These differences reflect the stages of development of a forest tourism site. The greatest weight was given to visitor arrivals because they represent different stages of tourism development cycles in the TALC model (Gore et al. 2021, 2024). According to these weights, the overall composite score ranges from 1 to 100 and is then categorized by TALC

developmental stages. 1.00–19.99 exploratory stage; > 20.00–39.99 involvement stage; > 40.00–59.99 developmental stage; > 60.00–79.99 consolidation stage and > 80.00–100 stagnation stages respectively. According to these weights, the composite index ranges from 1 to 100. The score categories adopted in this study follow the operational TALC framework proposed by Lumbanraja (2012, 2022), which groups the composite index into five development categories corresponding to the conceptual stages of TALC. These categories serve as operational guidelines for destination assessment rather than universal numerical thresholds of Butler's original TALC model.

TALC's desire for a development-stage categorization of destinations in terms of growth and decline, particularly that the TALC framework allows for clusters in a destination's life cycle, involvement, development, consolidation, stagnation, and possible decline or rejuvenation, has been analyzed as far as tourism is concerned (Butler 1980). Then, a descriptive analysis of the interview and observation was conducted to explain the factors that influenced the development stages, particularly management capacity, stakeholder participation, attractions, and supporting facilities. The model relates to cyclical models in economic development theory, such as Keynesian growth theories, Rostow's stages of economic development, and destination marketing thinking, advanced by Kotler and Turner (Quevedo et al. 2024; Shams 2016).

Initially, TALC was largely based on visitors' timescales as the core quantitative indicator of where destinations sit within the development cycle. Visitor numbers were considered a strong indirect indicator of destination popularity, intensity of use, and impact on natural resources and infrastructure (Hell and Petrić 2021; Marsiglio and Tolotti 2024). Twenty years later, Butler further developed the conceptual model by integrating additional attributes to better explain contemporary tourism dynamics. These refinements drew on substantial empirical applications of the TALC across diverse geographical and destination contexts, as well as critical evaluations of the theory's limitations and strengths identified in previous studies (Albaladejo and Martínez-García 2017; Szeligiewicz 2020).

Follow-up research, however, has both confirmed and questioned the TALC model. Several studies across regions and environmental conditions have supported its general applicability (Albaladejo and Martínez-García 2017), but methodological limitations have also been recognized, particularly in measurement procedures and assumptions about linearity (Matlovičová et al. 2026; Raykov et al. 2024). Further contributions have developed and expanded the model concept by combining alternative approaches to destination dynamics (Coelho 2026).

Szeligiewicz (2020) stresses the temporal relationship between destination attractiveness and stage of development, noting that attraction intensity tends to peak in earlier stages before declining, forming a curve that mirrors visitors' movements. This is consistent with the asymptotic S-shaped curve, a hallmark of TALC (**Fig. 2**), which represents a "birth-to-decline" pattern for tourism destinations (Maheshwari and Singh 2025). Each stage has identifiable features.

The TALC process model demonstrates that all tourist destinations go through six stages of growth. The first three stages, exploration, involvement, and development, are considered to show sharply increasing growth trends, while their growth trends fall gently through the consolidation stage. They reach the stagnation phase, at which point they are fully visited. Once beyond stagnation, destination development enters a post-stagnation phase in which several alternative paths may be pursued (each distinguished by a different curve). Curves C, D, and E represent declines caused by contracting tourism markets and the destination's inability to compete with new market attractions. In contrast, lines A and B represent possible rejuvenation directions achievable through efficient planning, management, and development interventions. These may

involve redeveloping tourism products, upgrading environmental quality standards, and changing the destination's positioning in the broader tourism market to reverse the decline and promote sustainable development.

