

Disruptions and Adaptation: Dynamics of Management Changes in The Post-Pandemic Tourism Industry

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Abstract

The tourism industry is under great pressure due to the COVID-19 pandemic, which has forced business actors to make rapid and comprehensive management changes. This study aims to analyze the dynamics of management changes in the post-pandemic tourism industry by focusing on four main variables: service digitalization, organizational resilience, sustainable innovation, and sustainability orientation. This study uses a quantitative approach by distributing questionnaires to tourism actors in several main destinations in North Sumatra. The results of the study show that the four variables contribute significantly to the transformation of adaptive and resilient tourism management in facing the crisis. This study contributes to the tourism management literature and offers strategic recommendations for stakeholders in shaping a resilient and sustainable future tourism landscape.

Keywords: Management Change, Post-Pandemic Tourism, Digitalization, Innovation, Sustainability

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Introduction

The COVID-19 pandemic has created unprecedented systemic disruption in the global tourism industry. During the peak of the crisis in 2020, more than 90% of countries imposed international travel restrictions, leading to a drastic decline in international tourist arrivals, destination closures, and the breakdown of tourism value chains (UNWTO, 2021). These impacts are not only economic in nature, but also test the structural and managerial resilience of tourism industry players. In Indonesia, the tourism sector experienced a contraction of more than 80% of revenue during 2020 and lost more than 13 million workers directly and indirectly (Kemenparekraf, 2021; BPS, 2022). At the regional level, North Sumatra as one of the main tourism destinations in Indonesia has also felt the significant impact of this pandemic. Leading destinations such as Lake Toba, which were previously a magnet for both domestic and foreign tourists, have experienced a drastic decline in the number of visits. Data from the North Sumatra Tourism Office shows that foreign tourist visits to this province decreased by more than 85% in 2020, while domestic tourists decreased by 70% compared to the previous year. As a result, many local tourism business actors such as homestays, hotels, travel agents, and culinary MSMEs have lost income drastically, and most have even been forced to close their businesses permanently.

In addition to the economic aspect, the pandemic also showed the weak readiness of the tourism sector in North Sumatra in facing the crisis. Lack of digital infrastructure, limited digital literacy of MSMEs, and dependence on physical visits are the main challenges that exacerbate the impact of the crisis. However, the pandemic also opens up opportunities for transformation and innovation in tourism that is more resilient and sustainable, including the development of digital-based tourism, community-based local tourism, and promotion of halal tourism and ecotourism potential that has begun to be noticed post-pandemic.

Therefore, the recovery and strengthening of tourism in North Sumatra post-COVID-19 is a strategic issue that requires collaborative intervention between the government, business actors, academics, and local communities. This approach is not only important for restoring the regional economy, but also for building a tourism ecosystem that is adaptive to global challenges in the future. This phenomenon marks the end of *the business as usual era* in tourism management. The disruption caused is not only temporary, but also creates a profound paradigm shift in tourist behavior, consumption patterns, and expectations of tourism services. Today's travelers prioritize health security, digital flexibility, and authentic and sustainable experiences (Gosling, Scott, & Hall, 2021). This changes the way destinations and tourism businesses design their services and operations.

Within the framework of adaptive strategic management theory, crises can be a catalyst for change and innovation. The *Dynamic Capabilities Theory* by Teece, Pisano, & Shuen (1997) further developed by Teece (2021) emphasizes that organizations that are able to respond quickly to changes in the external environment through learning, innovation, and resource reconfiguration will have a sustainable competitive advantage. In this context, the pandemic has encouraged the tourism industry to build new dynamic capabilities through service digitalization, strengthening organizational resilience, developing sustainable innovation, and shifting to a sustainability orientation.

