

Psychological and Financial Factors Influencing Managerial Commitment to Digital Transformation in the Yogyakarta Tourism Sector

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Abstract: This study examines digital maturity, digital transformation asymmetry, digital gaps, and the determinants of managerial commitment to digital transformation across four tourism segments in Yogyakarta, Indonesia. We used a mixed-methods design, combining a structured survey of 80 managers—20 each from hotels, tourism businesses, restaurants, and tourism villages—with semi-structured interviews with eight managers. The researchers purposively selected respondents to ensure balanced representation across the four segments. The researchers collected data from May to October 2025. The researchers analyzed quantitative data using descriptive statistics, cross-segment gap analysis, ANOVA, and multiple linear regression, and organized interview findings around implementation barriers, strategic intentions, and proposed solutions. The results show a clear digital maturity asymmetry: hotels record the highest scores, whereas tourism villages and restaurants show the largest deficits, particularly in culture, insights, and organization. In the regression model, attitude to change is the strongest predictor of managerial commitment ($\beta = 0.45$, $p < 0.001$), followed by perceived benefits ($\beta = 0.38$, $p < 0.001$), financial resources ($\beta = 0.22$, $p = 0.003$), and segment type ($\beta = 0.15$, $p = 0.048$); regulatory environment is not significant ($\beta = 0.08$, $p = 0.297$). The study contributes an integrated explanation of how digital maturity asymmetry and managerial factors interact across tourism segments, showing that technology investment alone is insufficient without managerial readiness and organizational capacity.

Keywords: *Business Strategy, Digital Transformation, Tourism Industry, Digital Maturity, Digital Asymmetry and Divide*

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INTRODUCTION

Information and communication technology has become a fundamental driver of transformation in the tourism industry. Tourism has historically been among the sectors that rapidly adopt digital innovation because digital technologies reshape how destinations are promoted, tourism products are distributed, and services are delivered and consumed. As competition in digital tourism intensifies, tourism organizations are increasingly required to adapt their strategies, organizational capabilities, and managerial practices to remain competitive. Digital transformation is therefore no longer merely an operational option but a strategic imperative that enables tourism businesses to innovate, create new business opportunities, improve service quality, and pursue



sustainable development. The development of smart tourism destinations illustrates this transformation by integrating technology and innovation to support operational efficiency, sustainability, accessibility, and inclusivity throughout the tourism lifecycle (Buhalis & Amaranggana, 2013).

The rapid development of digital technologies has further expanded the scope of transformation in tourism. Tourists increasingly rely on digital platforms to search for information, compare destinations, make reservations, and share travel experiences. Contemporary tourists also expect immersive, intuitive, and digitally enriched experiences (Muzyka & Solovei, 2025). Technologies such as mobile applications, artificial intelligence (AI), augmented reality (AR), virtual reality (VR), cloud computing, and the Internet of Things (IoT) are consequently transforming tourism operations and customer experiences. AI-powered personalization, dynamic pricing, digital customer engagement, and intelligent operational systems increasingly contribute to tourism competitiveness (Florido-Benítez & del Alcázar Martínez, 2025). Similarly, IoT facilitates real-time data integration, operational coordination, and service efficiency across tourism subsectors (Anwar et al., 2024), while VR and AR provide new opportunities to enhance visitor experiences and cultural interpretation (Tekin, 2025).

However, the expansion of digital technologies does not imply that tourism organizations have achieved comparable levels of digital transformation. Digital adoption remains highly uneven across tourism sectors and destinations, particularly in developing regions where organizations face different combinations of technological, infrastructural, managerial, cultural, human-resource, and financial constraints (Gretzel et al., 2020). Yogyakarta provides an important empirical setting for examining this phenomenon because its tourism ecosystem consists of heterogeneous actors, including hotels, tourism businesses, restaurants, and tourism villages, with substantial differences in organizational scale, managerial capability, resource availability, and exposure to competitive pressures. Larger tourism enterprises, particularly hotels, generally have greater access to technological infrastructure, professional management, and financial resources. In contrast, smaller tourism businesses, restaurants, and tourism villages often experience limitations in digital literacy, infrastructure, human resources, and investment capacity. These differences may generate not only a technological access gap but also deeper gaps in organizational capabilities and the ability to derive strategic value from digital technologies.

