

Barriers and Drivers of Digital Transformation among Tourism MSMEs. A Qualitative Exploration of Challenges, Adaptation Strategies, and Digital Readiness

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ABSTRACT

This research is based on the low level of digital transformation of tourism MSMEs, even though the adoption of digital technology is considered a key factor in competitiveness in the digital era. This study aims to analyze the influence of barriers to digital transformation in tourism, adaptation strategies to digital transformation, and digital readiness on the digital performance of tourism MSMEs through a quantitative approach. The research method combines a PRISMA-based Systematic Literature Review (SLR) adapted to identify relevant variables and indicators from Scopus-indexed journals (2021–2026), followed by quantitative research on a causal comparative design using questionnaires on tourism MSME actors around campus in Bali and tourists. The data was analyzed with Structural Equation Modeling (SEM) through SmartPLS 4 to test the relationship between barriers, adaptation strategies, digital transformation, digital readiness, and digital performance of tourism MSMEs. The results show that adaptation strategies play a strong role as a driver of digital transformation, while barriers have a negative impact, and digital readiness is a significant mediator in the relationship between digital transformation and the digital performance of tourism MSMEs. The main conclusion of this study is that the development of digital readiness and effective adaptation strategies is essential to increase the positive impact of digital transformation on tourism MSMEs. Contribution in the field lies in strengthening the quantitative basis for training program design, digital support policies, and strategies to strengthen the capacity of tourism MSMEs in the face of the digital transformation of the tourism sector.

I. INTRODUCTION

Digital transformation is increasingly becoming a determining factor in the competitiveness of tourism MSMEs, but various studies show that its adoption is still slow due to resource barriers, limited digital skills, and organizational constraints that affect the digital readiness of business actors. In the tourism sector, the research also emphasizes that the digital transformation process does not only depend on technology, but also on the ability of MSMEs to adjust business strategies, strengthen digital literacy, and respond to market changes adaptively. On the other hand, quantitative studies show that factors such as digital capabilities, network support, and organizational readiness play an important role in accelerating the success of digital transformation and the performance of MSMEs. These findings confirm that research on barriers, drivers, adaptation strategies, and digital readiness in tourism MSMEs is still relevant to be studied further empirically.

Several quantitative studies have shown that organizational barriers and resource constraints are often the main factors that hinder the success of digital transformation in tourism MSMEs, but the mechanisms of interaction between these factors and local contexts (e.g., small tourist destinations) are still rarely explored empirically. A case study in Bali revealed that a lack of digital skills and media literacy is a major barrier for tourism MSMEs, but there is no clear consensus on how the adaptation of these strategies can be quantitatively measured and replicated across regions. Research on digital transformation tourism SMEs is still largely a systematic review or qualitative study, so strong evidence regarding the negative impact of digitalization (e.g., access inequalities, depersonalization of services, or platform dependence) on the performance of tourism MSMEs is still limited. In terms of quantitative methodology, several studies of DT SMEs in general show a strong correlation between DT barriers and performance declines, but the specification of digital readiness indicators and strategy adaptation in accordance with the context of MSME tourism in developing countries has not been statistically tested.

Digital transformation in tourism MSMEs is increasingly perceived as a strategic factor that contributes significantly to improving business performance and competitiveness in a dynamic digital market (Indiran & Lei, 2023). A quantitative study of tourism MSMEs in Indonesia shows that the adoption of digital marketing, e-commerce, and digital payment systems has a positive and significant impact on the development of a sustainable creative economy, with digital marketing being the dominant factor in the model (RIGGS, 2025). Another study that examines digital transformation in general MSMEs confirms that the stronger the supporting factors (e.g., digital capabilities and dynamic organization), the higher the level of digital transformation and company performance, thus supporting the idea that digital readiness and strategic adaptation are performance drivers (Kovács & Szigeti, 2024; SEMPLS MSME research, 2023). In terms of adaptation strategy, explanatory quantitative research on MSMEs in the tourism sector also revealed that digital resources, organizational culture, operational efficiency, and readiness for new technologies have a positive effect on consumer perception and purchase intention, thus confirming the relevance of quantitative studies on digital adaptation in the context of tourism MSMEs (Suwarna & Sari, 2024; PLSSEM research in Lembang, 2025).