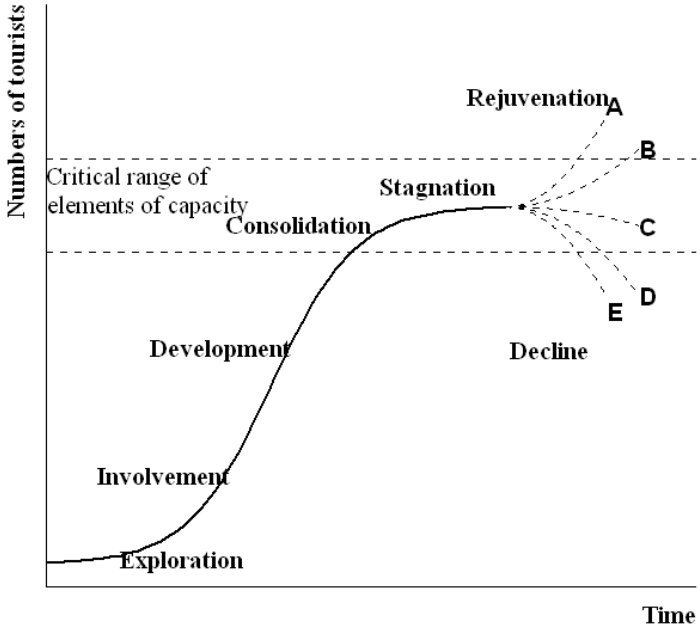

Fig. 2. Diagrammatic presentation of the hypothetical evolution of a tourist area (adapted from Butler 1980).

2.3. Data Analysis

This study used a qualitative, mixed-methods approach. The analysis of the development stage of forest tourism sites in the Mataram Cultural Forest Tourism Area used the tourism area life cycle (TALC) framework (Butler1980). The framework was applied to identify each tourism site's development stage using empirical evidence aligned with the TALC stages: exploration, involvement, development, consolidation, stagnation, and decline/rejuvenation. A qualitative descriptive approach was used to interpret destination development dynamics at the level of individual attractions (micro-destinations) (Astuti 2025; Liang and Lian 2024). Data were collected through interviews with site managers, tourist surveys, questionnaires, direct observation, and document review. The collected information was used to evaluate each tourism site's characteristics according to the TALC framework.

Factors influencing each forest tourism site's development stage were classified as internal and external destination factors, following destination development and TALC studies (Vélez et al. 2020; Zhang et al. 2023). These factors were subsequently analyzed using a descriptive-comparative approach to explain variations in development stages among sites managed under the same management system and to identify the key factors influencing site development.

3. Results and Discussion

3.1. TALC Development Stages of the Mataram Cultural Forest Tourism Area

Mataram Cultural Forest Tourism was officially established in January 2017, through government intervention in collaboration between the Provincial Environment and Forestry

Service and the Notowono Cooperative, which reflects a form of collaborative forest governance implemented with community participation realized through Public-Private-Community Partnerships, benefit sharing, and a multi-stakeholder governance framework (Roengtam et al. 2023; Wahyudi et al. 2021). These governance mechanisms align with the global trend toward sustainable tourism development, which is increasingly inclusive and considers social, economic, and environmental factors (Rohman and Pratiwi 2025).

Although Mataram Cultural Forest Tourism is considered a successful example of tourism management, tourism development in several ecotourism destinations within the area remains uneven. Some ecotourism destinations have grown rapidly in terms of visitor numbers and revenue, while others have stagnated or even declined. Similar uneven development patterns have been reported in forest-based tourism studies elsewhere, including Brazilian tropical rainforest tourism villages showing differences between geographically adjacent tourism villages (Portuguez and Alves 2015), and tourism villages from Nepal showing differences caused by variations in social capital, infrastructure access, and marketing capacity (Sharma and Dangal 2019).

Table 2 shows the percentage values of the variables and their indicators, based on field research using primary and secondary data. They are average composite scores used to determine the level of development of the forest tourism area tourist delivery system in the Mataram Cultural Forest Tourism district. Baseline data show wide variation in tourism development scores for specific forest tourism sites within the Mataram Cultural Forest Tourism area, whether measured by individual variables or cumulatively as a composite score. **Fig. 3** shows that tourism development varies across sites, with differences in tourist flows and supporting services.