Previous studies have shown that organizational and managerial factors influence digital transformation, including attitudes toward change, organizational culture, leadership, human capital, and financial resources (Mohamad Irhas Effendi et al., 2020). The Technology-Organization-Environment (TOE) framework developed by Tornatzky and Fleischer (1990) provides a useful theoretical foundation for examining technology adoption by emphasizing interactions among technological, organizational, and environmental contexts. Recent studies have also examined technological, organizational, and environmental determinants of digital transformation in tourism and hospitality (Nikopoulou et al., 2023). Nevertheless, three important gaps remain.

First, the theoretical gap concerns the limited integration between digital maturity and managerial commitment. Existing research commonly examines technology adoption or digital transformation readiness through technological, organizational, and environmental determinants. However, less attention has been paid to how managerial psychological factors, particularly attitudes toward change and perceived benefits of digital transformation, interact with structural factors such as financial resources and

regulatory conditions to shape managerial commitment. Consequently, the organizational dimension of digital transformation remains insufficiently explained from the perspective of managerial decision-making.

Second, the methodological gap lies in previous studies' tendency to examine digital adoption or readiness at the aggregate organizational level. Such an approach may obscure differences among tourism subsectors with substantially different resource capacities and operational characteristics. A comparison of hotels, tourism businesses, restaurants, and tourism villages is therefore necessary to determine whether digital transformation gaps are primarily technological or also rooted in organizational culture, managerial capabilities, and the ability to generate strategic insights from digital technologies. Combining descriptive measurement of digital maturity and gap analysis with inferential analysis of managerial commitment provides a more comprehensive approach to understanding these differences.

Third, the empirical gap concerns the limited evidence on the asymmetric nature of digital transformation among heterogeneous tourism actors in Yogyakarta. While previous research has documented digital adoption challenges among tourism businesses and small enterprises, empirical evidence remains insufficient to simultaneously identify the magnitude of digital maturity differences across tourism segments and explain the managerial factors associated with commitment to digital transformation. In particular, it remains unclear whether financial constraints are the primary obstacle or whether managerial and psychological factors more strongly influence tourism organizations' willingness to initiate and sustain digital transformation.

This study addresses these gaps by developing an integrated empirical framework that connects digital maturity asymmetry with the determinants of managerial commitment to digital transformation. The study examines four tourism segments in Yogyakarta—hotels, tourism businesses, restaurants, and tourism villages—and evaluates digital maturity across four dimensions: culture, technology, insights, and organization. It then examines how perceived benefits of digital transformation, attitudes toward change, tourism-segment characteristics, financial resources, and the regulatory environment influence managerial commitment. This approach extends the TOE framework by placing managerial psychological orientation alongside organizational and environmental conditions, rather than treating technology adoption solely as a function of technological readiness.

This study's novelty therefore lies in three contributions. First, theoretically, it extends the TOE framework by incorporating managerial psychological orientation as a key mechanism underlying organizational commitment to digital transformation. Second, empirically, it provides a segment-level comparison of digital maturity and identifies the structural asymmetry between relatively resource-rich tourism organizations and more resource-constrained tourism actors in Yogyakarta. Third, managerially and methodologically, it links the measurement of digital maturity gaps to an empirical assessment of predictors of managerial commitment, moving beyond simply identifying technology adoption barriers to explain why tourism organizations differ in their willingness and capacity to pursue digital transformation.

Based on these gaps and contributions, this study aims to measure digital maturity across four tourism segments in Yogyakarta, identify the extent and dimensions of digital transformation asymmetry, and examine the psychological, organizational, and environmental factors that influence managerial commitment to digital transformation. The findings are expected to contribute theoretically to the literature on digital

transformation and technology adoption in tourism and practically to the development of more differentiated digital transformation strategies for tourism businesses, tourism associations, and local government. Rather than applying a uniform digitalization policy across tourism actors, the findings provide an evidence-based basis for interventions that reflect differences in managerial readiness, organizational capability, and resource constraints.

RESEARCH METHODS

Research Design

This study employed a mixed-methods research design, integrating quantitative and qualitative approaches to obtain a comprehensive understanding of digital transformation in the tourism sector of the Special Region of Yogyakarta (DIY). The quantitative component measured digital technology adoption, digital maturity, and managerial commitment, while the qualitative component explored managerial perspectives on implementation barriers, strategic intentions, and challenges associated with digital transformation. Integrating both approaches was intended to complement the statistical findings with contextual explanations of managerial decision-making and digitalization practices.

