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TOURISM VILLAGE DIGITAL TRANSFORMATION READINESS ANALYSIS: CASE STUDY IN TWO SUPER PRIORITY DESTINATIONS IN INDONESIA

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Abstract: The digital economy is increasingly vital to Indonesia's development strategy and presents a major opportunity for enhancing tourism, especially in rural areas. However, there exists a significant disparity in digital readiness between urban and rural regions. This study aims to assess the digital transformation readiness of tourism villages located within two Super Priority Destinations (SPDs) - Borobudur and Mandalika - by identifying their strategic positions and formulating targeted development approaches. This research adopted a qualitative methodology using in-depth interviews with 26 tourism village leaders and two local government officials, supported by focus group discussions and direct field observations. The study developed and applied a contextualized Digital Transformation Readiness Index (DTRI) tailored to rural tourism settings, which encompasses eight dimensions: technology, customer, product, process, people, culture, strategy & investment, and governance. In addition, GE and portfolio matrices were used to map the villages to enable a strategic classification of readiness levels. The matrix dimensions was based on Digital Transformation Readiness assessment to measure internal capacity for digital adoption, and Future Traveler Journey Digital Alignment assessment to measure the extent to which village infrastructure supports digital tourist engagement. The study identified varying levels of digital readiness among tourism villages. While Candirejo (Borobudur) and Bilebante (Mandalika) exhibit strong digital maturity supported by infrastructure and leadership, many others remain in early or partial stages, constrained by limited digital literacy and investment. Notably, government classifications did not consistently align with actual digital readiness. Using GE and BCG matrices, villages were categorized into superior, average, and inferior groups based on readiness and market potential. This strategic mapping supports tailored recommendations in capacity building, infrastructure, and stakeholder collaboration. The findings highlight the importance of locally adapted digital strategies and contribute a scalable framework for rural tourism development in emerging economies. Valuable lessons are provided for other emerging economies grappling with comparable challenges in the digitalization of their tourism sectors. Moreover, this research presents opportunities for future investigations into the enduring effects of digital transformation on tourism villages.

Keywords: digital transformation, digital transformation readiness, tourism village, strategic management, product portfolio strategy

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INTRODUCTION

Indonesia's digital economy was projected to grow to approximately USD 77 billion, marking a 22% increase compared to the previous year's valuation. The contributor to the gross sales value of goods and services during a specific period (Gross Margin Value / GMV) in Indonesia in 2022 is estimated to come from the e-commerce sector of US $ 59 billion. The value of Indonesia's digital economy will continue to grow and remain the largest in Southeast Asia until 2030. The main growth driver is dominated by economic activities in the major cities such as Jakarta, Bogor, Depok, Tangerang, and Bekasi (Jabodetabek) area, with a total expenditure of US $ 555 per capita GMV. Outside the Jabodetabek area, GMV is only US $ 103 per capita, which is average. This condition shows that there is a disparity in digital transformation in Indonesia. The Digital Economy is one of Indonesia's priority issues. It aligned the government's program to accelerate the digital economy and develop digital infrastructure. While the national agenda is increasingly focused on infrastructure and digital innovation,

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global scholarship also emphasizes the importance of readiness evaluation. Globally, efforts to evaluate digital readiness and policy alignment in tourism are growing, particularly in big data-driven environments (Al-Omari et al., 2024).

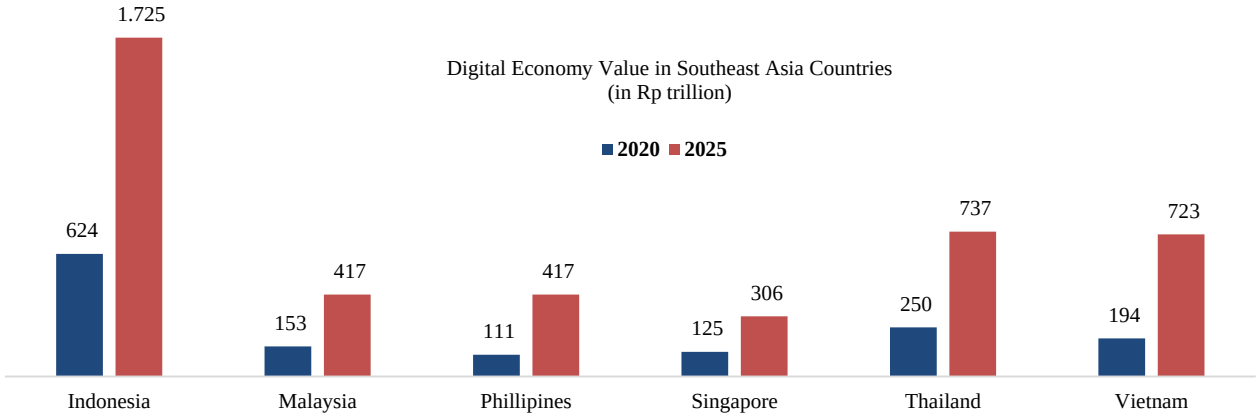

Figure 1. Indonesia Gross Margin Value 2020-2025 (Source: Ahdiat, 2025)

However, such assessments are still rare in rural or community-based tourism systems. Recent research in the Vietnamese Mekong Delta, for example, reveals that while digitalization efforts by destination marketing organizations are progressing, such initiatives still face structural and institutional limitations in rural contexts (Huynh et al., 2025).

Indonesia's digital transformation can be seen in the development of its digital economy. Google, Temasek, and Bain & Company in the Economy SEA 2022 report (Figure 1) said the value of the increase in the digital economy also occurs in the tourism industry and creative economy. According to the World Economic Forum's Digital Transformation Initiative (DTI), global digitalization in the aviation, travel, and tourism sectors is projected to generate a value of USD 305 billion, with approximately USD 100 billion attributed to emerging players and digital transformation processes. In the Indonesian context, the absolute economic contribution of the tourism sector is projected to increase significantly - from USD 29.9 billion in 2022 to USD 73.5 billion by 2028, marking a 145.34% growth (Degenhard, 2023). The economic contribution is expected to reach 124.0 billion US dollars by 2028. PricewaterhouseCoopers (PwC) reported that the tourism sector's contribution to GDP is still low at 5%. This figure is lower than that of other G20 countries such as Spain (14%), Italy (13%), Turkey (11%) and Thailand (12%). Contributions can be increased through promotion, improved access, and affordability.

In 2021, the contribution of Indonesia's tourism and creative industry to GDP is estimated at 7.3%. Previously, this contribution was weakened during the COVID-19 pandemic by 5%. Minister of Tourism and Creative Economy Sandiaga Uno targets this contribution to be increased by 10-12% on par with other countries in Southeast Asia in the next 5 to 10 years.

The Ministry of Tourism and Creative Economy (KEMENPAREKRAF) encourages an increase in the number of domestic tourists to achieve the GDP contribution growth target through the Super Priority Destination (DSP) development program in five locations to find "new Bali," namely Borobudur (Central Java) as one of UNESCO's world cultural heritage where the reliefs are full of detail and have 72 stupas with Buddha statues; Likupang (North Sulawesi) has tourism potential for five exotic beaches and mangrove forests; Labuan Bajo (NTT) has tourism potential for Komodo dragons, pink beach and Sylvia hills; Mandalika (NTB) has the potential of Gerupuk natural beach, Kuta beach and Bau Nyale Festival; and Lake Toba (North Sumatra) has the potential for lake cruising tourism, glamping (luxury camping). The main programs of KEMENPAREKRAF: (1) developing sports reputation and infrastructure in Mandalika; (2) popularizing creative economic potential such as weaving in Labuan Bajo; and (3) establishing a tourism special economic zone (SEZ) in Likupang.