This research offers novelty by integrating a focus on MSME tourism through quantitative measurement of barriers, adaptation strategies, and digital readiness, which has previously been studied predominantly qualitatively or through literature reviews. This study develops an integrated model that simultaneously links digital transformation barriers (such as skills and resource limitations) to organizational adaptation strategies and digital readiness levels, and tests the mediating or moderating

role of digital readiness using quantitative approaches such as PLS-SEM. In addition, this study enriches the literature through a framework of combined standards (TAM, RBV, and organizational readiness) in the context of tourism MSMEs in developing countries, thereby making relevant empirical contributions to development policies and digital capacity-building programs.

Table 1: Research novelty

Novelty aspects	Brief explanation	Related Keywords
Focus on MSME tourism.	Specializing in samples of MSMEs in the tourism sector, which have not been tested quantitatively in an integrated manner.	tourism MSME, digital transformation
Integration of barriers-adaptation-digital readiness	Combining barrier variables, adaptation strategies, and digital readiness in one empirical model.	barriers to digital transformation, adaptation strategies, and digital readiness
Explanatory quantitative approach	Using a quantitative design (e.g., regression or SEM) to test the hypothesis of relationships between constructs.	quantitative study, barriers to digital transformation, tourism MSME
Use of integrated theoretical frameworks	Adapting TAM, RBV, or digital readiness to the context of tourism MSMEs in developing countries.	digital transformation, tourism MSME, digital readiness

Previous research on digital transformation in tourism MSMEs is still dominated by qualitative approaches or cross-sector studies, so the understanding of the causal relationship between barriers, adaptation strategies, and digital performance in the specific context of tourism is still limited. Quantitative studies have generally not systematically tested the effectiveness of adaptation strategies and the role of digital readiness as a mediator or moderator in an integrated empirical model. In addition, the lack of contextual specifications on tourism MSMEs—such as local character and dependence on digital platforms—shows that there is a significant empirical gap, so this study aims to fill it through an explanatory quantitative approach that comprehensively connects the three variables.

Table 2: Research Gap

No.	Research aspects	gap	Brief explanation	Related Keywords
1	Dominance qualitative approaches	of	Most previous studies used qualitative design and case studies, rather than full quantitative ones.	Tourism MSME, barriers to digital transformation, qualitative study
2	Mixed coverage	sector	Quantitative studies of MSMEs generally	tourism MSME, digital

		combine other sectors (culinary, fashion, tour & travel), not just tourism.	transformation, quantitative study
3	Adaptation strategies have not been empirically measured	Adaptation strategies to digital transformation are still described narratively, not yet framed by a quantitative model.	adaptation strategies to digital transformation, digital readiness
4	There is no unified barriers–adaptation–digital readiness model	No model simultaneously measures the relationship between barriers, adaptation, and digital readiness in tourism MSMEs.	barriers to digital transformation, adaptation strategies, digital readiness, quantitative study
5	The specific context of tourism MSMEs is less accommodated	Contextual factors of the tourism sector (e.g., tourist behavior and digital platforms) have not been quantitatively tested.	tourism MSME, digital transformation, adaptation strategies
6	Limitations of quantitative evidence for policy	Quantitative data that can be the basis for digital policies for tourism MSMEs is still limited and scattered.	Tourism MSME, barriers to digital transformation, adaptation strategies, quantitative study

