

Tourist Village Typology in Batu City Based on Cluster Analysis: Strategic Implications for Tourism Management

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ABSTRACT

Tourist villages play a strategic role in boosting local government revenue and ensuring equitable economic distribution among communities; however, uniform management approaches are often ineffective because of variations in potential and performance across villages. This study aims to identify the tourist village typology in Batu City based on eight tourism management variables: tourism facilities, infrastructure and accessibility, service quality, creative economy innovation, visitor satisfaction, entrepreneurial orientation, tourist visits, and competitive advantage. Primary data were collected through a questionnaire survey involving 1,152 respondents representing 384 Neighborhood Associations (RT) across 24 villages/sub-districts in three districts of Batu City, namely Batu District, Bumiaji District, and Junrejo District. Sample selection employed proportional stratified sampling. The analytical methods used were a Systematic Literature Review to identify the research variables, followed by Cluster Analysis to group the villages/sub-districts based on similarities in their characteristics. The results indicate that the 24 tourist villages/sub-districts in Batu City can be classified into three clusters: Cluster 2 as the high-performing group (mean = 4.389), Cluster 1 as the moderate group (mean = 3.969), and Cluster 3 as the low-performing group (mean = 3.758). Each cluster exhibits significant differences in characteristics across all measured variables. These findings imply that tourist village development strategies must be differentiated and typology-based rather than uniform, ensuring that tourism management policies are more targeted and have a tangible impact on enhancing the competitive advantage of tourist villages in Batu City.

Article Information

Kata Kunci:

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ABSTRAK

Desa wisata memiliki peran strategis dalam mendorong pendapatan asli daerah dan pemerataan ekonomi masyarakat, namun pengelolaan yang bersifat seragam sering kali tidak efektif karena perbedaan karakteristik potensi dan kinerja antardesa. Penelitian ini bertujuan mengidentifikasi tipologi desa wisata di Kota Batu berdasarkan delapan variabel manajemen pariwisata, yaitu fasilitas pariwisata, infrastruktur dan aksesibilitas, kualitas layanan, inovasi ekonomi kreatif, kepuasan pengunjung, orientasi kewirausahaan, kunjungan wisata, dan keunggulan bersaing. Data primer dikumpulkan melalui survei kuesioner yang melibatkan 1.152 responden yang mewakili 384 Rukun Tetangga (RT) di 24 desa/kelurahan pada tiga kecamatan di Kota Batu, yaitu Kecamatan Batu, Kecamatan Bumiaji, dan Kecamatan Junrejo. Pemilihan sampel menggunakan teknik stratified sampling secara proporsional. Metode analisis yang digunakan adalah Systematic Literature Review untuk mengidentifikasi variabel penelitian, dilanjutkan dengan Cluster Analysis untuk mengelompokkan desa/kelurahan berdasarkan kesamaan karakteristik. Hasil penelitian menunjukkan bahwa 24 desa/kelurahan wisata di Kota Batu dapat dikelompokkan menjadi tiga klaster: Klaster 2 sebagai kelompok unggul (rerata 4,389), Klaster 1 sebagai kelompok menengah (rerata 3,969), dan Klaster 3 sebagai kelompok rendah (rerata 3,758). Masing-masing klaster menunjukkan perbedaan karakteristik yang signifikan dalam seluruh variabel yang diukur. Temuan ini mengimplikasikan bahwa strategi pengembangan desa wisata harus bersifat diferensial dan berbasis tipologi, bukan seragam, agar kebijakan manajemen pariwisata dapat lebih tepat sasaran dan berdampak nyata bagi peningkatan daya saing desa wisata di Kota Batu.

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1. Introduction

The tourism sector has become one of the main pillars of regional economic development in Indonesia, particularly through the development of tourist villages that integrate natural, cultural, and local community potential as their primary attractions. Batu City, East Java, is recognized as one of the leading tourism destinations in the region, with tourist villages distributed across three districts playing a major role in generating locally generated revenue (PAD), creating employment opportunities, and improving the welfare of local communities (Hermawati, 2020). Tourism's contribution to local economic growth has been widely recognized, particularly in the context of tourist villages, which can generate a multiplier effect through economic linkages involving tourism facilities, culinary offerings, handicrafts, and tourism services (Hermawati et al., 2018; Wartono et al., 2025).