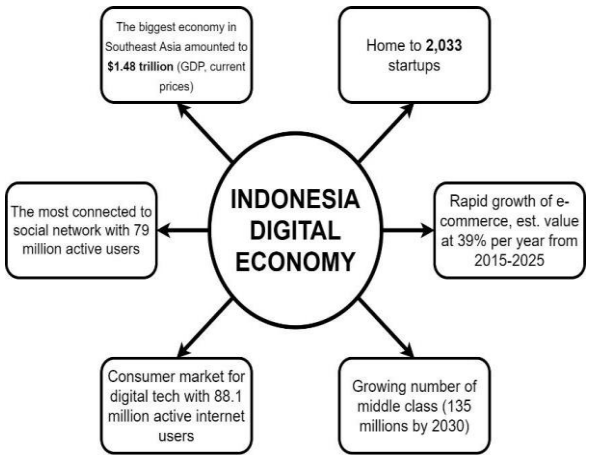

Figure 2. Indonesia Digital Economy (Source: Ulum, 2017)

Tiket.com CEO George explained three crucial things to increase contribution, namely (1) attraction, (2) accessibility, and (3) affordability. These three things can be improved through digital transformation in each DSP considering the market opportunities where Indonesia's current tendency as a digital society (Society 5.0) is the growth trend of internet penetration, digital buyers, startups, and e-commerce (Figure 2). The foremost opportunity in the tourism and creative industry today is also seen in the growth of middle-class people, estimated to reach 135 million by 2030. This shift encourages the creation of a new culture in consumption behavior where there is a shift in consumption patterns initially dominated by clothing-food-board to entertainment and leisure. Entertainment and leisure are included in the scope of KEMENPAREKRAF, especially to achieve domestic travel targets. The digital leisure experience of tourists or prospective tourists in Indonesia can be enhanced through digital transformation in each experience journey or point of interaction (POI). The Indonesian Ministry of Tourism and Creative Economy provided the internal documents that contain the core information in Figure 3. To align it with the context of the study, the authors adapted, visualized, and composed narrative framing from the information. Resulting in the map of Indonesia's Travel Journey Map (Figure 3).

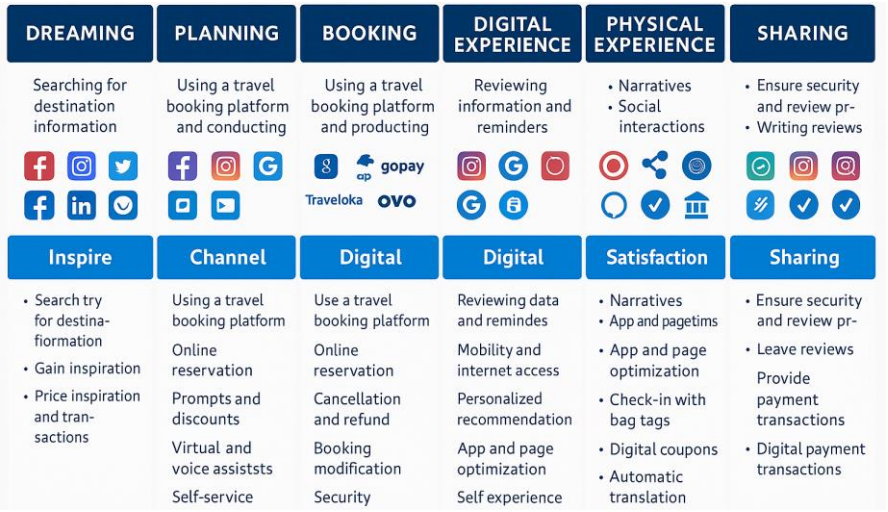

Figure 3. Indonesia Travel Journey Map (Source: Adapted from Internal data from the Indonesian Ministry of Tourism and Creative Economy (Kemenparekraf), 2023. Visualization adapted by the authors for explanatory purposes) (Source: Adapted from Internal Data from The Indonesian Ministry of Tourism and Creative Economy)

To successfully carry out digital transformation, several prerequisites must be met. First, adequate telecommunications infrastructure. Second, the demographic is young and tech-savvy. Third, supporting policies/regulations; finally, ecosystems supporting transformation (Pratama et al., 2021; Ulum, 2017).

To achieve the GDP contribution growth target of the tourism and creative industry through the development of DSP and equitable distribution of Tourism and Economy Creative digitalization, a study is needed to determine the readiness of DSP digital transformation through the measurement of the Digital Transformation Readiness Index (DTRI) including knowing the four prerequisites for digital transformation to produce recommendations for sustainable tourism governance.

Indonesian lifestyle trends after the pandemic persist in new normal conditions related to behavior, habits, lifestyles, or mindsets of digital-based leisure activities. Therefore, the digital leisure experience is a consumer need and desire. Indonesia has nearly 3,000 recreational tourism destinations that have yet to be digitized. Meanwhile, tourist destinations have three achievement targets: increasing the number of visitors, length of stay, and expenditure, which are the leading performance measures. The achievement of this target can be accelerated through digital transformation at each stage of the travel journey map (TJM). It has not been clearly mapped in the condition of digital transformation disparity, especially in the 5 DSPs. Therefore, measuring the level of digital readiness for destination transformation is necessary.

Therefore, this study aims to evaluate the level of digital transformation readiness among tourism villages in two Super Priority Destinations in Indonesia—Borobudur and Mandalika—and to develop a contextualized readiness index and strategic portfolio framework that supports differentiated policy intervention for inclusive rural digitalization.

Studies on tourism destination governance in Travel Journey Map (TJM)--based Tourism Villages could have been more consistent, especially in terms of digital readiness measurement frameworks tailored to rural settings (Shao et al., 2021). This destination governance strategy is seen from the state of digital transformation readiness. Previous research examining digital transformation readiness specifically for tourism or tourism villages in Indonesia has yet to exist. Recent studies have increasingly addressed digital transformation in tourism, focusing on smart destinations (Wu et al., 2023), digital social innovation in rural areas (García-Cabrera & Pérez-Tapia, 2023), and overall maturity of tourism systems (Baggio et al., 2023). However, these works are often situated in Global North or primarily urban contexts. Shao et al. (2021) and Vu et al. (2025) have highlighted the lack of empirical frameworks tailored to rural tourism digitalization in Southeast Asia. Additionally, Vu et al.(2025) conducted a comprehensive bibliometric and content analysis of digital transformation in rural tourism, identifying key research clusters, such as “Digital Folklore and Smart Travel Technology” and “Community-level IT

applications," while emphasizing the need for more empirical studies beyond 2023. Unlike previous research, our study advances by introducing a contextualized Digital Transformation Readiness Index and integrating strategic portfolio matrices to derive practical guidance for inclusive rural digital transformation in developing countries.