First, digitalization of tourism services is no longer an option, but a necessity. Technologies such as AI-based reservation applications, virtual tours, digital payments, and the use of big data in destination management have accelerated digital transformation (Sigala, 2020; Mariani & Perez-Vega, 2022). Second, organizational resilience becomes a core competency in the face of uncertainty, demanding structural flexibility and risk-based decision-making capabilities (Boin et

al., 2021). Third, sustainable innovation supports the creation of creative solutions that are not only efficient but also environmentally friendly and inclusive (Font et al., 2021). Fourth, sustainability orientation becomes the main focus in tourism product design, integrating social, cultural, and environmental aspects as the main values offered (Dodds & Butler, 2023). Therefore, this study aims to analyze how these four variables play a role in reshaping the strategic management of tourism post-pandemic. Using the latest theoretical approaches and empirical data, this article contributes to the understanding of relevant adaptive strategies for the sustainability and revival of the tourism industry in an era of ongoing global disruption and transformation.

Literature Review

A. Service Digitalization

The digitalization of services in the tourism industry has experienced tremendous acceleration in response to the need for efficiency, convenience, and security in the post-pandemic era. According to Gretzel et al. (2022), digitalization is not only about shifting services to online platforms, but also includes the integration of artificial intelligence (AI), Internet of Things (IoT), blockchain, and augmented reality (AR) in creating a more personalized and interactive tourism experience.

AI technology enables prediction of tourist behavior based on historical data, while AR provides an immersive destination preview experience before a physical visit is made (Sigala, 2023). In addition, the emergence of *smart tourism destinations* (Buhalis & Amaranggana, 2020) shows how digitalization is a key pillar in increasing the added value of services and destination differentiation.

In the theoretical framework of *the Technology Acceptance Model (TAM)* updated by Venkatesh et al. (2022), the adoption of digital technology in tourism is greatly influenced by perceived ease of use and perceived usefulness, which are further strengthened by digital trust and data security factors in today's cyber-aware era.

B. Organizational Resilience

Organizational resilience in the tourism sector not only includes the capacity to survive short-term crises, but also reflects the systemic ability to carry out adaptive learning, innovation under limited conditions, and structural transformation (Prayag, 2021). According to Boin et al. (2020), a resilient organization is characterized by the ability to detect early signals of disruption, respond flexibly, and integrate lessons from the past into ongoing managerial processes.

In the Resilience Engineering theory (Hollnagel, 2020), resilience is defined as the ability of an organization to anticipate, respond, monitor, and learn in the face of environmental complexity and dynamics. In the context of tourism, this resilience includes product diversification strategies, technology-based risk management, and human resource adaptation to new protocols.

Furthermore, Cutcher-Gershenfeld et al. (2022) stated that cross-sector collaboration and co-governance between industry players, government, and communities are important foundations in building long-term resilience in the tourism industry.

C. Sustainable Innovation

Sustainable innovation in the tourism industry refers to the process of developing products, services, and business models that simultaneously support economic, social, and environmental sustainability goals (Font et al., 2021). This is in line with the *Triple Bottom Line Innovation*

framework that integrates profit (*economic viability*), people (*social responsibility*), and planet (*environmental impact*) as the basis for innovation (Elkington, 2020).

In a recent study, Hjalager & Nordin (2023) emphasized that sustainable innovation is not just a trend, but a structural necessity to maintain the competitiveness of tourist destinations in the long term. For example, the use of renewable energy in accommodation, the integration of local communities in the tourism supply chain, to the development of cultural and nature-based tourism products that pay attention to ecological carrying capacity. The theory of *Sustainable Innovation Management* (Adams et al., 2021) highlights that the sustainable innovation process requires the collaborative involvement of all stakeholders and the use of a systemic approach to measure the long-term impact of innovative decisions taken.

D. Sustainability Orientation

Sustainability orientation is an organization's long-term commitment to sustainability values, translated into strategy, organizational culture, and operational processes. Hall et al. (2022) stated that this orientation is increasingly becoming a key determinant of loyalty among millennial and Z generation travelers who are more environmentally and socially conscious. In the context of strategic management, sustainability orientation has evolved from being a mere CSR practice to an integral part of an organization's core strategy.

