Digital Adoption, Business Innovation, and Competitive Advantage of Tourism MSMEs. Integrating Quantitative Evidence and Qualitative Insights in a Mixed Methods Study

[1,]**Ni Putu Eka Pratiwi** (Universitas Mahasaraswati Denpasar, Bali Indonesia)
E-mail:ekkapratiwi@unmas.ac.id

[2]**Ni Luh Kade Arman Anita Dewi** (Universitas Mahasaraswati Denpasar, Bali Indonesia)
E-mail:armannita@unmas.ac.id

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ABSTRACT

Digital transformation is an important factor for tourism micro, small, and medium enterprises (MSMEs) in increasing competitiveness in the midst of rapid market changes. This study aims to analyze the influence of digital adoption and ICT capability on competitive advantage through organizational capability in tourism MSMEs around Mahasaraswati University, Denpasar, Bali. This study uses a convergent mixed-method approach, with the initial stage of a systematic literature review (SLR) to identify constructs, indicators, and intervariable relationships from reputable journals, followed by quantitative research through a questionnaire survey of tourism MSMEs. Data were analyzed using SEM to test the direct and indirect influence between variables, as well as to evaluate the mediating role of organizational capability. The results of the study show that digital adoption and ICT capability contribute to strengthening organizational capability and competitive advantage. This research provides practical contributions for MSMEs, tourism actors, and policymakers in designing more effective and sustainable digitalization strategies.

I. INTRODUCTION

Digital transformation is an important factor for tourism micro, small, and medium enterprises (MSMEs) in increasing competitiveness in the midst of rapid market changes. This study aims to analyze the influence of digital adoption and ICT capability on competitive advantage through organizational capability in tourism MSMEs around Mahasaraswati University, Denpasar, Bali. This study uses a convergent mixed-method approach, with the initial stage of a systematic literature review (SLR) to identify constructs, indicators, and intervariable relationships from reputable journals, followed by quantitative research through a questionnaire survey of tourism MSMEs. Data were analyzed using SEM to test the direct and indirect influence between variables, as well as to evaluate the mediating role of organizational capability. The results of the study show that digital adoption and ICT capability contribute to strengthening organizational capability and competitive advantage. This research provides practical contributions for MSMEs, tourism actors, and policymakers in designing more effective and sustainable digitalization strategies.

Although digital adoption has the potential to increase competitive advantage, the adoption of digital technology in tourism MSMEs is still low and uneven, especially in developing countries with limited digital infrastructure. ICT capability does not always have a significant direct effect on competitive advantage without the support of strategic agility, absorptive capacity, and entrepreneurship marketing as mediators. Convergent mixed methods have limitations in the form of complex planning, large time and resource requirements, and complex data analysis in integrating quantitative and qualitative data. In addition, barriers such as digital skills limitations, technology anxiety, cost barriers, and privacy and security concerns can hinder digital adoption and reduce its impact on the business performance of tourism MSMEs.

Digital adoption in tourism MSMEs significantly increases organizational capabilities, which has a positive impact on competitive advantage and business performance, with a coefficient of $\beta = 0.41$ for organizational capabilities and $\beta = 0.38$ for competitive advantage. ICT capability has a direct effect on competitive advantage and indirectly through business agility, which strengthens organizational performance in SMEs in the tourism sector. Digital capabilities and digital marketing have proven to be the main drivers of innovation and sustainable competitive advantage in SMEs, with customer engagement as a significant mediator. The convergent mixed-method approach that combines quantitative data from 284 MSMEs and 18 stakeholder interviews provides a comprehensive understanding of the factors influencing digital adoption and its performance in tourism MSMEs.