Resarch Gap and Novelty

Indonesia's digital economy is becoming more important, especially in the tourism industry. However, most of the current digital transformation efforts have been focused on cities, leaving tourism villages under examined. While existing models such as those by Schumacher et al. (2016) or Agostino & Costantini (2022) provide valuable frameworks for digital readiness, they are limited by their focus on technologically advanced institutions in urban or developed contexts. These frameworks tend to prioritize infrastructure and neglect softer variables such as institutional trust, leadership, or sociocultural adaptability—factors that are especially crucial in rural tourism ecosystems (García-Cabrera & Pérez-Tapia, 2023). Furthermore, few studies translate readiness assessments into practical strategy portfolios, creating a gap in implementation tools for policy and investment. Recent bibliometric work by Vu et al. (2025) further highlighted the underrepresentation of rural tourism in global digital transformation discourse. Their analysis revealed that most studies cluster around urban or smart destination contexts, with limited empirical focus on Southeast Asian community-based tourism. These shortcomings limit the usefulness of existing models in rural, resource-constrained settings.

Without integrating localized sociocultural and governance dimensions, global frameworks risk overlooking key barriers to successful implementation in Indonesian tourism villages. This concern is echoed by Vu et al. (2025), who stress that rural digital transformation models must include community-driven governance factors. Most of the research that has been done so far has focused on smart tourism development in cities or digital readiness in institutional or commercial tourism settings. For instance, González-Reverté (2021) conducted a comprehensive review on smart tourism and sustainability, yet his findings are largely concentrated on urban contexts. As a result, research on community-based tourism governance structures—such as those found in Indonesia's Super Priority Destinations (SPDs)—remains scarce (Wu et al., 2023).

While studies by Wu et al. (2023) and Baggio et al. (2023) explore themes related to digital transformation, their emphasis lies primarily on smart technology infrastructure, urban innovation systems, and macro-level strategic frameworks. García-Cabrera & Pérez-Tapia (2023), in contrast, highlight the role of digital social innovation in enhancing rural tourism competitiveness, but do not provide a structured readiness index or strategic classification of destinations. This study complements and extends these works by proposing a contextualized Digital Transformation Readiness Index (DTRI) and portfolio-based strategic framework tailored to community-managed tourism villages in Indonesia.

In addition, most of the digital transformation readiness models that are presently available (like Schumacher et al., 2016; Agostino & Costantini, 2022) are designed for mature tourism systems in developed countries. These frameworks tend to emphasize infrastructure and technical indicators, yet often fail to address the complex social, cultural, governance, and economic realities of rural tourism in developing contexts. Digital leadership has been emphasized as a crucial factor in national readiness strategies (Cahyadi & Magda, 2021), yet its operationalization in rural tourism contexts remains underexplored. Similarly, there is limited research on variables such as local leadership, institutional trust, and cultural openness—despite increasing evidence that these elements are critical for enabling effective rural digital transformation.

The second major issue is that strategic mapping frameworks are not sufficiently employed to translate digital readiness assessments into actionable development strategies. While digital maturity evaluations are increasingly common, only a few studies have utilized portfolio-based analytical tools like the GE Matrix or BCG Matrix to classify tourism villages based on their readiness and market opportunities (Shao et al., 2021; Baggio et al., 2023). Unlike network-oriented models such as Baggio et al. (2023), this study's framework emphasizes the alignment between community capacity and localized digital strategies tailored to rural tourism settings. As a result, the lack of targeted classification has led to generic digital transformation agendas with limited impact across diverse rural tourism types.

Furthermore, most of the research that has been done so far is in the Global North, which has left a gap in empirical data for rural tourism in Southeast Asia. This is more alarming because Indonesia is aggressively pushing for digital acceleration in tourism by designating SPDs like Borobudur and Mandalika. Yet, we are unaware much about how these national-level policies are put into action and received at the village level, where access to markets, digital literacy, and institutional capacity can be very different (Al-Omari et al., 2024; García-Cabrera & Pérez-Tapia, 2023).

In response to these gaps, the present study sets out to investigate rural digital transformation readiness from both diagnostic and strategic perspectives. To address these gaps, this study proposes the following research questions:

- What is the current level of digital transformation readiness among tourism villages located in Super Priority Destinations in Indonesia?
- What internal and external factors influence the strategic positioning of tourism villages in terms of digital transformation readiness?
- How can tourism villages be strategically categorized using portfolio analysis to support tailored digital development strategies?

The novel part of this study is the creation and use of a Digital Transformation Readiness Index (DTRI) that is specific to community-based tourism villages in Indonesia's Super Priority Destinations. The DTRI introduced here offers a novel departure from earlier frameworks as it includes a wide range of indicators, such as technology infrastructure, human capital, customer engagement, governance, innovation culture, and local collaboration. These indicators are more compatible with the

socioeconomic and institutional realities of rural tourism ecosystems (García-Cabrera & Pérez-Tapia, 2023; Torres-Delgado & Benach, 2022). This emphasis on indicator-based assessment aligns with the earlier work of Torres-Delgado & Saarinen (2014), who advocate for the use of measurable criteria to evaluate sustainable tourism development and inform policy decisions. This study additionally offers a dual strategic framework that combines the DTRI with portfolio analysis tools (the GE and BCG matrices) to illustrate and group tourism villages based on how ready they are and what opportunities are available in their area. This method makes it possible to group strategies and come up with different digital development strategies. This is a step toward closing the gap between designing digital policy and making sure that everyone has equal access to it in developing countries. This study also adds to the global discussion on inclusive digital tourism transformation by providing context-rich empirical evidence from fieldwork in Borobudur and Mandalika.

In summary, this study fills four major gaps: (1) the empirical gap of rural tourism digitalization in Southeast Asia, (2) the theoretical mismatch between existing models and the sociocultural realities of developing countries, (3) the methodological absence of strategic portfolio frameworks in readiness analysis, and (4) the practical lack of differentiated policy tools for digital transformation in tourism villages.

MATERIALS AND METHODS

This study adopts a naturalistic and interpretive stance rooted in qualitative inquiry traditions (Denzin & Lincoln, 2012), employing a qualitative descriptive approach to explore the contextual readiness of tourism villages for digital transformation. A qualitative design was considered appropriate because it enables researchers to examine complex social phenomena holistically and interpret them within their natural settings (Creswell, 2013). This approach is particularly suitable for tourism research, where understanding local dynamics, community values, and leadership requires deep contextual immersion (Myers, 2013). The data consisted of non-numeric, textual information derived from in-depth interviews and direct field observations (Check & Schutt, 2012).

Semi-structured interviews were conducted with tourism village leaders and institutional actors, allowing for flexible exploration of site-specific issues while maintaining thematic coherence. Field observations were also employed to triangulate findings and uncover tacit dimensions not easily captured through interviews alone.

The research used primary data derived from (1) the results of semi-structured interviews with several resource persons deemed needed by the research and (2) the results of observations of the research team when conducting direct field surveys. Before collecting data, the research team will conduct several literature reviews to create an interview / FGD framework and identify what should be anticipated in observational data collection activities.

Researchers will collect data from village managers and officials to identify indicators to assess tourism villages' readiness for digital transformation. They will be the resource people for this research. Because the number is small (13 tourist villages in each research location), the entire population in this study will be a resource person.

The sampling method used is purposive sampling, which requires selecting individuals and research sites that can deliberately provide information that can enrich the understanding of research problems and central phenomena in research, generally used in qualitative research (Creswell, 2013).