Nevertheless, the development of tourist villages in Batu City faces significant structural challenges. The substantial heterogeneity in potential and performance characteristics among villages/sub-districts means that uniform policy approaches are often ineffective. Developed tourist villages require different strategies from those that remain in the initial stages of development. Inappropriate prioritization of policy interventions may result in inefficient resource allocation and hinder the achievement of sustainable competitive advantage (Hermawati et al., 2022; Hermawati et al., 2024).

Several previous studies have examined the determinants of tourist village performance from various perspectives. Tirtawati et al. (2023) used *Importance-Performance Analysis* (IPA) to evaluate tourist satisfaction at cultural destinations in Bali and found that cleanliness, service responsiveness, and the appropriateness of prices and facilities were the dimensions with the greatest influence on tourist satisfaction and loyalty. Santoso et al. (2024) demonstrated that innovation capability, mediated by learning orientation, significantly improves the performance of small and medium-sized enterprises (SMEs) in the tourism sector. Using an *Analytic Hierarchy Process* approach, Hermawati et al. (2024) identified facilities and human resource quality as the primary determinants of tourism SME growth. Nevertheless, studies that systematically classify tourist villages according to tourism management performance typologies that comprehensively encompass eight dimensions remain very limited.

This research gap provides the primary basis

for the present study. By integrating a *Systematic Literature Review* (SLR) to identify variables and *Cluster Analysis* as a classification method, this study offers a more holistic, data-driven approach to understanding the tourist village typology in Batu City. A cluster-based typology approach enables the formulation of more targeted tourism management policy recommendations, as each group of tourist villages can receive interventions suited to its specific characteristics and needs. This study is expected to make an empirical contribution to the development of tourism management knowledge while serving as a practical reference for local governments, tourist village managers, and other stakeholders in designing strategies to enhance sustainable competitiveness.

Tourism Facilities

Tourism facilities comprise the full range of amenities and infrastructure provided at a tourism destination to meet tourists' basic needs and ensure their comfort during their visit. The availability and adequacy of facilities, such as accommodation, culinary services, sanitation, parking, information centers, worship facilities, souvenir shops, and recreational areas, have consistently been identified as key determinants of tourist satisfaction (Boro, 2022). Adequate facilities create a holistic experience, increase the perceived value of a visit, and encourage revisit intentions (Tirtawati et al., 2023). In the context of tourist villages in Batu City, the quality and completeness of tourism facilities constitute the foundation of destination attractiveness and shape the overall destination image.

Infrastructure and Accessibility

Infrastructure and accessibility encompass road conditions, the availability of public transportation, the reliability of electricity and internet networks, the clarity of directional signage, the quality of drainage and clean water systems, and internal accessibility within tourism areas. Well-developed infrastructure directly reduces travel barriers and improves visitor comfort, thereby positively affecting tourist satisfaction and visitor volume (Jangra et al., 2024). The digital transformation of infrastructure, particularly internet connectivity, has increasingly become a critical factor in supporting the modern and competitive management of tourist villages (Sukaris & Kirono, 2025). Limited accessibility is a major structural constraint on tourist village development, particularly in mountainous areas

such as Batu City.

Service Quality

Service quality in the context of tourist villages includes the hospitality of managers and residents, the reliability of tourism information, responsiveness to complaints, communication skills, security assurance, service consistency, empathy toward tourists, and the physical appearance of facilities. High service quality directly promotes tourist satisfaction and strengthens loyalty and recommendation intentions (Rahayu et al., 2024). The dimensions of service quality in the SERVQUAL framework—*tangibility*, *reliability*, *responsiveness*, *assurance*, and *empathy*—have consistently been shown in the tourism literature to be relevant determinants of tourism destination performance (Boro, 2022). Enhancing the capacity of local human resources is a prerequisite for delivering quality services in tourist villages.

Creative Economy Innovation

Creative economy innovation reflects the capacity of tourist village communities to develop products and experiences based on local uniqueness, including handicrafts, cultural arts, distinctive culinary products, tourism packages based on local wisdom, creative digital enterprises, and community involvement in the tourism value chain. The creative economy strengthens destination differentiation and creates added value that is not easily replicated by other destinations (Souca, 2019). The involvement of local creative communities and the expansion of product marketing beyond the region are key indicators for measuring the innovation capacity of tourist villages. A strong innovation orientation is positively correlated with increases in community income and destination competitive advantage (Santoso et al., 2024).