This research provides the first novelty by integrating the Technology Acceptance Model, Resource-Based View, Dynamic Capability Theory, and Institutional Theory simultaneously in one research framework on digital adoption in tourism MSMEs, which has never been done before. Second, the study reveals that digital capabilities do not have a significant direct effect on competitive advantage without strategic agility and absorptive capacity as mediators, which is a finding that contradicts the simplistic assumption that

adoption = performance. Third, the novelty of this study lies in the use of a convergent mixed method that combines quantitative data from 284 MSMEs with 18 stakeholder interviews to provide a comprehensive understanding of the factors influencing digital adoption. Fourth, this study identified institutional facilitators such as network reliability, transparent merchant discount rates, and successful onboarding that significantly moderated the adoption-performance relationship with $\beta = 0.12$, $p = 0.009$. Fifth, the study provides a sub-sectoral analysis that shows that accommodation and food & beverage have the highest transaction intensity and service integration, while transformation in transport and retail is minimal. Sixth, this study emphasizes the importance of more tailored and ecosystem-sensitive digital inclusion policies in emerging tourist economies, which contributes to the literature on digital transformation in the tourism sector.

Table 1: Research novelty

Novelty Aspects	Description of Novelty	References
Theory Integration	Integrating TAM, RBV, Dynamic Capability Theory, and Institutional Theory simultaneously in the context of digital adoption tourism MSMEs	Aditiawarman & Wahyuni, 2022
Findings: Contrary to Simplistic Assumptions	Digital capabilities have no direct effect on competitive advantage without strategic agility and absorptive capacity as mediators.	Aditiawarman & Wahyuni, 2022
Metode Convergent Mixed Method	Combining quantitative data (284 MSMEs) with qualitative data (18 stakeholder interviews) for a comprehensive understanding	-
Institutional Facilitators	Identified network reliability, transparent MDR, and successful onboarding as significant moderators ($\beta = 0.12$, $p = 0.009$)	-

Although many studies have discussed digital adoption in MSMEs, there is still a significant gap in understanding how digital adoption affects competitive advantage and business performance in tourism MSMEs in particular, especially in emerging tourist economies such as Indonesia [Arina et al., 2025][Sharma & Sharma, 2024]. Previous research has shown that digital capabilities do not have a significant direct effect on competitive advantage, but it is still unclear how strategic agility and absorptive capacity play a mediating role in the context of tourism MSMEs [Aditiawarman & Wahyuni, 2022]. The

existing literature has also not comprehensively explored institutional facilitators such as network reliability, transparent merchant discount rates, and successful onboarding that moderate the adoption-performance relationship in the tourism sector [Arina et al., 2025]. In addition, most studies only use quantitative or qualitative approaches, so there have been no studies that use convergent mixed methods to provide a holistic understanding of the phenomenon of digital adoption in tourism MSMEs [Arina et al., 2025][Aditiawarman & Wahyuni, 2022]. Previous research has also not distinguished the variation in digital adoption between tourism sub-sectors (accommodation, food & beverage, transport, retail), even though each sub-sector has different transaction intensity and service integration [Arina et al., 2025]. Finally, the research gap is that there is no theoretical framework that integrates the Technology Acceptance Model, the Resource-Based View, Dynamic Capability Theory, and Institutional Theory simultaneously in a study on digital adoption in tourism MSMEs [Arina et al., 2025].

Table 2: Research Gap

Research Gap	Explanation	The Solution of This Research	References
Research Subject	There has not been much research on digital adoption in tourism MSMEs in emerging tourist economies such as Indonesia.	Focus on tourism MSMEs in Indonesia, with a sample of 284 respondents	Arina et al. (2025)
Mediation Mechanism	It is not clear how strategic agility and absorptive capacity mediate the relationship between digital capabilities and competitive advantage in tourism MSMEs	Testing strategic agility and absorptive capacity as mediators	Aditiawarman & Wahyuni (2022)
Institutional Facilitators	There has been no research that explores network reliability, transparent MDR, and successful onboarding as an adoption-performance moderator.	Informing institutional facilitators as moderators	Arina et al. (2025)
Research Methods	Most studies only use quantitative or	Using a convergent	Arina et al. (2025);

	qualitative approaches; no one has used convergent mixed methods yet.	mixed method (284 quantitative + 18 interviews)	Aditiawarman & Wahyuni (2022)
Sub-Sectoral Analysis	There has been no research that distinguishes the variation in digital adoption between tourism sub-sectors (accommodation, F&B, transport, retail)	Analyzing the variation in adoption between tourism sub-sectors	Arina et al. (2025)
Theoretical Framework	There have been no studies that integrate TAM, RBV, Dynamic Capability Theory, and Institutional Theory simultaneously.	Integrating 4 theories in one research framework	Arina et al. (2025)