This study used the Digital Transformation Readiness Index (DTRI), developed by synthesizing and adapting dimensions from various existing frameworks (e.g., Schumacher et al., 2016; Bharatula & Murthy, 2020; Cahyadi & Magda, 2021; Wahyuningtyas et al., 2023; Agostino & Costantini, 2022) to suit the specific context of tourism villages in Indonesia. While institutional models such as Agostino & Costantini (2022) offer structured approaches for cultural institutions, and Bharatula & Murthy (2020) emphasize national digital readiness, this study's framework incorporates localized social, governance, and leadership variables that are critical in rural tourism ecosystems. The preliminary set of dimensions, sub-dimensions, and indicators was subsequently reviewed by five experts from the Ministry of Tourism and Creative Economy, BRIN, and tourism research centers to ensure contextual validity.

We also did a pilot test in three tourism villages, one from each of the three categories: pioneering, developing, and advanced. The goal was to see how clear, useful, and consistent the proposed indicators were. The feedback from this field test helped us improve the wording of some indicators and get dismissed of any that were unnecessary.

The final DTRI has eight dimensions, 25 sub-dimensions, and 34 indicators. It gives a complete picture of digital readiness that is both theoretically sound and practical in rural tourism settings.

Following the data collection process, the data will be analyzed by describing or depicting the data that has been collected using product portfolio analysis techniques. Ritson (2011) in (Pramudiana et al., 2016; Rismayani & Pramudiana, 2013) said that product portfolio analysis could be done through a positional approach that formulates strategies analytically and rationally with the aim of placing companies or products in a favorable environment proposed by Porter (1985) with the output of GE Matrix and BCG Matrix. The original framework proposed by Rismayani & Pramudiana (2013), although developed in the context of Indonesia's cement industry, emphasized how portfolio classification can be adapted to different sectors, including tourism, by focusing on the balance between internal capability and external opportunity. This foundational approach informs the portfolio adaptation model used in the present study to assess digital readiness in tourism villages. Furthermore, portfolio analysis provides strategic investment recommendations by positioning each business unit based on an integrated assessment of internal capabilities and market attractiveness.

This study employed an adjusted BCG matrix to map the strategic position of each tourism village and perform a portfolio-based classification. In corporate strategic analysis, the Boston Consulting Group (BCG) matrix is widely applied

to classify business segments by evaluating their relative market expansion rate and competitive positioning (Khajezadeh et al., 2019; see also Palazzo, 2024, for recent developments in strategic decision-making frameworks). This approach is further informed by Indonesian portfolio strategy literature, which highlights the importance of aligning internal capacity with market positioning (Pramudiana et al., 2016). Although originally developed for corporate settings, their framework provides a conceptual basis for adapting portfolio models to community-based tourism systems. However, its application in rural tourism remains limited. To better reflect the realities of rural tourism development, the matrix was restructured by replacing traditional business indicators with two customized dimensions: (1) Digital Transformation Readiness (DTRA), representing the internal capacity for digital adaptation; and (2) Future Traveler Journey Digital Alignment (FTJDA), indicating the extent to which village infrastructure supports digital tourist engagement across travel stages.

DTRA was conducted to determine the existing position of Tourism Villages based on the level of attractiveness of the industry (external) and the internal strength of Tourism Villages related to Digital Transformation Readiness (Figure 4). The X axis is the competitive position of the company/product that describes the competitiveness or strength of the company's products derived from internal company factors or business strength. This X-axis is divided into three parts or boundaries: weak, average, and vital. The lowest value on the X-axis is 1, and the highest value on this axis is 3. The Y axis is an external attractiveness that describes the company's product opportunities (business opportunities) derived from external company factors that the company cannot control. This Y-axis is divided into three parts or boundaries: unattractive, average, and attractive. The lowest value on the Y axis is one, and the highest value on this axis is 3.

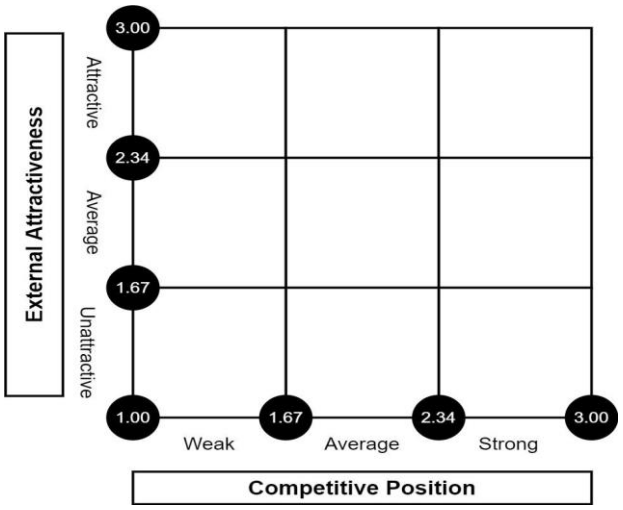

Figure 4. Digital Transformation Readiness Assessment Matrix

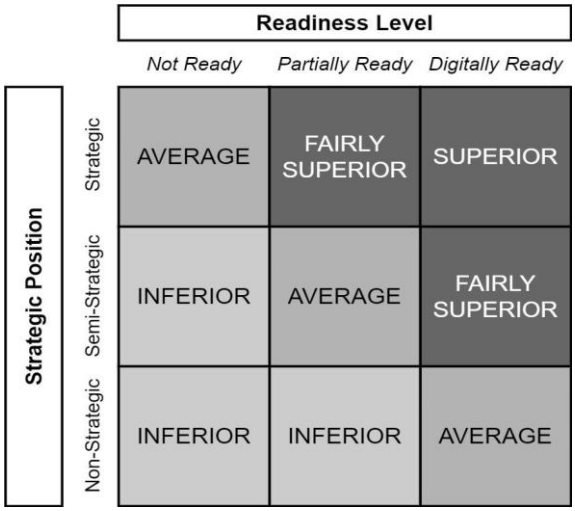

Figure 5. Digital Transformation Strategic Readiness Assessment Matrix

The Future Travel Journey Assessment (FJTA) was employed to identify key constraints in the digitalization process of tourism villages by mapping their alignment with FJT-based service flows. This diagnostic was integrated with the Theory of Constraints (TOC), a system-oriented methodology that posits every system has a singular goal—typically profit or performance—and that overall system performance is limited by its weakest or most constrained process.

By identifying and analyzing these bottlenecks, TOC enables decision-makers to formulate strategies for maximizing throughput and optimizing systemic efficiency. In this study, constraints were assessed in relation to the digital tourism service ecosystem, following a service design perspective adapted from Gao et al. (2022), which emphasizes holistic alignment between service processes and digital readiness across the travel journey.

The GE/McKinsey framework comprises nine strategic categories that allow firms to map their business units by evaluating internal strength alongside market appeal. Furthermore, market size and current sales will differentiate each SBU. Based on a clear understanding of all these factors decision makers are able to develop effective strategies. The nine cells in the matrix can be grouped into three main segments (Figure 5): (1) Superior: This is the best segment because it has a strong business and an attractive market; (2) Average: Have a good and strong business, but the market is not attractive or vice versa, the market is strong, and the business is not strong enough to pursue potential opportunities; and (3) Inferior: This is the worst segment because the business in this segment is weak and the market is not attractive.