Visitor Satisfaction

Visitor satisfaction is tourists' overall evaluation of the alignment between their expectations and actual experiences at a tourist destination, encompassing satisfaction with attractions, facilities, services, prices, cleanliness, and safety. High satisfaction has been shown to be the strongest predictor of revisit intention and willingness to recommend the destination to others (Boro, 2022; Rahayu et al., 2024). In the study by Hermawati et al. (2024), visitor satisfaction was identified as the primary mediating mechanism linking the *supply-side* quality of destinations with tourists' demand-side behavior. Thus, visitor satisfaction is an integrative

indicator of all dimensions of tourist village management performance.

Entrepreneurial Orientation

Entrepreneurial orientation reflects the strategic disposition of tourist village managers and communities in addressing business opportunities and challenges, including the willingness to establish new businesses, proactiveness, risk tolerance, competitive spirit, managerial independence, the ability to learn from experience, youth involvement, and long-term vision and planning. A strong entrepreneurial orientation promotes continuous innovation, expands the tourism business base, and enhances destination resilience to external shocks such as pandemics (Hermawati et al., 2022; Santoso et al., 2024). Youth involvement in the management of tourism businesses is a critical factor in sustaining the entrepreneurial capacity of tourist village communities.

Tourist Visits

Tourist visits encompass increases in visitor numbers, the geographic reach of tourist origins, revisit rates, visits outside holiday seasons, length of stay, visits by international tourists and tourists from outside Java, recommendations through social media, and the effectiveness of tourism events. Growth in tourist visits is a *primary* outcome of destination management performance, reflecting the extent to which a destination can attract and retain tourists (Corbisiero & Monaco, 2021). Visitor satisfaction has been shown to be the principal mediator between the quality of facilities and infrastructure and the volume of tourist visits, underscoring that increased visits should be achieved through improved tourist experiences rather than promotion alone (Hermawati et al., 2024).

Competitive Advantage

Competitive advantage in the context of tourist villages is the ability of a destination to create sustained superior value relative to competing destinations through the uniqueness of its attractions, competitive prices, destination reputation, cultural advantages and local wisdom, the authenticity of tourist experiences, professional management, continuous innovation, and stakeholder collaboration (Porter, 1990; Ritchie & Crouch, 2003). Competitive advantage

derived from cultural uniqueness and local wisdom is inimitable and provides long-term competitive protection for tourist villages (Hermawati, 2020). Collaboration among stakeholders, including government, communities, business actors, and academics, is a key enabler of inclusive and sustainable competitive advantage (Hermawati et al., 2018).

2. Methods

This study used a quantitative approach with two main analytical stages: a *Systematic Literature Review* (SLR) to identify the study variables and *Cluster Analysis* to classify villages/sub-districts in Batu City according to tourist village typology.

Data Collection Methods

Primary data were collected through a survey using a structured questionnaire. The sampling units in this study were Neighborhood Associations (RT) located in 24 villages/sub-districts in Batu City. RT-level sampling units were selected because RTs represent communities directly involved in tourism activities and tourism management within their respective areas. Each RT was represented by three respondents—the RT chair, vice chair, and secretary—who were expected to provide more comprehensive information on tourism conditions, village potential, and various development issues and opportunities.

The study population comprised all RTs across 24 villages/sub-districts in three districts of Batu City: Batu District, Bumiaji District, and Junrejo District. The sample size was determined using proportional stratified sampling, taking into account the proportion of RTs in each village/sub-district. This technique yielded a study sample of 384 RTs. Each RT involved three respondents, resulting in a total of 1,152 respondents. Proportional stratified sampling was used to ensure that all villages/sub-districts in Batu City were proportionally represented, enabling the findings to accurately represent tourism conditions in Batu City.

Data Analysis Methods

Systematic Literature Review (SLR)

A *Systematic Literature Review* (SLR) was conducted as the initial stage in identifying the research variables. An SLR is a literature review method conducted systematically, transparently, and reproducibly to identify, evaluate, and synthesize all scientific evidence relevant to a specific research question (Kitchenham & Charters,

2007). The SLR process followed three main phases: planning, implementation, and reporting (Xiao & Watson, 2019).

During the planning phase, an SLR protocol was developed, encompassing the formulation of research questions, the selection of academic databases (Scopus, Web of Science, Google Scholar, and Sinta-accredited national journal portals), and the specification of the publication period. Search keywords were systematically developed using combinations of terms such as *tourist village*, *tourism village*, *digital transformation*, *big data tourism*, *market orientation*, *tourism performance*, and their derivatives in Indonesian and English (Denyer & Tranfield, 2009).