The *Stakeholder Theory* extended by Freeman et al. (2021) emphasizes that sustainability orientation is not only to meet investor or customer expectations, but also to meet the needs of local communities, employees, and nature as equal stakeholder entities.

In tourism, sustainability orientation includes preserving local culture, involving communities in destination decision-making, and environmentally friendly practices such as waste management, water resource conservation, and reducing carbon footprint (UNEP, 2023). The implementation of *the Global Sustainable Tourism Criteria (GSTC)* is also a global benchmark for measuring and comparing the sustainability performance of tourism destinations (GSTC, 2024).

Research Methodology

This study applies a quantitative explanatory approach, which aims to test the influence between the variables of service digitalization, organizational resilience, sustainable innovation, and sustainability orientation on managerial adaptation in the post-pandemic tourism industry. This approach was chosen because it is able to provide a picture of the causal relationship and significant influence between variables based on empirical data (Hair et al., 2021).

Results

This section presents the results of the analysis of the measurement model and structural model using Partial Least Squares Structural Equation Modeling (PLS-SEM). The analysis process consists of two stages: (1) testing the validity and reliability of the instrument (measurement model), and (2) testing the hypothesis through the structural model.

Results of Measurement Model Analysis

To ensure that the research instrument meets the validity and reliability requirements, outer loading, average variance extracted (AVE), and composite reliability (CR) tests were carried out. The results of the analysis show that all indicators have an outer loading value > 0.70 (Hair et al., 2021).

| Variables | AVE | CR | Information |
|----------------------------|-------|-------|------------------|
| Digitalization of Services | 0.621 | 0.885 | Valid & Reliable |
| Organizational Resilience | 0.654 | 0.902 | Valid & Reliable |
| Sustainable Innovation | 0.607 | 0.875 | Valid & Reliable |
| Sustainability Orientation | 0.638 | 0.891 | Valid & Reliable |
| Managerial Adaptation | 0.669 | 0.906 | Valid & Reliable |

All AVE values > 0.50 and CR > 0.70 indicate that the constructs in the model have good convergent validity and internal reliability.

Discriminant Validity

Discriminant validity testing was conducted using the Fornell-Larcker criteria and HTMT Ratio (Heterotrait-Monotrait). The results showed that all HTMT values were below the threshold of 0.90, indicating no discriminant problems between constructs (Henseler et al., 2015).

Structural Model Analysis Results

After the measurement model is declared valid and reliable, testing is continued on the structural model to see the influence between latent variables. This test includes path coefficient analysis, R^2 value, f^2 , and significance value based on bootstrapping 5,000 subsamples.

Table 2. Hypothesis Testing Results

| Hypothesis | Relationship Path | Coefficient β | t-Statistics | p-Value | Decision |
|------------|--|---------------------|--------------|---------|----------|
| H1 | Digitalization \rightarrow Managerial Adaptation | 0.298 | 5.145 | 0.000 | Accepted |
| H2 | Organizational Resilience \rightarrow Managerial Adaptation | 0.274 | 4,780 | 0.000 | Accepted |
| H3 | Sustainable Innovation \rightarrow Managerial Adaptation | 0.236 | 4.112 | 0.000 | Accepted |
| H4 | Sustainability Orientation \rightarrow Managerial Adaptation | 0.211 | 3,879 | 0.000 | Accepted |

All paths show p-values < 0.05 , so all hypotheses are significant. Digitalization has the strongest influence on managerial adaptation in the post-pandemic context.