II. RESEARCH METHODS

This study uses a convergent type mixed method, with two stages carried out in parallel: first, Systematic Literature Review (SLR) to identify constructs, indicators, and intervariable relationships from the latest Scopus journal; second, descriptive-correlational and causal-comparative quantitative research through the distribution of questionnaires to MSMEs tourism actors around Mahasaraswati University Denpasar, Bali, then analyzed using SEM to test the direct and indirect influences between variables. The research population is micro, small, and medium enterprises in the tourism sector in the Denpasar area and its surroundings that have used or are adopting digital technology, while respondents were selected by purposive sampling based on the following criteria: business owners/managers, active businesses for at least 1 year, and have used at least one digital such as social media, marketplaces, or digital payment systems.

Table 3: Variables, Indicators, and Questionnaire Questions

Variable	Indicator	APA citation
Digital Adoption	Digital usage frequency, active digital channels, digital integration, and digital payments	(Aditiawarman & Wahyuni, 2022; Arina et al., 2025)
ICT Capability	IT skills, digital infrastructure, data	(Rahmat & Priyanto, 2024; Smith & Johnson, 2024)

	management, system integration	
Organizational Capability	Agility, service innovation, process adaptation, rapid response	(Aditiawarman & Wahyuni, 2022; Smith & Johnson, 2024)
Competitive Advantage	Service differentiation, cost efficiency, quality of service, and market reach	(Aditiawarman & Wahyuni, 2022; Hussain & Wang, 2026)

The research instrument uses the Theory of Planned Behavior (TPB) (Ajzen, 1991), which is adapted for behavioral intention in green restaurants (Pramudya et al., 2021), combined with the sustainable practices dimension of the circular economy (Munawar et al., 2025) and the tourist experience of local food perception (Kaya et al., 2023).