During the implementation phase, each article was screened according to strict inclusion and exclusion criteria. The inclusion criteria were: (1) articles published in Sinta-accredited national journals or international journals indexed in Scopus or Web of Science; (2) topics relevant to tourism, tourist village management, digital transformation, tourism-based human resource management, or the economic performance of tourism destinations; and (3) availability in full-text format. The selection process was conducted in stages, beginning with title and abstract screening, followed by full-text review and methodological quality assessment (Denyer & Tranfield, 2009). In this study, the SLR was conducted using *two approaches*: variable mining to identify key variables and relationship mining to map patterns of relationships among variables (Solimun et al., 2023).

Cluster Analysis

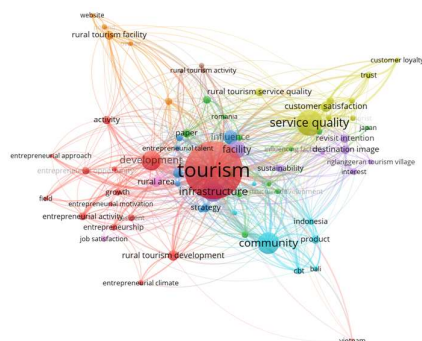
Cluster Analysis is a multivariate statistical method used to group objects according to the similarity of their characteristics. This method aims to form groups (clusters) with high within-group homogeneity and high between-group heterogeneity (Hermawati et al., 2024). In this study, *Cluster Analysis* was applied to 24 tourist villages/sub-districts in Batu City using four main dimensions: tourism potential, tourism facilities, service quality, and spatial conditions.

The variables used in the process

Clustering was measured through a questionnaire using a 1–5 Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). The instrument underwent validity and reliability testing to ensure measurement quality. The results grouped tourist villages into typologies that can serve as a basis for developing distinct strategies for each group according to its respective characteristics and needs.

3. Results and Discussion

The first stage of the analysis involved *conducting a Systematic Literature Review (SLR)* to identify key variables relevant to the performance and development of tourist villages. The SLR used the keywords "*tourism*" and "*pariwisata*" and their derivatives in the Scopus, Web of Science, and Google Scholar academic databases. A word-cloud visualization of the SLR results is presented in Figure 4.1.



The keyword "*facility*," which appeared prominently in the literature, led to the tourism facilities variable. Facilities are physical elements that directly shape the visitor experience, including accommodation, culinary services, sanitation, information centers, parking areas, places of worship, souvenir shops, and recreational facilities. The completeness and adequacy of facilities have been shown to be key determinants of tourist satisfaction and destination image (Boro, 2022; Tirtawati et al., 2023).

The keyword "*infrastructure*" led to the infrastructure and accessibility variable. Infrastructure, including roads, public transportation, electricity, internet access, directional signage, drainage, and area accessibility, is a prerequisite for tourist mobility and visitor comfort. Infrastructure limitations significantly hinder the growth of tourist visits and the development of tourist villages (Jangra et al.,

2024; Sukaris & Kirono, 2025).

The occurrence of the keywords "*service quality*" and "*product*" in the same literature cluster resulted in the service quality variable. Service quality encompasses friendliness, information reliability, responsiveness, security assurance, consistency, empathy, and physical appearance. Collectively, these dimensions shape tourists' perceptions of service standards at tourism destinations (Rahayu et al., 2024; Boro, 2022).

The keyword "*community*," which appeared in the tourist village literature, led to the creative economy innovation variable. Local communities drive the development of handicraft products, cultural arts, local culinary products, tourism packages based on local wisdom, and creative digital enterprises. The active participation of communities in the tourism value chain strengthens destination differentiation and attractiveness (Souca, 2019; Santoso et al., 2024).

The closely related keywords "*customer satisfaction*" and "*customer loyalty*" in the literature led to the visitor satisfaction variable. Satisfaction reflects tourists' holistic evaluation of all dimensions of their visit and has been shown to be a key mediator between destination quality and tourist loyalty behaviors, including revisit intentions and recommendations (Hermawati et al., 2024; Boro, 2022).

The keyword "*entrepreneurship*," emerging in the context of tourism destination management, points to the entrepreneurial orientation variable. Entrepreneurial orientation reflects the capacity of tourist village communities to innovate, take initiative, manage risks, and plan business growth independently and sustainably (Hermawati et al., 2022; Santoso et al., 2024).