RESULTS AND DISCUSSION

In developing digital transformation readiness measurements in tourism villages, this study refers to several articles on digital transformation readiness. One is an article from Agostino & Constantini (2022) that develops a framework to measure digital transformation in a cultural institution. In addition, the measurement model adopted several dimensions from the studies of Schumacher et al. (2016) and Wahyuningtyas et al. (2023). Then, experts reviewed and tested small samples' adopted dimensions, sub-dimensions, and indicators. Table 1 illustrates the measurement model of the digital transformation readiness of tourism villages.

Table 1. Digital Transformation Readiness Measurement Model in Tourism Villages

Dimension	Sub-Dimensions	Indicators
A. Technology	A.1. Technology Adoption	A.1.1. Technology presence
	A.2. Data Analysis	A.2.1 Digital archive
		A.2.2. Data collection and storage
	A.3. Technology Infrastructure	A.2.3. Data monitoring
		A.3.1. Wi-Fi presence
		A.3.2. Signal availability
		A.3.3. Electricity availability
B. Customer	B.1. Visitor/Customer Awareness	B.1.1. Digital marketing activity
		B.1.2. Social media preferences
		B.1.3. Tourism village presence in reputable website(s)
C. Product	C.1. Product Personalization	C.1.1. Product personalization
	C.2. Product Digitalization	C.2.1 Product digitalization
	C.3. Product Integration	C.3.1. Integrated and limitless digital product
D. Process	D.1. Front Office	D.1.1. Pre-requisite
		D.1.2 Payment method
	D.2. Back Office	D.2.1. Tourism village's operating service digitalization
E. Human	E.1. Digital Skills	E.1.1. Personnel with special task
		E.1.2. Personnel capability to use ICT
		E.1.3. Digitalization training and coaching
F. Culture	F.1. Knowledge Sharing	F.1.1. Occurring information exchange
	F.2. Innovation Openness	F.2.1. Support towards innovation openness
	F.3. Collaboration Between Actors	F.3.1. Collaboration between digital transformation actors
	F.4. Digital Transformation Importance	F.4.1. Awareness of digital transformation importance
G. Strategy & Investment	G.1. Strategy	G.1.1. Digital strategy
	G.2. Investment	G.2.1. Digital investment
		G.2.2. Digital investment penetration
H. Leadership and Governance	H.1. Leadership	H.1.1 Village leader commitment
		H.1.2. Leader's motivation
	H.2. Governance	H.2.1. Tourism village digital governance

The digital transformation readiness measurement model in tourism villages developed in this study produces seven measurement dimensions: technology, customer, product, process, people, culture, strategy and investment, and leadership and governance (Table 1). The technology dimension refers to digital technology, data utilization and analysis practices, and the availability of infrastructure such as Wi-Fi. It has three sub-dimensions and seven indicators. Customer dimension refers to the ability of tourism villages to engage with customers through digital interaction channels, both before and after the transaction or visit process, and has one sub-dimension with three indicators. Product dimensions refer to everything offered to tourists, whether nature- or culture-based, or tangible or intangible, and have three sub-dimensions with one indicator each. The process dimension describes how digital utilization is carried out in front- and back-office business processes. It has two sub-dimensions with three indicators. The human dimension refers to the availability of human resources with digital skills and utilization capabilities. It has one sub-dimension with three indicators. The cultural dimension refers to the values that develop in tourism villages to support the development of digital transformation. It has four sub-dimensions with four indicators.

The strategy and investment dimension refers to an organization's ability to achieve its long-term digital strategy by investing resources in digital transformation projects. It has two sub-dimensions with three indicators. Finally, the leadership and governance dimension refers to the digital capabilities of decision-makers and policy support from stakeholders. It has two sub-dimensions with three indicators. In Borobudur DPSP, tourism villages are excellent destinations that combine the beauty of natural potential with the richness of local culture. Villages such as Karangrejo, Candirejo, Kembanglimus, and Wanurejo offer a variety of products that are attractive to both local and foreign tourists.

Accessibility support and adequate tourism infrastructure are its advantages. Tourists can enjoy various exciting activities, such as Jeep, VW, bicycle, and Andong/Dokar tours. In addition, the agricultural sector is the main attraction in Candirejo and Karangrejo. The tourists could enjoy experiencing traditional farming. Tourism villages also offer other potentials, such as art and cultural performances like traditional dance in Candirejo and mask art in Tuksongo. Interaction with local communities is the focus, with various activities such as pottery crafts in Karanganyar, batik making in Wanurejo, and bamboo crafts in Kebonsari. Kembanglimus Village, famous for its Bukit Rhema, offers bamboo carving and traditional batik activities called 'jumputan'. In addition, the development of artificial attractions is also an integral part of Borobudur DPSP Tourism Village. Dolanan Jamuskauman Village serves a variety of traditional games, while Kebonlegi and Ngawen villages offer outbound and river tubing activities. Several villages also provide educational tourism, such as Ngargogondo Village with Borobudur Language Village, Ngargoretno Village with Dino Park and Marble Nature Museum, and Tanjungsari Village with ancient historical tours and Honey Bee education.

In utilizing technology in the Borobudur DPSP tourism village, almost all villages have provided digital payment options for tourists. Although most villages use digital technology for data collection, especially related to village visits and profiles, data updates are still unscheduled. The back office may not be entirely digital since marketing and finance is the

focus of digital transformation. Technological infrastructure such as Wi-Fi, telecommunication networks, and electricity are readily available in villages, although the stability of ICT infrastructure is affected by weather and geographical location. Data monitoring involves online reviews on social media, with support from the central and local governments through the Jadesta website and social media @Visitjawatengah. Most villages realize the importance of digital marketing, but the availability of competent human resources to use ICT is still a significant obstacle. Some villages, such as Wanurejo and Ngawen, have adopted digital transformation by involving the younger generation as local champions and digital ambassadors. However, digitalization training and assistance have not been running sustainably. Budget constraints for digitalization are also an obstacle, with an average allocation of less than 10% of the total village budget. Post-pandemic, several villages have started offering digital products such as virtual tours and virtual shows. Overall, tourism villages support innovation and collaboration, considering digital transformation a crucial aspect of village development. However, policy support and planning that accommodates digital innovation are still inadequate. Meanwhile, in DPSP Mandalika, besides marine tourism as the main attraction, many tourism villages with natural wealth and local wisdom that are still maintained have under-developed potential. Most villages offer natural charms, such as lakes and waterfalls in Karang Sidemen Village and camping grounds in Janggawana Village and Kabul Mandalika. Bilebante Village offers rice fields, forest trekking activities, and fitness therapy. The local wisdom and culture of the Sasak Tribe are the main attractions in DPSP Mandalika, and they are reflected in the traditional buildings and customs of Sasak Ende, Sengkoah, and Rembitan Traditional Villages. The villages of Monggas Tastura and Setanggor exhibit traditional music and Peresean dance. Weaving activities are in demand in Puyung and Sukarara Villages, while Beleka Village is famous for rattan and Ketak/Atte crafts. Jango Village offers religious educational tours. This potential is an essential foundation for developing tourism villages in Mandalika.