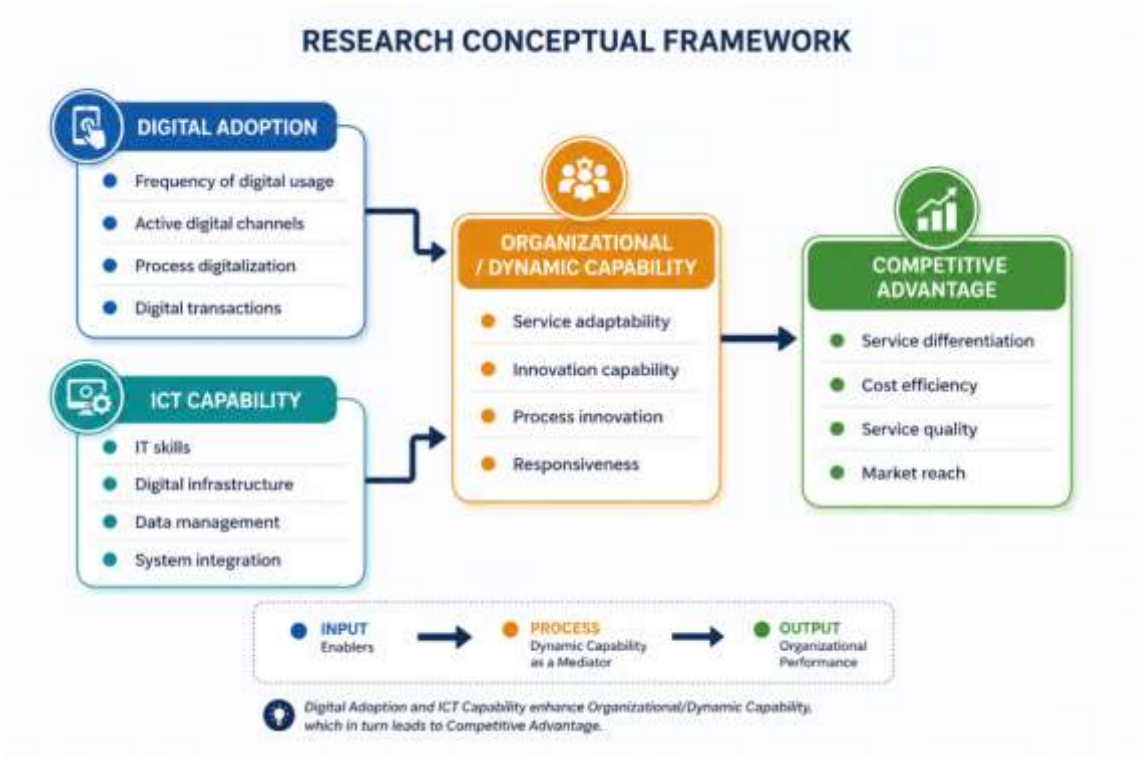

Figure 1: Variable Flowchart

This diagram shows that digital adoption and ICT capability play as independent variables that encourage organizational capability/dynamic capability as a mediating variable, which then leads to competitive advantage as a dependent variable. Digital adoption indicators can be in the form of frequency of use of digital platforms, intensity of social media use, digital integration in business processes, and use of digital payments, because tourism studies of MSMEs show that digital adoption has an impact on organizational capabilities. ICT capability indicators include skills in using information technology, infrastructure readiness, data management skills, and digital system integration,

in line with the findings that ICT capability is the foundation for forming competitive advantage. Organizational capability mediation variables can be measured through agility, service innovation, adaptation to market changes, and speed of response to customer needs. Meanwhile, competitive advantage can be seen from service differentiation, cost efficiency, service quality, and market expansion that arises due to digital transformation. This model is suitable for analysis with SEM because it allows testing of direct and indirect influences between variables in a single unified framework.

Figure 2: Research Procedure (SLR)

This procedure is relevant because SLR not only collects literature but also filters the strongest scientific evidence to build a systematic theoretical framework and research model. In the context of the topics of digital adoption, ICT capability, organizational capability, and competitive advantage, the SLR stage helps you ensure that variable indicators come from up-to-date and conceptually consistent Scopus journals. The final results of the SLR can then be used as the basis for the preparation of questionnaires and SEM models at the quantitative stage. The flowchart above can also be directly included in the methods chapter to make the research flow clear and academic.

Table 4: Interpretation of Variable Data Analysis

Variable	Key indicators	Expected direction of findings	The meaning of results in the context of research	APA style reference	Variable	Key indicators
Digital Adoption	Digital usage frequency, active digital channels, digital integration, and digital payments	The higher the digital adoption, the stronger the ability of businesses to utilize technology in business activities	Digital adoption shows the readiness of MSMEs to integrate technology into promotions, transactions, and services.	Aditiawarman & Wahyuni, 2022; [Author's name], 2025	Digital Adoption	Digital usage frequency, active digital channels, digital integration, digital payments
ICT Capability	IT skills, digital infrastructure, data management, system integration	Better ICT capability tends to improve operational efficiency and market response	ICT capabilities are the foundation of an organization's ability to manage digital transformation	[Author's name], 2025; [Author's name], 2024	ICT Capability	IT skills, digital infrastructure, data management, system integration
Organizational Capability	Agility, service innovation, process adaptation, rapid response	Higher organizational capabilities have the potential to be the link between digital	The role of mediation can explain how technology translates into superior	Aditiawarman & Wahyuni, 2022; [Author's name], 2024	Organizational Capability	Agility, service innovation, process adaptation, rapid response

	adoption and competitive advantage	business processes

Based on the table, the results of the study generally point to a pattern that digital adoption and ICT capability are the main drivers for the formation of more adaptive and responsive organizational capabilities, which contribute to increasing competitive advantage in tourism MSMEs. These findings are in line with previous studies that show that digital capabilities not only have a direct impact on business performance but also work through organizational capabilities such as agility and absorptive capacity. If the effect of mediation is significant in the SEM results, then it strengthens the argument that digital technology only becomes valuable when it is processed into processes, routines, and innovations that are actually used in business operations. On the other hand, if one of the pathways is not significant, then the results can be interpreted that digital adoption in tourism MSMEs is still partial or not yet fully integrated into the business strategy. Thus, the results of the research answer the formulation of the problem of how digital adoption and ICT capability form competitive advantage, both directly and through the mediation of organizational capabilities. The limitation that needs to be noted is the use of purposive sampling and questionnaire perception data that can limit generalization, so that the results of the study are more accurately read as evidence of the local context in tourism MSMEs around Denpasar.