The keywords revisit intention and sustainability in the literature are closely associated with tourist visit outcomes and point to the Tourist Visits variable. Tourist visits measure the growth and diversification of tourism demand, including the number of visits, the geographic reach of tourist origins, revisit rates, visits outside holiday seasons, and the effectiveness of digital promotion (Corbisiero & Monaco, 2021).

The keywords development and growth emerging in the context of tourist destinations point to the Competitive Advantage variable. Competitive advantage reflects the ability of tourist villages to create superior and sustainable value through the uniqueness of attractions, the strengths of local culture, management professionalism, continuous innovation, and stakeholder collaboration (Porter, 1990; Ritchie & Crouch, 2003; Hermawati, 2020).

Based on the eight variables identified through the Systematic Literature Review, a research questionnaire was developed. These variables are latent constructs that cannot be measured directly; therefore, they were operationalized through a set of indicators measured using a 1–5 Likert scale (1 = strongly disagree; 5 = strongly agree). The indicators were developed based on the literature review and adapted to the context of tourist villages in Batu City. The research variables and indicators are presented in Table 4.1.

Table 4.1. Research Variables and Indicators

Variable	Indicator
Tourism Facilities	Availability of accommodation facilities
	Availability of culinary facilities
	Adequacy of sanitation facilities
	Availability of tourist information centers
	Availability of parking facilities
	Availability of worship facilities
	Availability of souvenir shops
	Adequacy of recreational facilities
Infrastructure and Accessibility	Condition of roads leading to tourist villages
	Availability of public transportation
	Reliability of the electricity network
	Availability of internet and telecommunications access
	Clarity of signs and directions
	Affordability of travel distance and time
	Quality of drainage and clean water
	Accessibility within tourist areas
Service Quality	Friendliness of managers and local residents
	Reliability of tourist information
	Responsiveness to complaints
	Communication skills of tourism service personnel
	Assurance of safety and comfort
	Consistency of service
	Empathy toward tourists
	Physical appearance of managers and facilities
Creative Economy Innovation	Development of local handicraft products
	Performances of local cultural arts
	Development of regional culinary specialties
	Tourism experience packages based on local wisdom
	Digital-based creative economy businesses
	Local creative community involvement
	Marketing products beyond the region
	Increased income from the creative economy
Visitor Satisfaction	Alignment of expectations with tourism experiences
	Satisfaction with the quality of tourist attractions
	Satisfaction with available facilities
	Satisfaction with management services
	Satisfaction with the price paid
	Satisfaction with cleanliness and safety
	Tourists' intention to revisit
	Willingness to recommend the tourist village
Entrepreneurial Orientation	Willingness to establish new tourism businesses
	Proactiveness in exploiting tourism opportunities
	Willingness to take risks
	Competitive spirit
	Independence in managing tourism businesses
	Learning from experience and failure
	Youth involvement
	Long-term vision and business plan
Tourist Visits	Increase in the number of tourist visits
	Geographic reach of tourist origins

Variable	Indicator
	Rate of tourist revisits
	Tourist visits outside the holiday season
	Duration of tourist visits
	Visits by international tourists/tourists from outside Java
	Recommendations through social media
	Effectiveness of tourism events in attracting visitors
Competitive Advantage	Uniqueness of tourist attractions
	Competitive prices
	Reputation of the tourism destination
	Cultural advantages and local wisdom
	Authentic tourism experiences
	Professionalism in tourism management
	Continuous innovation
	Stakeholder collaboration

After the questionnaire was distributed to the entire study sample, mean values for each variable were obtained and are presented in Table 4.2. The mean values ranged from 1 to 5, in accordance with the Likert scale used, where values approaching 5 indicate highly positive respondent perceptions.

Table 4.2. Mean values of the study variables

Variable	Mean
Tourism Facilities	3.929
Infrastructure and Accessibility	3.939
Service Quality	3.943
Creative Economy Innovation	3.946
Visitor Satisfaction	3.939
Entrepreneurial Orientation	3.942
Tourist Visits	3.927
Competitive Advantage	3.934

Based on Table 4.2, all study variables fell within the Good category, with mean values ranging from 3.927 to 3.946. These relatively high mean values indicate that, in aggregate, tourist villages/sub-districts in Batu City performed well across all measured dimensions. However, this narrow range of aggregate values conceals substantial variation in characteristics among tourist villages/sub-districts. Therefore, Cluster Analysis was necessary to examine these typological differences in greater depth.