Table 2. Total scores of tourism area development variables in the Mataram Cultural Forest Tourism Area

Variable Group	Weight	Forest Tourism Objects							
		Pinus Pengger	Puncak Becici	Pinus Sari	Seribu Batu	Lintang sewu	Pinus Asri	Bukit Panguk	Bukit Mojo
Number of Tourists	20	20.00	11.12	15.58	3.70	0.51	0.52	0.68	0.00
Tourism Attractions	15	3.76	8.84	6.08	8.74	6.66	6.06	0.00	2.08
Accessibility	15	6.25	6.25	6.00	5.75	5.75	5.75	2.50	2.50
Amenities	15	3.10	4.25	4.59	9.94	6.01	0.19	0.66	0.00
Institutional Capacity	15	12.50	11.25	12.50	10.00	11.25	8.75	7.50	7.50
Tourist Characteristics	10	8.74	8.33	8.38	7.99	7.84	6.36	6.73	0.00
Community Participation	10	7.26	7.43	8.71	5.98	3.74	2.21	1.76	0.00
Total	100	61.61	57.46	61.84	52.10	41.76	29.84	19.85	12.08

From the TALC perspective, the attracting sites, namely Bukit Mojo, Bukit Panguk, Pinus Asri, and Lintang Sewu, are still in the early stage of exploration, as they generate low scores. The situation is mainly due to poor infrastructure and access, a lack of facilities, and the immature role of local institutions in the destination. These characteristics align with previous research, which has shown that exploration-stage destinations generally have low visitor numbers and depend heavily on local or niche markets (Mandić et al. 2018; Wroblewski et al. 2020).

In comparison, other sites, such as Seribu Batu, Puncak Becici, Pinus Sari, and Pinus Pengger, show increasing scores and can be categorized into the stages of involvement, development, consolidation, and stagnation. These insights highlight the need for both aggregate and cross-site analyses to enable comparison, as early-stage destinations do not advance

automatically without specific policy interventions, investment, and community capacity-building. These findings are also consistent with previous research, which shows that the quality of service provision predominantly conditions uneven destination development, the level of local community integration, and resource management practices (Berbekova et al. 2024; Persson-Fischer and Liu 2021).

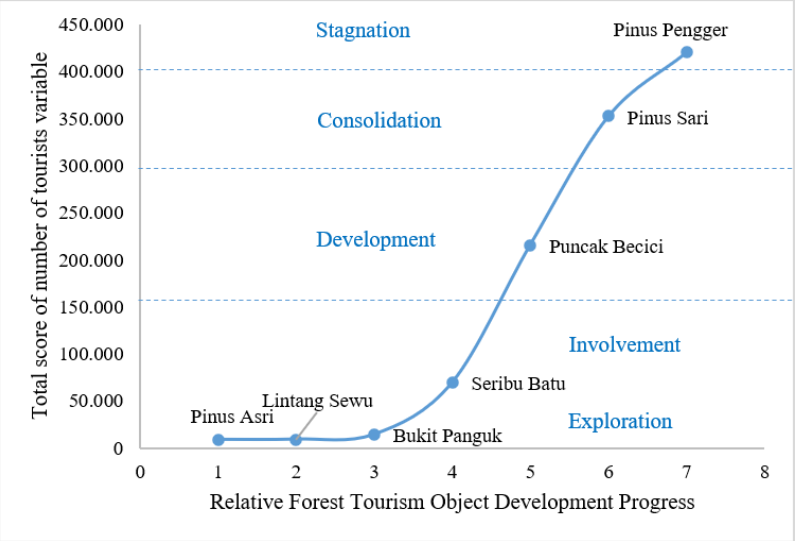

Fig. 3. TALC based on tourist numbers in the Mataram Cultural Forest Tourism Area.

Although the composite index scores of Pinus Sari (61.84) and Pinus Pengger (61.61) are very similar, the TALC stage interpretation was not based solely on the composite index. In accordance with the mixed-methods approach adopted in this study, the interpretation incorporated qualitative evidence from interviews, field observations, and document reviews, along with destination characteristics described in the TALC framework. These included visitor dynamics, destination maturity, innovation, institutional conditions, and management trends. Based on this integrated assessment, Pinus Pengger exhibits characteristics indicative of a transition toward the stagnation stage, whereas Pinus Sari continues to exhibit characteristics more consistent with the consolidation stage.