The study was conducted in the Special Region of Yogyakarta from May to October 2025. The research covered four tourism segments representing different organizational and operational characteristics: hotels, tourism businesses, restaurants, and tourism villages. The study selected 80 respondents: 20 hotel managers, 20 tourism business managers, 20 restaurant managers, and 20 tourism village managers. This equal allocation across the four segments was intended to support balanced comparative analysis of digital maturity and identify differences in digital transformation across tourism subsectors. The sample size was also considered appropriate for the exploratory segment-level comparison undertaken in this study, while maintaining representation from each tourism segment.

Respondents were selected using purposive sampling because the study required participants with direct knowledge of, and decision-making responsibility for, digital technology adoption and organizational digital transformation. Inclusion criteria required that respondents had managerial responsibility within the selected tourism organization, were involved in decisions about technology use or organizational operations, and had sufficient knowledge of the organization's digital practices and resources. This approach was considered more appropriate than random sampling because the research specifically required information from managers who could provide relevant assessments of digital maturity and managerial commitment.

Data Collection

Data were collected using two complementary instruments: a structured questionnaire and semi-structured interviews. The structured questionnaire was administered to the 80 respondents to obtain quantitative information concerning technology use, perceptions of investment and financial resources, digital maturity, attitudes toward change, perceived benefits of digital transformation, regulatory conditions, and managerial commitment. The questionnaire used structured response categories to facilitate quantitative comparison across the four tourism segments.

In addition to the survey, the researchers conducted semi-structured interviews with eight managers selected from the tourism segments represented in the survey. The



interviews aimed to gather more detailed information on perceived barriers to digital transformation, managerial attitudes, strategic intentions, resource constraints, organizational challenges, and possible solutions. The qualitative component provided contextual explanations for patterns identified in the quantitative analysis rather than replacing the statistical findings.

Quantitative Data Analysis

The quantitative data were analyzed through several sequential stages. First, descriptive statistics summarized respondents' characteristics and measured digital maturity across the four tourism segments. The study assessed digital maturity across four dimensions: culture, technology, insights, and organization. The descriptive results identified each segment's relative digital maturity level.

Second, the study conducted a gap analysis to identify differences in digital maturity between the tourism segments. The analysis compared the average scores of hotels, tourism businesses, restaurants, and tourism villages across the four dimensions. This analysis identified the magnitude and dimensions of digital transformation asymmetry among tourism actors.

Third, inferential statistical analysis examined differences among tourism segments and identified factors associated with managerial commitment to digital transformation. One-way analysis of variance (ANOVA) tested whether differences in digital maturity across tourism segments were statistically significant. Subsequently, multiple linear regression using the ordinary least squares (OLS) approach examined the relative influence of selected predictors on managerial commitment to digital transformation.

The regression model included five explanatory variables: perceived benefits of digital transformation, attitude toward change, tourism segment, availability of financial resources, and regulatory environment. Managerial commitment to digital transformation was treated as the dependent variable. The regression coefficients, t-statistics, p-values, and coefficient of determination (R^2) were examined to evaluate the direction, statistical significance, and explanatory power of the predictors.

Qualitative Data Analysis

The interview data were analyzed systematically to identify recurring themes related to digital transformation. The analysis involved three main stages: organizing the data, identifying themes, and interpreting findings. First, the researchers organized interview responses by research question and the main dimensions of digital transformation. Second, the analysis identified recurring statements on managerial attitudes, perceived benefits, financial constraints, technological barriers, organizational capabilities, regulatory issues, and strategic intentions, and grouped them into thematic categories. Third, the identified themes were compared with the quantitative findings to explain differences in digital maturity and managerial commitment across tourism segments.

The qualitative findings were then integrated with the quantitative results through convergent interpretation, using interview evidence to explain and contextualize the statistical patterns. For example, differences in digital maturity between hotels and smaller tourism actors were interpreted not only in terms of technology availability but also in relation to managerial capabilities, financial resources, organizational culture, and strategic orientation.

Validity, Reliability, and Data Credibility

To ensure the quality of the quantitative instrument, the questionnaire should undergo validity and reliability testing before hypothesis testing. Construct validity can be assessed by examining the correlation between individual items and their respective constructs, while internal consistency can be evaluated using Cronbach's alpha. Items that do not meet the predetermined validity criteria should be reviewed or excluded before the main statistical analysis.

For the qualitative component, triangulation should strengthen data credibility, particularly by comparing interview findings with survey results and relevant documentary or contextual evidence, where available. The comparison is intended to identify consistency or divergence between managers' reported perceptions and the quantitative patterns observed across tourism segments.

Importantly, report the actual validity coefficient, Cronbach's alpha values, and evidence of triangulation based on the procedures actually conducted. These values should not be added to the manuscript unless they have been calculated from the study data.