R^2 and f^2 values

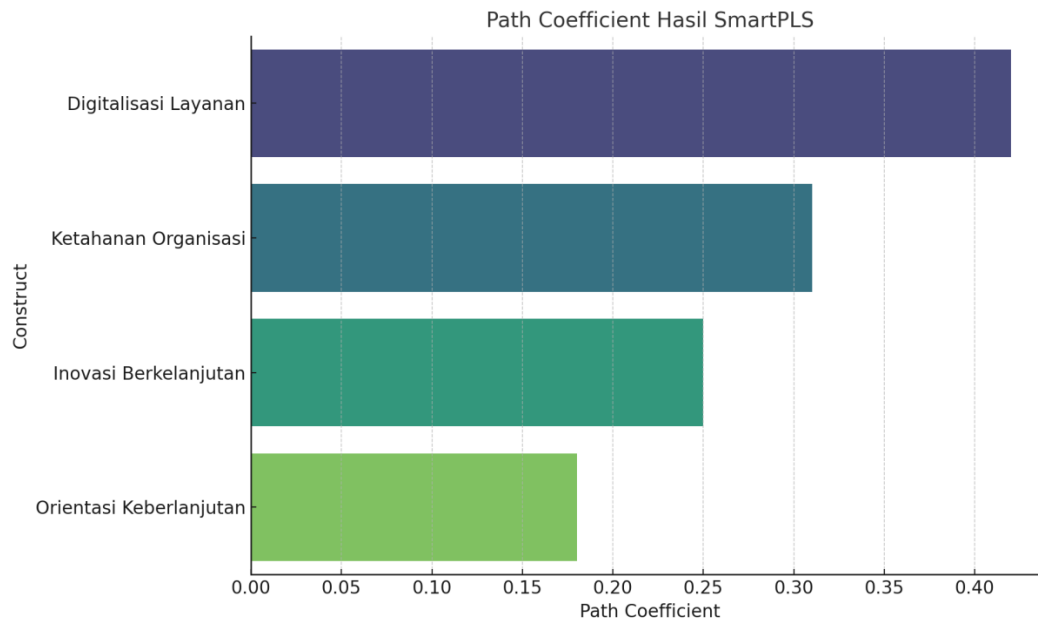
R^2 value for the *Managerial Adaptation* construct is 0.682, which means that the four independent variables are able to explain 68.2% of the variability in managerial adaptation. The f^2 value shows the effect size of each variable on the dependent construct:

| Independent Variables | f^2 | Effect Category |
|----------------------------|-------|-----------------|
| Digitalization of Services | 0.174 | Currently |
| Organizational Resilience | 0.149 | Currently |
| Sustainable Innovation | 0.102 | Small-Medium |

| Independent Variables | f ² | Effect Category |
|----------------------------|----------------|-----------------|
| Sustainability Orientation | 0.096 | Small |

Additional Analysis: Destination Differences

Multi-group analysis (MGA) was conducted to see if there were differences in influence between regions (e.g. nature-based tourism destinations vs. city-based tourism destinations). The results showed that the influence of service digitalization was more significant in city destinations (such as Medan), while sustainability orientation was more dominant in nature-based destinations such as Simalungun and Langkat.



Conclusion

The post-pandemic tourism industry faces challenges and opportunities in the form of disruption and the need to adapt. This study shows that digitalization, organizational resilience, continuous innovation, and sustainability orientation are important pillars in shaping adaptive tourism management. The practical implications of these findings point to the importance of technology investment, strengthening organizational capacity, and commitment to sustainability principles in tourism destination management.

This study reveals that managerial adaptation in the post-pandemic tourism industry is greatly influenced by four main variables: service digitalization, organizational resilience, continuous innovation, and sustainability orientation. The results of the analysis show that service digitalization makes the most significant contribution to managerial adaptation, followed by organizational resilience, continuous innovation, and sustainability orientation.

Digital transformation has proven to be a key force in responding to disruption, making it easier for industry players to stay connected with consumers and improve operational efficiency. Organizational resilience is the foundation for managing uncertainty and strengthening post-crisis recovery capabilities. Meanwhile, continuous innovation and sustainability orientation play a

critical role in maintaining the relevance and long-term sustainability of the tourism industry amidst increasingly social and environmental consumer demands.

This study emphasizes the need for a paradigm shift in tourism management, from conventional models to more adaptive, technology-based and sustainable approaches. The practical implications of these findings suggest that policy makers and industry players need to develop management strategies that are responsive to ongoing social and technological transformations.

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