Based on the TALC mapping curve using tourist arrivals alone, several development models for non-linear destination dynamics emerge. Bukit Mojo, Bukit Panguk, Pinus Asri, and Lintang Sewu Forest Tourism sites are in the initial stages of development. However, according to site manager reports, the 2017–2018 season saw peak tourist numbers at these four sites. They are therefore currently more in a post-peak than in an exploration mode (Chan et al. 2022; Grudtsyn 2024).

The predominance of the Yogyakarta market, including short, unplanned, and recreational visits, also indicates a speculative visitation threshold, in which low-spending rounds are characteristic of low-commitment nature-based destination visitation (Adawiah 2024). In this cluster, Lintang Sewu is relatively stronger because glamping facilities can maintain revenue even as visitation declines. At the same time, Bukit Mojo appears to be the most fragile, with almost no tourist visits over the past two years.

Seribu Batu shows a different trend, with relatively consistent visitor numbers over the past few years. This equilibrium suggests a phase of involvement in which tourism is sustained but shows no marked increase. The high percentage of local visitors, outbound groups, and

overnighters in glamping sites also suggests the local community as well as site managers' participation in tourism service delivery at an early stage, which is evidence of engaging stage features according to the TALC model's characteristics (Brooks et al. 2023; Priambodo 2024).

However, only the development, consolidation, and maturation stages are evident in Puncak Becici, Pinus Sari, and Pinus Pengger. The marked differences between these two stages reflect a significant growth disparity within the same management zone. Weak functional connections, along with a lack of spatial integration among sites, prevent further development and automatically result in improvements in adjacent sites. This aligns with earlier work by Ghalani et al. (2024) and Su et al. (2025), which highlighted that flagship development does not automatically lead to spillovers without integrated, area-based management plans.

Second, the findings indicate that the use of the TALC model at Mataram Cultural Forest Tourism was not fully compatible with the classic pattern of mass tourist destinations (Astuti 2025; Singh 2021). Adding weighted scores across seven variable groups, rather than focusing solely on tourist visitors, provides a more nuanced, context-specific location for each site along the tourism life cycle. This evidence supports the view that destination development is multidimensional, shaped by the interaction of social, economic, institutional, and physical factors, and that tourist numbers alone are not reliable measures of development. This approach reflects conceptualizations of TALCs throughout modern times that stress flexibility, dynamism, and local dependence in interpreting destination life cycles (Duro et al. 2025). A graphical depiction of this multi-feature approach is shown in **Fig. 4**.

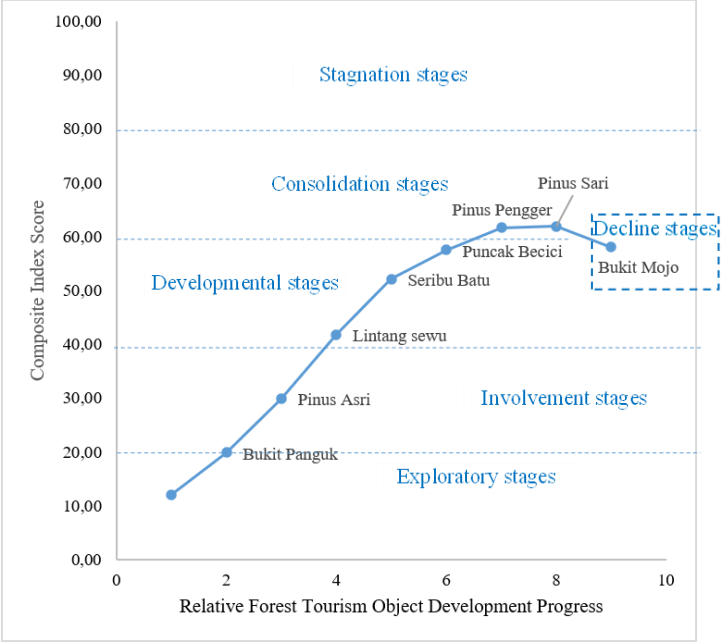

Fig. 4. TALC of Mataram Cultural Forest Tourism based on the total composite variable scores.