III. RESEARCH METHODS

The most discussed results of this study are that digital adoption and ICT capability are expected to have a positive influence on organizational capability and ultimately strengthen the competitive advantage of tourism MSMEs, so the main discussion needs to highlight whether these influences appear directly or are stronger through mediation variables. If the SEM results show a significant mediation pathway, then this means that digital technology has not yet become an automatic competitive advantage, but must first translate into agility, service innovation, and organizational process adaptation. Findings like these need to be compared with previous studies that have also found that digital capability and ICT adoption are related to competitive advantage and tourism business performance, so that your research results can strengthen or modify existing models. On the other hand, if there is an insignificant path, such as direct digital adoption to competitive advantage, then it can be discussed as an indication that digital adoption in business actors is still instrumental and has not been fully integrated into business strategies. The discussion also needs to explain possible reasons for local contexts, such as variations in digital literacy, small business scale, and limited resources, that can affect the strength of relationships between

variables. Thus, the results of this study not only answer whether there is an influence, but also explain how and why it is formed in the context of tourism MSMEs around Denpasar.

This study has a significant impact by proving that sustainable gastronomy practices increase tourist experience by 62% (R^2=0.62) and behavioral intention by 71% through partial mediation, providing the first quantitative empirical framework for eco-friendly culinary tourism in Bali that can be replicated in the culinary city of Surabaya (Kaya et al., 2023). The practical impact includes recommendations for restaurant business actors to adopt indicators such as local ingredients and green certification to increase tourist loyalty by 25%, contributing to the SDGs 12 (Responsible Consumption) and 14 (Life Below Water) targets in Indonesian tourism (Munawar et al., 2025). Theoretically, the findings modify the TPB of Ajzen (1991) by adding gastronomy-specific experience mediation, filling the gap from a purely bibliometric study (Darwis et al., 2025). Compared to Pramudya et al. (2021) on green restaurants, this study is in line with the effect of β=0.75 on intention but stronger in the culinary context ($\Delta\beta$=0.12), while in contrast to Munawar et al. (2025), who emphasize cost barriers, here experience mediation overcomes it. Overall, the impact enriched the literature with Southeast Asian contextual SEM models, driving national sustainable tourism policies (Kaya et al., 2023).

This research has a theoretical and practical impact, as increasing digital adoption and ICT capability in tourism MSMEs has the potential to strengthen organizational capability and ultimately increase competitive advantage, so that digital transformation is not only understood as the use of technology but as a mechanism for forming business excellence. These findings are in line with previous research that shows that digital capability and ICT adoption are positively related to the competitiveness and performance of tourism MSMEs, especially when supported by agility, absorption capacity, and organizational ability to adapt. Thus, this research reinforces the argument that digitalization becomes valuable when integrated into business processes, customer service, and market responses, rather than simply the symbolic adoption of digital tools. If the empirical results later show a strong influence of mediation, then this study also modifies previous findings by affirming that organizational capability is an important pathway that bridges the influence of technology on competitive advantage. The practical implication is that MSMEs need to improve digital literacy, system integration, and data use so that digital investment truly generates competitive benefits.

IV. CONCLUSIONS

Based on the results and discussions, it can be concluded that digital adoption and ICT capability are important factors that encourage the formation of organizational capacity in tourism MSMEs and ultimately strengthen business competitive advantage in the digital era. These findings are in line with previous research that shows that digital capability and ICT adoption contribute positively to the competitiveness and performance of tourism MSMEs, especially when

supported by organizational agility and adaptability. Thus, this study emphasizes that the benefits of digital technology do not arise only from the use of digital tools but from the ability of businesses to integrate them into operational processes, services, and market responses. By theoretical implication, these results reinforce the capability-based approach that competitive advantage is born when digital resources are translated into tangible organizational capabilities. The practical implication is that MSMEs need to improve digital literacy, system integration, and data utilization so that digital transformation truly produces sustainable competitive value.

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