Tourist villages/sub-districts in Batu City were grouped using *Cluster Analysis* to identify groups of villages with similar performance characteristics and tourism potential. This analysis was applied to 24 tourist villages/sub-districts based on eight study variables. Villages/sub-districts with similar characteristics were grouped into the same cluster, thereby generating a tourist village typology for Batu City. The analysis showed that the 24 tourist villages/sub-districts could be grouped into three clusters reflecting differences in potential and performance levels. This grouping provides an empirical basis for developing more targeted

development strategies. The clustering results are presented in Table 4.3.

Table 4.3. Cluster Analysis Results

Cluster	Members (Villages/Sub-districts)	Number of Members
1	Ngaglik, Bumiaji, Sumbergondo, Pandanrejo, Beji, and Torongrejo	6
2	Oro-oro Ombo, Songgokerto, Sumberejo, Temas, Sidomulyo, Punten, Tulungrejo, Bulukerto, Gunungsari, Pendem, and Tlekung	11
3	Pesanggrahan, Sisir, Giripurno, Sumberbrantas, Mojorejo, Junrejo, and Dadaprejo	7
Total		24

Based on Table 4.3, Cluster 2 had the largest number of members (11 villages/sub-districts; 45.83%), followed by Cluster 3 (7 villages/sub-districts; 29.17%) and Cluster 1 (6 villages/sub-districts; 25.00%). This distribution indicates that nearly half of the tourist villages/sub-districts in Batu City belonged to a group with relatively similar characteristics. Differences in the number of members across clusters reflect substantial variation in potential and performance characteristics. The characteristics of each cluster, based on the mean value of each variable, are presented in Table 4.4.

Table 4.4. Characteristics of each cluster based on the study variables

Variable	Cluster 1	Cluster 2	Cluster 3
Tourism Facilities	3.811	4.472	3.776
Infrastructure and Accessibility	3.913	4.211	3.461
Service Quality	3.958	4.295	3.704
Creative Economy Innovation	4.165	4.402	3.610
Visitor Satisfaction	4.054	4.385	3.610
Entrepreneurial Orientation	3.854	4.402	3.881
Tourist Visits	3.668	4.366	3.692
Competitive Advantage	4.326	4.562	3.910
Average	3.969	4.389	3.758
Category	Moderate	High-Performing	Low-Performing

Cluster 2: High-performing tourist villages

Cluster 2 (High-Performing) comprised Oro-oro Ombo, Songgokerto, Sumberejo, Temas, Sidomulyo, Punten, Tulungrejo, Bulukerto, Gunungsari, Pendem, and Tlekung, with the highest mean score of 4.389. This group attained the highest scores across all measured variables, making it the best-performing group of tourist villages in Batu City.

For the tourism facilities variable, Cluster 2 achieved a score of 4.472, the highest among the three clusters. This reflects the highly adequate availability and suitability of facilities, including accommodation, culinary offerings, sanitation, tourist information, parking, places of worship, souvenir shops, and recreation. This advantage in tourism facilities is consistent with Boro's (2022) finding that destinations with high-quality facilities consistently generate greater visitor satisfaction and stronger revisit intentions. From a managerial perspective, tourist villages in this cluster need to maintain existing facility standards while continuously innovating in the types and quality of facilities to sustain competitive advantage.

Cluster 2's infrastructure and accessibility score (4.211) also significantly exceeded those of the other clusters, particularly Cluster 3, which scored only 3.461. Good road conditions, transportation, internet availability, and internal accessibility within tourist areas create a comfortable and seamless visitor experience. This finding is consistent with Jangra et al.'s (2024) argument that the quality of transportation infrastructure is a key determinant of tourist visit volume. The managerial implication for this group is the need for sustained investment in infrastructure maintenance and accelerated digital transformation to maintain connectivity.

Cluster 2's service quality score (4.295) indicates that hospitality, responsiveness, information reliability, and security assurance have been implemented very effectively. High service quality serves as an important complement to adequate facilities in creating a holistic tourism experience (Rahayu et al., 2024). Tourist village managers in this cluster need to maintain service standards through continuous training and a structured complaint management system.