As shown in the graph, total scores for tourism development variables range widely (12.08–61.84) across forest tourism sites grouped into four development stages. Higher cumulative variable scores are assumed, theoretically, to represent more mature destinations as the premise of the analysis (i.e., destination maturity). Based on the TALC model, these destinations are often considered to be in advanced stages of development toward stability cycles with higher scores (Kesuma et al. 2025; Wong et al. 2024).

Overall, considering the combined effects of all variables in this study, the findings support partial TALC in the Mataram Cultural Forest Tourism area. We observe that more developed levels are evident not only when we consider the number of tourists as a single indicator, but also when multiple aspects are taken into account. This finding supports the assertion that tourist arrivals alone are insufficient for fully comprehending destination development (Duro et al. 2025). An additional insight is that the temporal development of this area cannot be modeled using a simple linear "(biological) life cycle" approach, as implied in the classical TALC framework. The transition from one stage to another could not be gradual (for instance, from exploration directly to stagnation, or from involvement to stagnation without passing through consolidation). Comparable trends were observed when historical visitation rates during the 2017–2018 peak period were analyzed. In this regard, TALC presents an upward spiral or stepwise pattern rather than, as the theory suggests, a cyclical curve, reinforcing previous work that has also questioned both the inflexibility and the bounded nature of traditional TALC theory (Butler 2022; Szeligiewicz 2020).

The research also emphasizes the strong interplay among variables in shaping destinations' development and paths within Mataram Cultural Forest Tourism. Two strategic variables are perhaps the most important ones: (a) government policy, particularly the tourism master plan, and regulatory framework existence/legitimacy/consistency; and (b) the degree of local community responsiveness to being involved in, as well as to paying attention to, tourism management and development. These determinants are well documented in the literature as key factors in the destination's sustainability and development path (Dong and Nguyen 2023; Nugraha et al. 2024).

Overall, the results indicate crucial differences in the development subsystem and typology among the forest tourism areas within the Mataram Cultural Forest Tourism. These differences are closely associated with the distinct contributions of factors at different stages of the TALC. Accordingly, not all destinations adhere fully to the sequential stages of development proposed by TALC theory, a finding consistent with previous empirical criticisms (Albaladejo et al. 2020; Albaladejo and Martínez-García 2017). The outcomes also underscore the significance of government policies and local community support in shaping uneven tourism development trajectories across destinations.

3.2. Factors Influencing the Development Stages of Mataram Cultural Forest Tourism

Differences in development phases among forest tourism objects in the Mataram Cultural Forest Tourism Area indicate significant differences by destination maturity, even though they are located in the same geographical area and are part of the same administrative region. This reinforces criticisms of TALC that argue the model is more conceptual and interpretive than prescriptive or deterministic, and would not neatly fit all instances (Albaladejo and Martínez-García 2017; Astuti 2025). As such, the coexistence of exploration, involvement, and stagnation-stage destinations in a single region was found to reflect heterogeneity in management capacity, development trajectories, and market reactions rather than an abnormality.

While tourist visitation is often a key indicator of destination expansion within the TALC model (Hell and Petrić 2021; Kiráľová 2017), this research suggests that visitation patterns are shifting and can be deceptive when considered in isolation. Several forest tourism objects have experienced periods when visitor numbers peaked and then declined due to internal and external

factors, underscoring earlier warnings about the risks of overemphasizing visitor numbers when interpreting destination lifecycle stages (Goyal et al. 2025; Topcu et al. 2023).

Variations also shape different development paths in attraction features. Forest tourism-type artifacts based on uniform experiences of a single event can saturate quickly, whereas those with experience-based and novel attractions are more likely to sustain visitor interest over time (Huang et al. 2024; Pechlaner et al. 2019). Although scenic surroundings and cooler microclimates, particularly in areas covered by pine and eucalyptus forests, are found at most sites, Dominant teak stands have unique environmental characteristics that add to their aesthetic appeal and experiential sense of place.