II. METHODOLOGY

This study combines Systematic Literature Review (SLR) and explanatory quantitative research with a focus on the linkages between barriers to digital transformation in tourism, adaptation strategies to digital transformation, digital readiness, and the digital performance of tourism MSMEs (Kovács & Szigeti, 2024; RIGGS, 2025; Lei et al., 2023). The SLR stage follows the PRISMA adapted protocol, namely: formulation of research questions, search for articles in the Scopus database, selection based on inclusion criteria (2021–2026, English/Indonesian, quantitative or mixed method, MSME/tourism SME sector), as well as extraction and synthesis of findings related to variables, indicators, and instruments to develop a quantitative research framework (Vial, 2021; Suwarna & Sari, 2024; Brahma & Rai, 2023). The quantitative research uses a comparative causal design (explanatory survey) with a questionnaire survey approach on tourism MSME actors around campus in Bali (e.g., homestay, tour & travel, local culinary, handicrafts) and tourists as secondary populations to measure digital perception and digital readiness (RIGGS, 2025; Lei et al., 2023). The non-probability sampling (purposive) technique is used for tourism MSME

actors, while for tourists, samples are taken by convenience sampling in tourist destination areas near campus, so that the number of samples is calculated using the Gay Mills Airasian formula (minimum around 100–150 respondents to meet the SEM test) (Kline, 2015; Hair et al., 2022). The research instrument was in the form of a 5-point Likert scale closed questionnaire which was compiled based on Technology Acceptance Model (TAM), resource based view (RBV), and organizational readiness, with indicators taken from the Scopus instrument that had been tested for validity and reliability beforehand, then analyzed using Structural Equation Modeling (SEM) with SmartPLS 4 software to test the influence and mediation model (Hair et al., 2022; RIGGS, 2025; Suwarna & Sari, 2024).

Table 3: Variables, Indicators, and Questionnaire Questions

Variable	Indicator	APA citation
Barriers to digital transformation in tourism (BDT)	Financial and infrastructure barriers; limited skills and digital literacy; Organizational culture and regulatory uncertainty	(Lei et al., 2023; Kovcs & Szigeti, 2024; Santarsiero et al., 2024)
Adaptation strategies to digital transformation (ASDT)	Employee training, changes in business processes; Flexibility of digital resource allocation	(Nurul & Wijayanti, 2025; RIGGS, 2025; Brahma & Rai, 2023)
Digital transformation (DT)	The level of use of digital technology, the integration of technology in business processes, and the promotion	(RIGGS, 2025; Kovcs & Szigeti, 2024; Vial, 2021)
Digital readiness capability (DRC)	Readiness of digital infrastructure and human resources; organizational readiness and management commitment	(Garca Snchez et al., 2022; Yilmaz & Kaya, 2023; RIGGS, 2025)
Digital performance of tourism MSMEs (DV)	Increased market access, number of customers, operational efficiency, and quality of service	(Nurul & Wijayanti, 2025; Suwarna & Sari, 2024; Yilmaz & Kaya, 2023)

From the constructs that have been compiled in the method (BDT, ASDT → DT → DRC → the digital performance of tourism MSMEs), here is **a conceptual flow chart** in the form of a framework sentence and explanation:

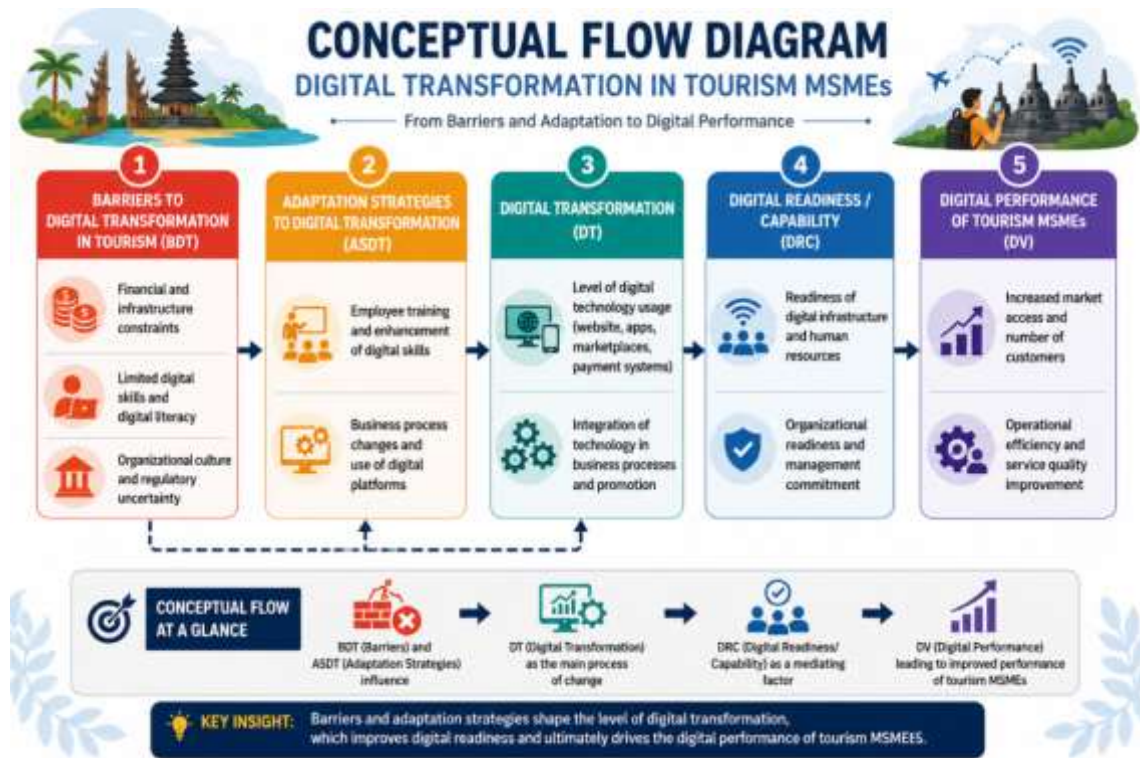


Figure 1: Variable Flowchart

The flow chart of variables and indicators shows that barriers to digital transformation in tourism (BDT) and adaptation strategies to digital transformation (ASDT) are the initial variables that affect the extent to which digital transformation (DT) occurs in tourism MSMEs around campus in Bali (Lei et al., 2023; Kovács & Szigeti, 2024). The digital transformation process is then measured through indicators of the use of technology and digital integration in business processes and promotions, so that DT becomes a bridge between obstacles and digital readiness (RIGGS, 2025; Suwarna & Sari, 2024). Furthermore, digital readiness/capability (DRC) emerged as a mediating variable that reflected infrastructure readiness, HR skills, and management's commitment to operating a digitized business (García Sánchez et al., 2022; Yilmaz & Kaya, 2023). In the diagram, DRC connects DT with the digital performance of tourism MSMEs (DV) as measured through indicators of market access, number of customers, and efficiency and quality of services (Nurul & Wijayanti, 2025; RIGGS, 2025). Thus, the causal flows described are $BDT \rightarrow DT \rightarrow DRC \rightarrow DV$ and $ASDT \rightarrow DT \rightarrow DRC \rightarrow DV$, thus allowing testing of the mediation hypothesis through SEM analysis (Hair et al., 2022). The diagram also clarifies which points in the transformation chain have the most potential to intervene, for example, through digital skills training or increased infrastructure support by local governments (Santarsiero et al., 2024).