Although most tourism villages in DPSP Mandalika consider digital transformation vital, technology adoption in village development is still limited due to low digital literacy among village managers. The interaction and digital marketing process is not optimal, although villages generally have 1 to 2 types of social media. The introduction of digital tourism products tends to be done by travel agents rather than tourism villages themselves. Some villages, such as Kabul Mandalika and Sengkoah, still use cash payments. Although foreign investors are interested, essential tourism-supporting infrastructure is still lacking, and providing ICT infrastructure has not been a priority. Limited human resources and budget are obstacles to digital transformation, with less than 10% of village budgets allocated for digitalization. However, some villages, such as Bilebante, Karang Sidemen, and Sukarara Weaving Center, firmly commit to adopting digital technology. Some villages have developed digital travel guides, archived data through big data, and offer digital travel products such as virtual tours and workshops. Villages actively exchange communications, but involvement and support from stakeholders and local governments are still limited. Coordination between regional officials and tourism village managers is not optimal, and support for developing digital technology competencies is still inadequate. The training provided also lacks sustainability mechanisms.

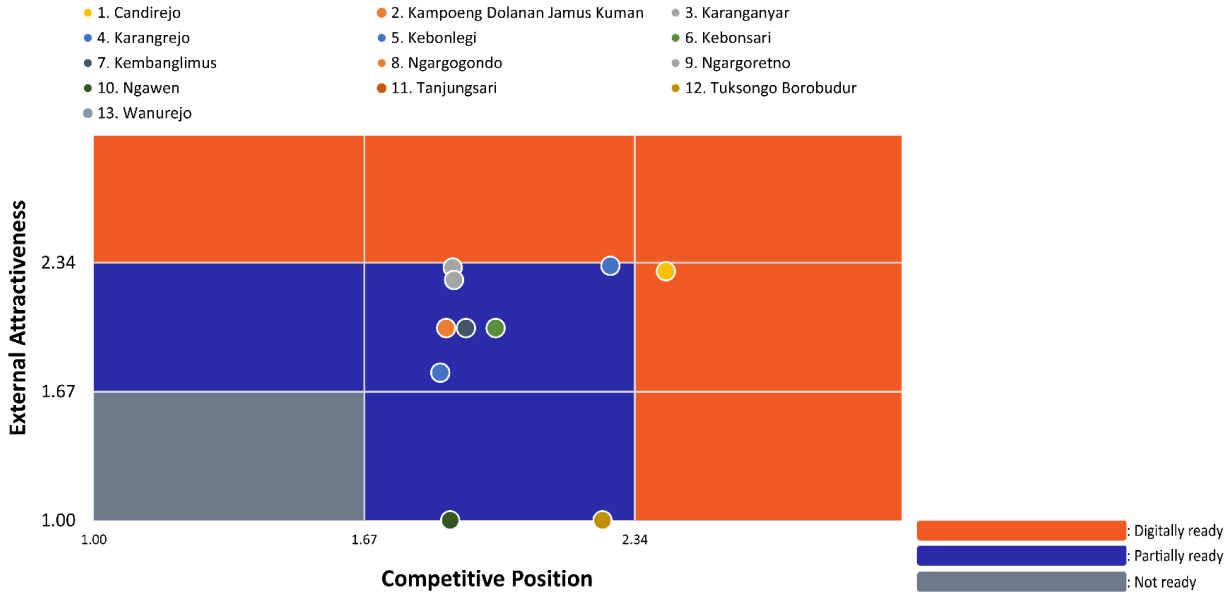

Figure 6. Digital Transformation Readiness Level of DPSP Borobudur Tourism Villages

Based on Figure 6, there are two groups of digital transformation readiness levels of tourism villages in DPSP Borobudur. A tourism village included in the digitally ready level is Candirejo Village. Meanwhile, 11 other tourism villages are at the partially ready level, namely Kampoeng Dolanan, Karang Anyar, Karangrejo, Kebonlegi, Kebonsari, Kembanglimus, Ngargogondo, Ngargoretno, Ngawen, Tuksongo Borobudur, and Wanurejo. Unlike the tourism villages located in Borobudur DPSP, tourism villages located in Mandalika DPSP (Figure 7) are divided into three groups of digital transformation readiness levels. The digitally ready level includes four tourist villages in Mandalika: Bilebante Village, Sasak Ende Custom, Setanggor, and Rembitan. The partially ready level encompasses three villages: Adat Sengkoah,

Karang Sidemen, and Kabul Mandalika. The remaining six villages, Monggas Tastura, Janggawana, Beleka, Jango, Puyung, and Sentra Tenun, are included in the not-ready level.

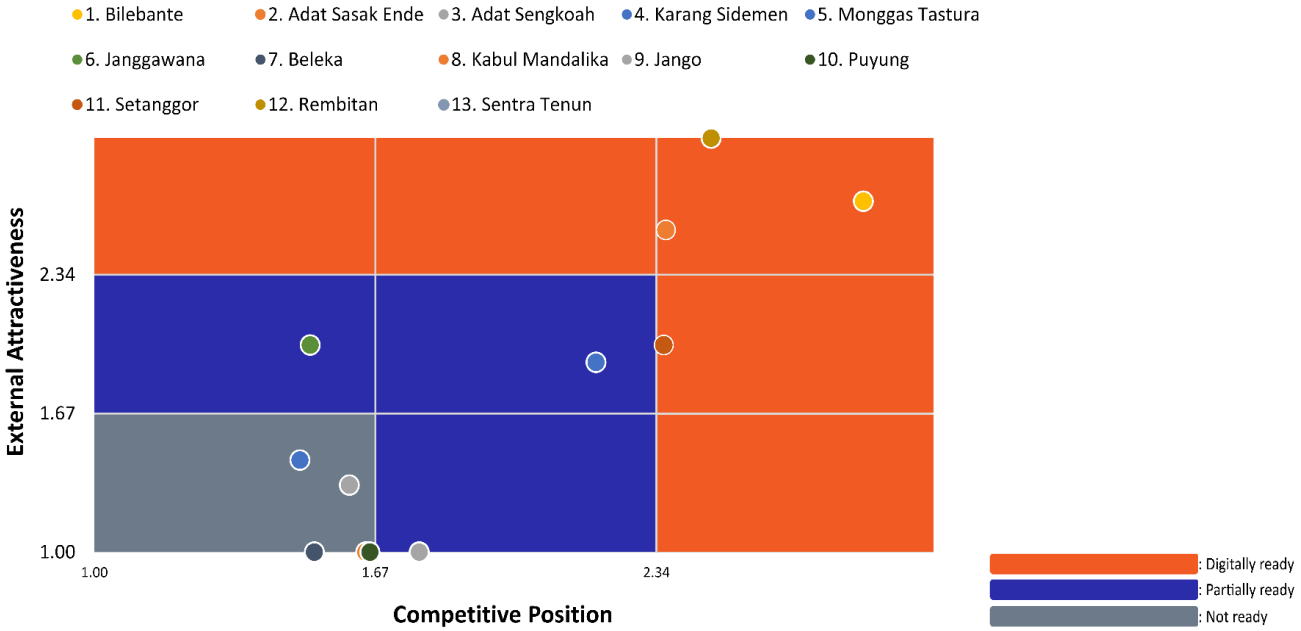

Figure 7. Digital Transformation Readiness Level of DPSP Mandalika Tourism Villages

The result highlights that DPSP Mandalika has more tourist villages that are at the digitally ready level compared to Borobudur. It shows that the more challenging the village's access to the market, the more innovative it is in making digital transformation one of its advantages. For tourism villages located in DPSP Mandalika, limitations in accessing the market make their efforts to carry out digital transformation even greater. They know the benefits of digital transformation in encouraging tourism villages to penetrate the market. However, if averaged cumulatively, Borobudur DPSP is better prepared for digital transformation than Mandalika DPSP. Some of the superior things from DPSP Borobudur include Technology infrastructure (Signal Availability, Electricity Availability), Customer / Visitor Awareness (Social Media Preferences), Digital Skills (HR Ability to use ICT), Knowledge Exchange (Information Exchange Process, Support for Open Innovation), Awareness of the importance of Digital Transformation, and Leadership (Commitment).