Cluster 2's creative economy innovation score (4.402) reflects the community's strong capacity to develop creative products based on local wisdom, ranging from handicrafts, cultural arts, and local culinary specialties to digital tourism packages. The involvement of creative communities and the expansion of product marketing beyond the region constitute a

differentiation strength that is difficult to imitate (Santoso et al., 2024). The main managerial agenda is to strengthen the creative economy ecosystem through business incubation, facilitation of access to digital markets, and protection of the intellectual property of local products.

Cluster 2's visitor satisfaction score (4.385), the highest among the clusters, confirms that superior supply-side quality in facilities, infrastructure, and services has been successfully translated into satisfying tourist experiences. This high satisfaction has implications for strong revisit rates and word-of-mouth recommendations (Hermawati et al., 2024). Satisfaction management strategies need to include periodic satisfaction surveys and responsive feedback systems.

Cluster 2's entrepreneurial orientation score (4.402) indicates that tourist village communities in this group possess a strong entrepreneurial spirit: they are willing to establish new businesses, proactive in seizing opportunities, have a long-term vision, and actively involve younger generations. High entrepreneurial orientation provides a foundation for continuous innovation and adaptation in response to tourism market dynamics (Hermawati et al., 2022). Tourism entrepreneurship acceleration programs and business mentoring for younger generations are relevant intervention priorities.

Cluster 2's tourist visits (4.366), the highest among the clusters, reflect the strongest growth and diversification of tourism demand, characterized by broad tourist reach, high revisit rates, and effective tourism events. This advantage is the cumulative result of combined strengths in facilities, infrastructure, services, innovation, and satisfaction (Corbisiero & Monaco, 2021). This group needs to develop international market diversification strategies and strengthen digital promotion.

Cluster 2's competitive advantage (4.562), the highest score across all variables and clusters, indicates that tourist villages in this group have successfully established a strong and sustainable competitive position through unique attractions, destination reputation, local cultural advantages, professional management, and effective stakeholder collaboration (Porter, 1990; Ritchie & Crouch, 2003). Maintaining and strengthening competitive advantage through tourism product innovation and enhanced destination branding are the primary strategic priorities for this group.

Cluster 1: Moderate Tourist Villages

Cluster 1 (Moderate) comprised Ngaglik, Bumiaji, Sumbergondo, Pandanrejo, Beji, and

Torongrejo and had a mean score of 3.969. This group occupied an intermediate position between Cluster 2 (High-Performing) and Cluster 3 (Low-Performing), demonstrating reasonably good performance but still having substantial room for improvement.

The relative strengths of Cluster 1 were evident in the competitive advantage (4.326) and creative economy innovation (4.165) variables, which substantially exceeded the values for Cluster 3. This finding indicates that tourist villages in the moderate group have established a sufficiently strong foundation for differentiation through the uniqueness of their attractions and local economic creativity, although operational dimensions such as facilities and infrastructure still require strengthening.

The tourist visits variable for Cluster 1 (3.668) was the lowest among the three clusters, indicating that although tourist villages in this group demonstrate relatively strong competitive advantage and innovation, these strengths have not yet been optimally converted into growth in tourist visits. The gap between relatively high competitive advantage potential (4.326) and low tourist visits (3.668) suggests a bottleneck in the tourism value chain, most likely in promotion, accessibility, or the conversion of interest into actual visits (Hermawati et al., 2024). The main managerial implication is the need to strengthen digital marketing strategies, improve accessibility, and develop more attractive tourism packages.

Tourism facilities in Cluster 1 (3.811) were significantly lower than those in Cluster 2, indicating that the adequacy and standards of facilities remain major constraints on enhancing the tourist experience. Targeted investment in sanitation facilities, tourist information, and recreational facilities should be prioritized (Boro, 2022). Infrastructure and accessibility (3.913) were relatively better than tourism facilities; however, improving digital connectivity and road conditions remains a priority area.

The lower entrepreneurial orientation of Cluster 1 (3.854), compared with visitor satisfaction (4.054), indicates that community entrepreneurial capacity still needs to be developed, particularly in terms of proactivity, long-term business planning, and youth engagement. Entrepreneurial capacity-building programs and community-based tourism business incubation constitute strategic interventions for this group (Hermawati et al., 2022).

Overall, development strategies for Cluster 1 should focus on three priorities: (1) improving tourism facilities to narrow the gap with Cluster 2; (2) accelerating digital promotion and tourism

package development to convert competitive advantage potential into actual visits; and (3) strengthening community entrepreneurial capacity to promote innovation and the self-reliant management of tourist villages.