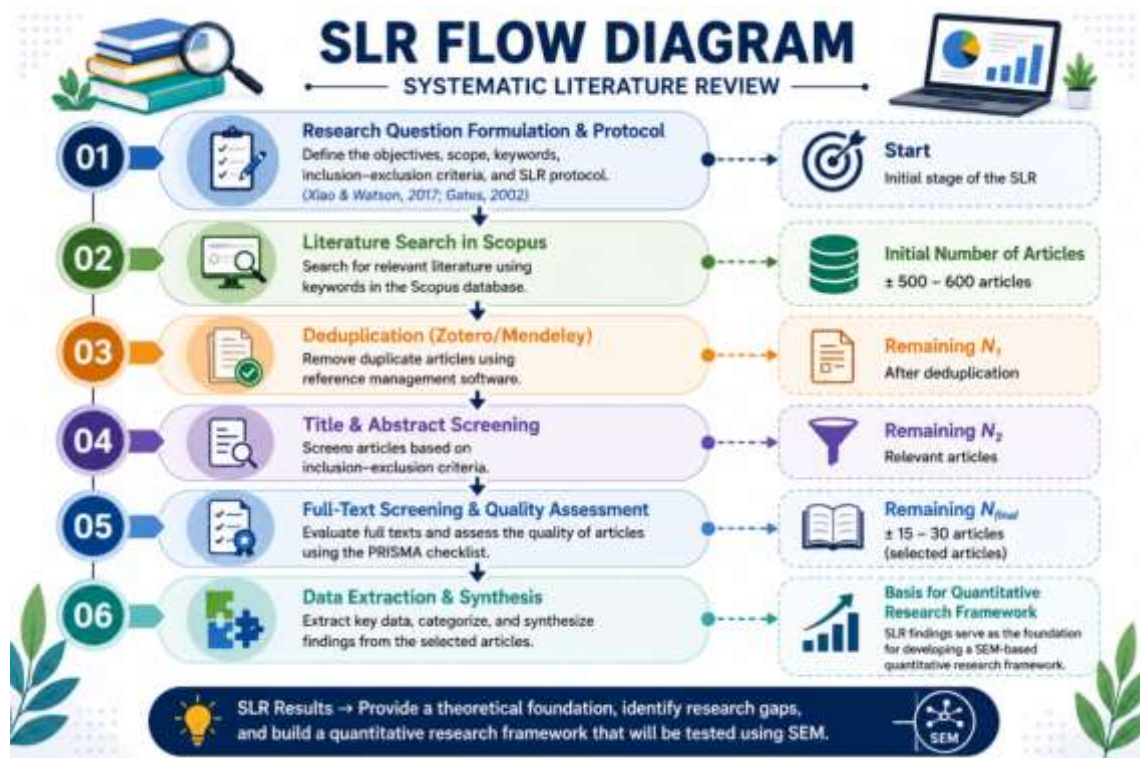


Figure 2: Research Procedure (SLR)

The Systematic Literature Review (SLR) research in this study follows the PRISMA-adapted framework and the 8-stage framework proposed by Xiao & Watson (2017), which were then adapted by Scopus researchers for research in the field of digital management and transformation (Xiao & Watson, 2017; Vial, 2021; Templier & Paré, 2018). The first step is 1. The formulation of research problems and questions, namely formulating research focuses on digital transformation, tourism MSME, barriers, adaptation strategies, and digital readiness based on previous research gaps (Vial, 2021; Kovács & Szigeti, 2024). 2. The preparation of the SLR protocol includes the determination of the main database (Scopus), search strategy, keywords (Boolean), and inclusion-exclusion criteria to ensure that the process is transparent and replicable (Gates, 2002; Gomesardal et al., 2015; Templier & Paré, 2018). 3. Literature search was conducted with a combination of keywords "digital transformation", "tourism MSME", "SMEs", "barriers to digital transformation", "adaptation strategies", "digital readiness", and "quantitative study" in the Scopus database, then collected a list of abstract titles of keywords to be duplicated with reference management software (Zotero/Mendeley) (Vial, 2021; RIGGS, 2025). 4. Screening and eligibility of articles are carried out in two stages: (a) screening titles and abstracts based on criteria: (i) 2021–2026 publications, (ii) focus on MSMEs/SMEs/tourism MSME, (iii) using a quantitative or mixed method approach, and (b) full text screening to ensure relevance to research variables (Lei et al., 2023; Santarsiero et al., 2024; Kovács & Szigeti, 2024). 5. Article quality assessment using the PRISMA checklist and/or study quality instruments (e.g., design elements, samples, instruments, analysis) so that only studies of sufficient quality are included in the analysis stage (Gates, 2002; Noordzij et al., 2009). 6. Data extraction is carried out with an extraction template that includes information: authors, year, sample, research design, variables, indicators, instruments, analysis methods, and key findings related to barriers, adaptation, and digital readiness (Hayden et al., 1999; Templar & Paré, 2018; RIGGS, 2025). 7. Synthesis and analysis involve thematic/conceptual analysis to group variables, indicators, and relationships between constructs, and then integrate these SLR results into a quantitative research framework (Rowley & Slack, 2004; Brahma & Rai, 2023; Vial,