Figure 8. Grouping Matrix of Tourism Villages in DPSP Borobudur Tourism Villages

Meanwhile, some things that excel from DPSP Mandalika are awareness of the importance of digital transformation and leadership as well as the availability of electricity. In addition, there was no relationship between the status of tourism

villages assessed by the Ministry of Tourism and Creative Economy (Pioneering, Developing, Advanced, Independent) and digital transformation readiness. This is because the assessment related to the transformation and digital readiness of Tourism Villages has not been an essential aspect of its assessment. In formulating a strategy to increase digital transformation readiness in tourism villages, it is necessary first to identify the position of the tourism village's product portfolio to see its grouping. Figure 8 and Figure 9 shows the position of the tourism village portfolio in terms of digital transformation, as seen from the level of external attractiveness and competitive position of the tourism villages.

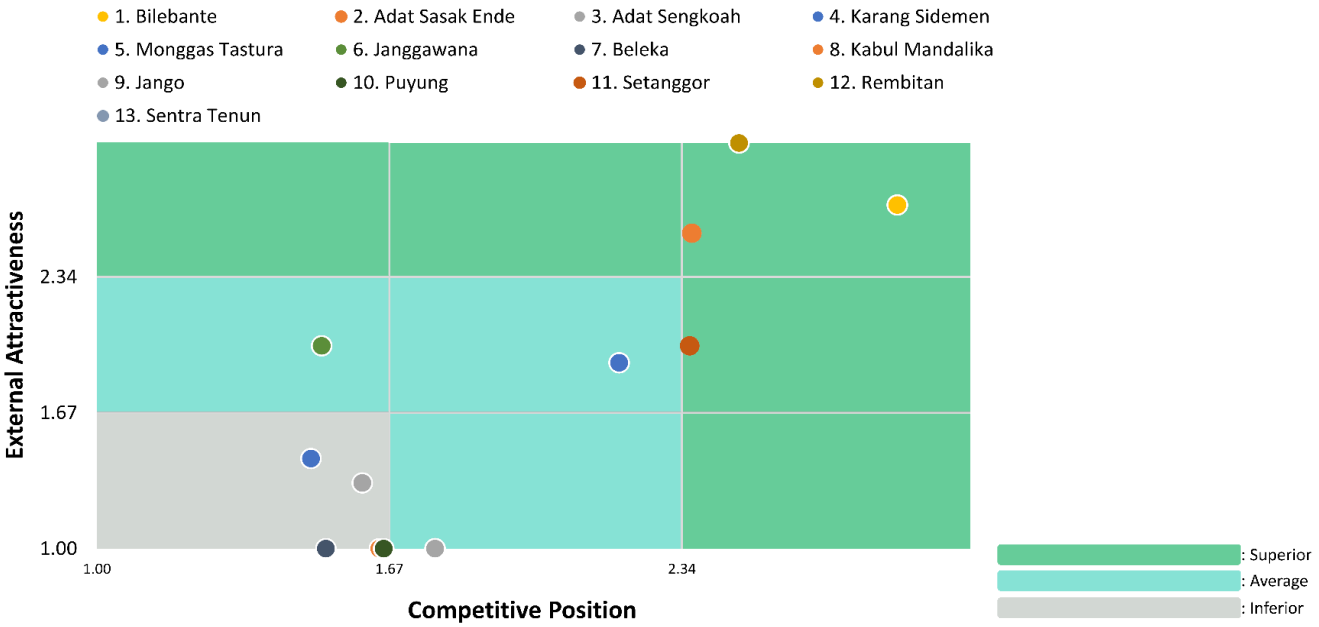

Figure 9. Grouping Matrix of Tourism Villages in DPSP Mandalika Tourism Villages

In Borobudur DPSP (Figure 8), the superior quadrant includes only one village, the Candirejo Tourism Village. The average quadrant consists of 11 tourism villages: Kampoeng Dolanan, Karang Anyar, Karangrejo, Kebonlegi, Kebonsari, Kembanglimus, Ngargogondo, Ngargoretno, Ngawen, Tuksongo Borobudur, and Wanurejo.

Meanwhile, DPSP Mandalika (Figure 10) has more tourism villages in the superior product category, namely Bilebante Village, Sasak Ende Custom, Setanggor, and Rembitan. The average product quadrant contains three: Sengkoah Sengkoah Traditional Village, Karang Sidemen, and Kabul Mandalika. Unlike DPSP Borobudur, six tourism villages of DPSP Mandalika tourism village has six villages that are included in the inferior quadrant, namely Monggas Tastura, Janggawana, Beleka, Jango, Puyung, and Sentra Tenun.

Based on Figures 6 to 9, we created a quadrant-based strategic framework to help us get insightful data from the digital readiness of tourism villages. Each quadrant shows a mix of internal digital capability and external attractiveness (market opportunity), helping to shape different intervention strategies:

- **The Superior Quadrant (High Readiness – High Attractiveness):** It includes villages like Candirejo, Bilebante, Sasak Ende, Setanggor, and Rembitan. These villages should work on scaling up digital innovations, introducing more digital products to their portfolios (such as virtual tours and digital booking systems), and forming strategic partnerships with technology providers and marketplaces. These villages can also be used as examples for other areas to follow or as pilot cases for how to do things.
- **Average Quadrant (Moderate Readiness – Moderate Attractiveness)**: Villages like Karangrejo and Wanurejo fall into this group. They need to make small improvements to their digital marketing skills, train their staff, and improve their digital infrastructure. These areas have a lot of potential, but they need help from local government programs and targeted capacity-building efforts.
- **Inferior Quadrant (Low Readiness – Low Attractiveness):** Villages like Jango, Monggas Tastura, and Puyung need to build up their basic digital skills. This group wants to set up basic ICT infrastructure, find local youth leaders, and make sure they have strong partnerships with universities, NGOs, or the private sector to help people become more digitally empowered. There should be a staged roadmap that starts with raising awareness and training and then moves on to implementing digital technology gradually.

This strategic categorization enables stakeholders, especially ministries, regional tourism boards, and funding agencies, to adjust their interventions, better manage their budgets, and keep track of how things are changing by looking at measurable outcomes at different levels of readiness.

Collaboration from actors, be it government, academics, or the private sector, is one indicator of digital transformation readiness for tourism villages included in the superior quadrant in Borobudur and Mandalika. Collaboration from actors, be it government, academics, or the private sector, is one indicator of digital transformation

readiness for tourism villages included in the superior quadrant in Borobudur and Mandalika. This is aligned with the findings of Wahyuningtyas et al. (2023), who emphasized the role of cooperative competitiveness and multi-actor collaboration as key enablers of inclusive community development in the context of Economic Society 5.0.