Cluster 3: Low-Performing Tourist Villages

Cluster 3 (Low-Performing) comprised Pesangrahan, Sisir, Giripurno, Sumberbrantas, Mojorejo, Junrejo, and Dadaprejo, with the lowest mean score of 3.758. Although it remained classified in the Good category based on the Likert scale, the substantial gap with Cluster 2 (a difference of 0.631) indicates that this group requires more comprehensive and systematic interventions.

Infrastructure and Accessibility in Cluster 3 (3.461) represented the lowest score across all variables and clusters, indicating that limited accessibility constitutes the most critical structural barrier faced by tourist villages in this group. Inadequate road conditions, limited public transportation, and low internet availability directly constrain destinations' ability to attract and retain tourists (Jangra et al., 2024). Without fundamental infrastructure improvements, interventions in other dimensions are unlikely to generate optimal impacts. Therefore, the development and rehabilitation of physical and digital infrastructure should be the principal policy priority for local governments in this group.

Creative Economy Innovation in Cluster 3 (3.610) and Service Quality (3.704) were also at the lowest levels, reflecting limited community capacity to develop creative products and deliver quality services. Investment in human resource capacity-building training, including hospitality services, communication skills, and the development of creative products based on local wisdom, is urgently needed (Santoso et al., 2024). Local governments need to facilitate the involvement of *academics* and training institutions in community capacity-building programs.

Nevertheless, Cluster 3 exhibited a relatively higher Entrepreneurial Orientation score (3.881) than several other variables, indicating that community entrepreneurial potential remains and can be optimized. Visitor Satisfaction (3.610) and Competitive Advantage (3.910) also remain at levels that can be further developed. This condition provides an opportunity for tourist villages in this cluster to advance to the moderate group in the medium term through targeted interventions, particularly in infrastructure and service capacity improvement.

The still-positive Competitive Advantage of Cluster 3 (3.910), particularly in the dimensions

of attraction uniqueness and local cultural strengths, indicates that some villages in this group possess distinctive tourism assets that have not yet been optimally managed and promoted. A destination branding strategy focused on uniqueness and authenticity, supported by infrastructure improvements and enhanced services, may provide an effective entry point for improving the competitiveness of this cluster (Ritchie & Crouch, 2003; Hermawati, 2020).

Overall, development strategies for Cluster 3 must encompass three integrated priority interventions: (1) the development and rehabilitation of physical and digital infrastructure as key enablers of tourism growth; (2) human resource capacity-building programs covering service training, tourist village management, and creative product innovation; and (3) the development of branding strategies based on local uniqueness, supported by digital marketing platforms to expand market reach and enhance destination visibility.

4. Conclusion

This study identified the tourist village typology in Batu City through the integration of a *Systematic Literature Review* and *Cluster Analysis*. Three main findings can be drawn. First, the Systematic Literature Review identified eight key variables that consistently determine the performance and competitiveness of tourist villages in the tourism literature: tourism facilities, infrastructure and accessibility, service quality, creative economy innovation, visitor satisfaction, entrepreneurial orientation, tourist visits, and competitive advantage. These variables constitute a comprehensive framework for holistically evaluating tourist village management performance.

Second, *Cluster Analysis* classified 24 tourist villages/sub-districts in Batu City into three distinct typologies: Cluster 2 (High-Performing; mean = 4.389), comprising 11 villages/sub-districts and excelling across all dimensions; Cluster 1 (Moderate; mean = 3.969), comprising 6 villages/sub-districts with strengths in innovation and competitive advantage but weaknesses in tourist visits; and Cluster 3 (Low-Performing; mean = 3.758), comprising 7 villages/sub-districts, for which infrastructure and accessibility constitute the main structural constraints.

Third, these findings imply that tourist village development strategies in Batu City must be differentiated and typology-based. Cluster 2 requires strategies to maintain its advantages and

foster continuous innovation. Cluster 1 requires accelerated digital promotion and improved facilities to convert its potential competitive advantage into actual growth in tourist visits. Cluster 3 requires structural interventions in infrastructure and human resource capacity before interventions in other dimensions can have an optimal impact.

Future research should expand this study by integrating secondary data on actual tourist visits and locally generated revenue (PAD) to validate the cluster results, testing causal relationships among variables using Structural Equation Modeling, and developing typology-based tourist village development models that can be tested in other tourism destinations in Indonesia.

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