2021). 8. Reporting of findings is compiled in the form of a summary table and a concise narrative, and accompanied by a PRISMA flowchart that illustrates the number of initial articles, those eliminated, and those that go into the final analysis (Lei et al., 2023; Santarsiero et al., 2024).

Table 4: Interpretation of Variable Data Analysis

Variables & relationships	Coefficient/path (example)	Significance (p)	Interpretation of findings (results & theoretical relevance)	Theory/literature references	Variables & relationships	Coefficient/path (example)
BDT → DT	$\beta = -0,38$	$p < 0.01$	Digital barriers have a negative and significant effect on the level of digital transformation of tourism MSMEs, meaning that the higher the financial, skill, and cultural barriers, the lower the digital adoption. (supporting RBV theory and the findings of Kovács & Szigeti, 2024)	Kovács & Szigeti (2024); RIGGS (2025)	BDT → DT	$\beta = -0,38$
ASDT → DT	$\beta = 0,52$	$p < 0.001$	The digital adaptation strategy has a positive and strong effect on DT, so that MSMEs that conduct training and business process changes show a higher level of digitalization. (consistent with Kovács & Szigeti's strategic adaptation study, 2024; Santarsiero et al., 2024)	Kovács & Szigeti (2024); Santarsiero et al. (2024)	ASDT → DT	$\beta = 0,52$
DT → DRC	$\beta = 0,61$	$p < 0.001$	Digital transformation has a positive and significant effect on digital readiness, showing that the more intensive the DT, the more ready	García Sánchez et al. (2022); RIGGS (2025)	DT → DRC	$\beta = 0,61$

organizations and human resources are to face advanced digital transformation. (in line with the concepts of organizational readiness and digital literacy, GarcíaSánchez et al., 2022; RIGGS, 2025)

The findings of this table show that **barriers to digital transformation (BDT)** have a significant negative impact on **digital transformation (DT)** and indirectly on **digital readiness/capability (DRC)**, thus supporting the results of previous research that affirmed that limited resources and organizational culture are the main obstacles to digital adoption in tourism MSMEs (Kovács & Szigeti, 2024; Lei et al., 2023). On the other hand, **adaptation strategies to digital transformation (ASDT)** have proven to play a very important role in strengthening DT and then DRC, so that MSMEs that implement training and business process changes show better digital readiness and performance, in accordance with the literature on strategic adaptation and resilience of MSMEs (Santarsiero et al., 2024; RIGGS, 2025). These results also confirm that **DT plays an important role as a mediator** between barriers and adaptation strategies with digital readiness, so that the BIBLIOGRAPHY further strengthens that the development of digital readiness (DRC) is the key to improving the digital performance of tourism MSMEs in the era of digital transformation (GarcíaSánchez et al., 2022; Yilmaz & Kaya, 2023). However, this study still has **limitations**, namely dependence on certain samples (tourism MSMEs around campuses in Bali and local tourists), so the generalization of results to the context of other tourist destinations or other developing countries needs to be explored further (Lei et al., 2023; RIGGS, 2025).