Convenience and linkage are also related to the strategic choice of visit intensity and connectivity. Most forest tourism objects have good road infrastructure and regional accessibility, thereby promoting multi-destination tourism and spillover effects. In contrast, Bukit Panguk and Bukit Mojo have poor road quality and dead-end access, which reduces their attractiveness, especially for group visits and time-conscious tourists (Ghalani et al. 2024; Su et al. 2025).

Institutional capability shapes variation in development levels. Although all forest tourism sites are managed under the same governing structure as the Notowono Cooperative, local site-level managerial performance varies significantly. Destinations with a stable organizational structure, stronger human resource capacity, and continuous program implementation show greater adaptability, innovativeness, and long-term resilience. By contrast, sites with low institutional capacity have few opportunities for reinvestment, which is compounded by declining visitor numbers, leading to stagnation or retardation (Goyal et al. 2025; Topcu et al. 2023).

In general, the results support the idea that destination development in the Mataram Cultural Forest Tourism area occurs in a non-linear, context-dependent manner, questioning the determinism implied by the classical TALC model. The stage passing and early stagnation suggest that governance, institutional capacity, and site-level management are crucial factors that warrant explanation in their own right. These findings also strengthen the case for considering TALC as a heuristic and diagnostic framework, with governance and institutions identified as critical factors not only for tourism development but also for supporting sustainable forest management in community-based forest tourism areas.

From a forest management perspective, these differences in TALC stages also imply different management priorities. Destinations approaching the consolidation or stagnation stages require greater attention to visitor carrying capacity, waste management, environmental impacts, and conserving forest ecosystem functions. In contrast, destinations at earlier stages should prioritize sustainable infrastructure development, institutional strengthening, and community participation to prevent future ecological degradation while maintaining the forest area's conservation objectives. These findings may help forest management units (FMUs) and community-based forest tourism managers develop site-specific management strategies that balance tourism development with the long-term sustainability of forest ecosystems. This recommendation aligns with previous studies showing that increased recreational activities in forest tourism areas may affect wildlife responses. It should therefore be managed within ecological carrying capacity to maintain the sustainability of the forest ecosystem (Avenzora et al. 2024).

4. Conclusions

This study found that tourism development in all forest-based tourist destinations tested within the Mataram Cultural Forest Tourism Area varied, despite a single governance system. The results show that destination evolution is non-linear and does not follow the linear progression of stages outlined in the classic tourism area life cycle (TALC) model. This study has used a multidimensional composite index beyond visitation numbers. It is becoming clear that institutional capacity, site-level management performance, policy consistency, access, attractions, facilities, and community engagement are the key factors explaining divergent development outcomes. These findings position TALC as a heuristic and diagnostic tool rather than an end-state model and offer further insight into the governance and institutional forms that shape uneven development in community-based forest tourism. This finding also supports previous studies emphasizing that effective forest governance requires strong institutional arrangements and collaboration between government agencies and local communities to achieve sustainable forest management. From a practical perspective, destinations at earlier TALC stages should prioritize institutional strengthening, sustainable infrastructure, and community capacity-building. In contrast, destinations approaching consolidation or stagnation should focus on visitor carrying capacity, environmental management, and forest ecosystem conservation to ensure the long-term sustainability of forest-based tourism.

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Author Contributions

N.W.M.: Conceptualization, Methodology, Data Curation, Formal Analysis, Investigation, Visualization, Writing – Original Draft Preparation; H.M.: Supervision, Conceptualization, Methodology, Writing – Original Draft Preparation; K.: Supervision, Validation, Writing – Review and Editing; M.: Supervision, Validation, Writing – Review and Editing.

Conflict of Interest

The authors declare no conflict of interest.

Declaration of Generative AI And AI-Assisted Technologies in the Manuscript Preparation

During the preparation of this work, the authors used ChatGPT (OpenAI) to assist with language editing, improve academic clarity, and refine the manuscript's structure. After using this tool, the authors critically reviewed, revised, and edited the content as needed and take full responsibility for the scientific accuracy, originality, and integrity.

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