These five superior tourism villages (Candirejo, Bilebante, Adat Sasak Ende, Setanggor, and Rembitan) collaborate with various parties to optimize digitalization in their villages. Biliebante Tourism Village, for example, collaborates with Atourin, a travel marketplace platform, to promote sustainable tourism. In addition, as a fostered design of Bakti BCA, Bilebante opens up opportunities for cooperation with various parties.

In addition to collaboration between actors, the availability of digital infrastructure (such as Wi-Fi and internet signals) is also an indicator of digital transformation readiness owned by tourism villages in Borobudur and Mandalika. The five superior tourism villages in Borobudur and Mandalika have good digital infrastructure. Most of the five villages already have a good internet network, although some do not have smooth Wi-Fi.

For tourism villages that fall into the inferior quadrant (Monggas Tastura, Janggawana, Beleka, Jango, Puyung, and Sentra Tenun), digital transformation readiness indicators that must be improved are strategy and investment. These five tourism villages do not yet have a specific strategy or investment in digital transformation. Janggawana Village, for example, is a village included in this pioneer village classification that does not yet have a unique approach and investment in digital transformation. Various obstacles were faced, such as the absence of a management team focusing on digitalization to polemics in village governance. The condition is similar to what happened in Puyung village, where the main obstacle is the absence of support from the village related to the development of digitalization of tourism villages. Unlike the previous two tourism villages, Jango Tourism Village has investors who enter into management agreements within a few years with the Tourism Awareness Group (POKDARWIS).

Even so, Pokdarwis in Jango Tourism Village does not yet have a usable work plan, strategy, and target regarding digital transformation as a reference for the future. Tourism village managers have not been able to directly feel the impact of private investment through technology transfer and knowledge about digital transformation.

The research proposed models for assessing digital readiness in tourism by adopting several approaches from previous studies. Using the model, two critically important tourism villages in Indonesia were assessed. Several intriguing issues to discuss arose from the assessment results, such as the digital readiness in diverse contexts, the role of strategic and government policies, human and cultural issues, and sustainable tourism.

Digital readiness in diverse contexts refers to the level of preparedness individuals and organisations possess in effectively utilising digital technologies in various settings. This encompasses the ability to adapt and navigate digital platforms, tools, and resources to achieve desired outcomes in a wide range of environments.

The findings section highlights the challenges in diverse settings, showcasing the contrasting digital transformation readiness between DPSP Borobudur and Mandalika. The need for localised strategies tailored to each village's unique context is underscored by the disparity in infrastructure, digital literacy, and strategic planning. The contrasting approaches of Borobudur and Mandalika, with Borobudur emphasising digital payment and social media marketing while Mandalika focuses on natural and cultural attractions, highlight the importance of customised digital strategies. These findings align with prior studies that emphasize indicating the significance of tailored digital strategies in the management of tourist villages (Afrilian, 2022; Wiweka et al., 2021; Nasution et al., 2023; Supriadi et al., 2024). In particular, the lifecycle-based approach documented by Wiweka et al. (2021) in Desa Wisata Nglanggeran highlights how tourism villages in Indonesia can undergo systematic rejuvenation while embracing digital innovation.

The pivotal significance of strategic planning and policy-making cannot be overstated when it comes to shaping the digital landscape of tourism villages. According to the findings, it can be inferred that villages that possess stronger digital strategies, which are further reinforced by government policies and investments such as the establishment of Wi-Fi infrastructure, are more adept at utilising digital technologies to foster growth in the tourism sector.

The aspect is in accordance with prevailing global patterns, underscoring the significance of comprehensive approaches that encompass various actors (Vu et al., 2025). The alignment observed in this statement is consistent with the findings of Bencheva & Manevsky (2019), Ivancsóné Horváth et al. (2025), and García-Cabrera & Pérez-Tapia (2023), which collectively highlight the importance of developing integrated and context-specific strategies to ensure successful digital transformation in tourism systems. This is in line with Ivancsóné Horváth et al. (2025), who demonstrated how the digitalization of traditional angling tourism can modernize local experiences without eroding cultural authenticity. Similarly, this study shows that culturally grounded tourism villages such as Candirejo and Wanurejo are capable of adopting digital tools while maintaining local traditions and values.

Human resource development and cultural adaptation are widely recognized as critical components for organizational success in the context of digital transformation. The process involves enhancing employees' digital skills, cultural competencies, and institutional readiness to adapt to evolving technological landscapes.

Consistent with previous studies (Hien et al., 2020; Pranita, 2018; Huynh et al., 2025), the findings of this study indicate that villages prioritizing digital literacy programs and cultural integration—such as Candirejo and Wanurejo—demonstrate significantly higher levels of digital maturity compared to those lacking such initiatives. Villages that demonstrate higher digital maturity often share a common characteristic—strong local knowledge ecosystems and continuous learning efforts. This is consistent with findings from digital transformation research in small-medium enterprises, which emphasize the importance of knowledge base development (Pratama et al., 2021).

The research elucidates the dichotomous essence of digital transformation in the tourism industry, whereby it augments the quality of tourist experiences while concurrently posing obstacles such as the potential dilution of cultural authenticity. The finding presented in this statement aligns with the ongoing global discourse surrounding sustainable tourism, wherein the digital preparedness factor must be carefully weighed against the preservation of tourist attractions and the integrity of local communities, as previously emphasised as previously emphasised by Wardhani & Widodo (2020), who highlighted the role of destination innovativeness in achieving competitive advantage while navigating structural and cultural transformation.

The implications of the study's findings extend to the global domain of digital transformation in the tourism industry. Valuable lessons are provided for other emerging economies grappling with comparable challenges in the digitalization of their tourism sectors. Moreover, this research presents opportunities for future investigations into the enduring effects of digital transformation on tourism villages, specifically in relation to sustainability and the empowerment of communities.

CONCLUSION

Digital economy has been prominent issue in developing Indonesian economy that boasts its tourism and leisure reputations. This research proposed a model to assess the readiness of tourism villages in Indonesia to transform its operation towards digital economy. The implications of the study's findings extend to the global domain of digital transformation in the tourism industry. Valuable lessons are provided for other emerging economies grappling with comparable challenges in the digitalization of their tourism sectors.

Moreover, this research presents opportunities for future investigations into the enduring effects of digital transformation on tourism villages, specifically in relation to sustainability and the empowerment of communities.

However, there were some limitations that must be admitted related to the study. The methodology employed in this study, which heavily relies on qualitative assessments and incorporates only a limited number of quantitative metrics, may potentially fail to comprehensively capture the intricate nuances associated with the phenomenon of digital transformation. The research's scope, which is restricted to regions in Indonesia, constrains its applicability to different contexts. The findings pertain solely to the period of investigation and the designated areas, DPSP Borobudur and Mandalika. Given the dynamic nature of digital transformation, it is imperative to continuously reassess the readiness levels and challenges as they may evolve over time. Although the study acknowledges the significance of cultural factors in digital transformation, it falls short in delving into the intricate intricacies of social dynamics and their consequential influence on the adoption of digital technologies in tourism villages.

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