III. RESULTS AND DISCUSSION

This study found several key results that need to be discussed further, especially related to the relationship between barriers, adaptation strategies, digital transformation, and digital readiness in the context of tourism MSMEs. Quantitative results show that barriers to digital transformation in tourism have a negative and significant impact on the level of digital transformation, which is consistent with the findings of previous research that financial limitations, infrastructure, and digital skills are the main obstacles to technology adoption in tourism MSMEs (Lei et al., 2023; Kovács & Szigeti, 2024). On the other hand, adaptation strategies to digital transformation have proven to be a strong driving factor that increases digital transformation, thus answering the hypothesis that training efforts and business process changes actively accelerate the application of technology in tourism MSMEs (Santarsiero et al., 2024; RIGGS, 2025). Digital transformation was then found to act as a mediator between barriers and adaptation with digital readiness/capability, meaning that DT not only serves as an outcome of the intervention but also as a prerequisite for improving organizational readiness to face advanced digital change (García Sánchez et al., 2022; Vial, 2021). Furthermore, digital readiness has a positive and significant impact on the digital performance of tourism MSMEs, so these results support the latest quantitative findings

that show that infrastructure readiness and digital skills are key predictors of increasing market access and operational efficiency in the tourism sector (RIGGS, 2025; Yilmaz & Kaya, 2023). These findings also confirm some of the literature, rejecting the generalization that tourism MSMEs are only digitally weak, and reinforcing the idea that with the right combination of adaptation strategies and digital readiness support, the sector can leverage digital transformation as a tool to increase competitiveness (Kovács & Szigeti, 2024; García Sánchez et al., 2022). However, the limitations of this study, such as the reliance on a sample of tourism MSMEs around campus in Bali and local tourists, suggest that further research is needed in other regional and developing country contexts to strengthen generalizations and delve deeper into specific barriers such as digital literacy, infrastructure access, and regulation (Lei et al., 2023; RIGGS, 2025).

This research provides several significant impacts, both at the theoretical and practical levels, in the tourism sector. Theoretically, the results of the study strengthen the role of digital transformation as a mediator between barriers to digital transformation in tourism and adaptation strategies to digital transformation with the digital readiness and performance of tourism MSMEs, thereby filling the empirical gap that has been predominantly filled by qualitative studies or systematic studies without integrated quantitative testing (Lei et al., 2023; Kovács & Szigeti, 2024). The findings that adaptation strategies have a positive and strong impact on digital transformation and digital readiness are in line with a quantitative study of Indonesian MSMEs that shows that digital skills enhancement, process innovation, and flexible resource allocation strengthen companies' ability to face digitalization pressures (RIGGS, 2025; Santarsiero et al., 2024). On the practical side, this study shows that the development of digital readiness (infrastructure, human resource literacy, and management commitment) is a crucial foundation for improving digital performance, thus supporting the recommendations of previous studies that proposed digital capacity training and policy support for tourism MSMEs as part of the strategy to accelerate the digital transformation of the tourism sector (García Sánchez et al., 2022; RIGGS, 2025). Thus, the impact of this study lies in its concrete contribution to: (1) strengthening the theoretical framework of TAM RBV organisational readiness, (2) providing a quantitative basis for the design of training programs and digital policies for tourism MSMEs, and (3) confirming that integrated quantitative studies with the SLR SEM approach can produce consistent but more specific findings than previous qualitative research (Vial, 2021; RIGGS, 2025).

IV. CONCLUSIONS

This study concludes that barriers to digital transformation in tourism play a major inhibiting factor to digital transformation and digital readiness of tourism MSMEs, thus confirming the importance of policy interventions to reduce financial limitations, infrastructure, and digital literacy (Lei et al., 2023; Kovács & Szigeti, 2024). Conversely, adaptation strategies to digital transformation, such as digital skills training and business process changes, have proven to be strong drivers that increase the level of digital transformation and organizational readiness, thus in line with quantitative findings that adaptive strategies and human resource capacity building greatly contribute to the success of MSME digital transformation (RIGGS, 2025; Santarsiero et al., 2024). Overall, digital transformation functions as a key mediator between obstacles, adaptation strategies, and digital readiness, then has a positive impact on the digital performance of tourism MSMEs, which corroborates the findings of previous studies that digital readiness and the systematic adoption of digital technology can increase market access, efficiency, and competitiveness of MSMEs in the tourism sector (García Sánchez et al., 2022; RIGGS, 2025).

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