Integration of Quantitative and Qualitative Findings

The two components were integrated during interpretation. Quantitative analysis provided evidence on the magnitude of digital maturity differences and the statistical determinants of managerial commitment, while qualitative findings explained the managerial and organizational conditions underlying those patterns. This integration enabled the study to move beyond measuring digital adoption toward understanding why digital transformation develops differently across tourism segments in Yogyakarta.

RESULTS AND DISCUSSION**Tourism Sector Business Strategy to Face the Digital Era**

In general, managers understand the importance of digitalization in managing the tourism industry in the digital era. However, because each business's resource conditions differ, they adopt digital technology in different ways and at different levels. Overall, tourism sector entrepreneurs implement 9 strategies to face the digital era, but their application differs from one company to another.

1. Integrating the Cloud in Its Operations (S-1)

The survey shows that 55% of hotel managers report that their companies have used AI systems to deliver personalized service and dynamic pricing. Meanwhile, the adoption rate of information technology in tourism businesses, restaurants, and tourist villages that utilize technology is less than 10%. Their use of ICT is limited to basic social media platforms and minimal instant payment applications. These results align with the findings of Muzyka Bohdana & Anna Solovei (2025) and Medika Oga Laksana (2024), which state that high technology currently drives profitability, but only for certain groups, and is not yet evenly distributed across all business groups. This deepens the competitive gap in the local ecosystem. This IT adoption gap affects how tourism businesses operate and perform. Tourism businesses in this group will struggle to reach tourists who now rely heavily on IT.

2. Data-Based Decision Making (S-2)

Data-driven decision-making is an essential mechanism for proactive business management. Thi Hoang Ha Tran et al. (2024) explain that larger tourism operators

effectively leverage these analytics tools to predict customer needs, optimize staffing, dynamically adjust prices, and manage revenue. Tourism industry managers in Yogyakarta understand this, but human resource constraints hamper their commitment to such decision-making. Only 20% of managers across all segments have received formal training in advanced data analytics. For most MSMEs, data use is limited to surface-level social media metrics, and limited human resource quality prevents the robust market research needed to refine strategies and capitalize on competitive advantages.

3. Provide customer-centric and hyper-personalized service (S-3)

Hotels and some tour operators have used AI to create dynamic itineraries and location-based bookings, deliver timely quotes, and improve the visitor experience through hyper-personalization. This strategy is moving towards hyper-personalization, which is recognized as important for deepening customer connection and loyalty (Chapman, Jonathan Carter, 2025). Customer journey mapping is widely recognized by 75% of respondents as a framework for aligning strategies with customer expectations, with potential benefits including a 20% increase in customer satisfaction and a 15% increase in revenue. Despite this recognition, the prerequisite investment in a comprehensive customer data platform (CDP) to collect extensive real-time data remains too expensive for most tourism sectors, so many have not implemented it yet, especially restaurant entrepreneurs and tourist villages.

4. Cultivating Agile Culture and Change Management (S-4)

An agile culture is a work mindset and approach that focuses on rapid adaptation to change, collaboration, and delivering repeatable results. It emphasizes flexibility, responsiveness, and the ability to learn and innovate continuously in a dynamic environment. The key is not to get hung up on rigid procedures, but rather to adapt nimbly to provide maximum value. Agility is essential for enabling organizations to adapt quickly to evolving digital needs (Christopher Auteberry, 2025). These principles were originally developed for the tech industry and have been leveraged to design flexible training programs and enhance learning and development. Data show that 40% of hotel and tourism business managers report actively implementing agile methodologies, characterized by cross-functional teams, iterative progress, and regular retrospectives. In contrast, restaurant managers and tourist villages mostly report that the concept of Agile is less well known, and some are even unfamiliar with it. This shows the lack of the cultural foundation necessary to maximize technology investments and respond flexibly to market shifts.

5. Improving the quality of human resources (S-5)

Tourism business managers' answers about obstacles to implementing digital transformation show that they still face several problems in carrying it out. They suggested digital technology training as a solution. This aligns with Laksana and Medika Oga (2024), who stated that the digital skills gap is the main obstacle to transformation. Their solutions are precise, but investment in training remains fragmented and insufficient. A key barrier identified through qualitative input is that people without consistent digital access are less likely to start upskilling or join digital literacy programs, as they have not yet experienced the real benefits of internet connectivity. Addressing the scarcity of workers with advanced digital skills is paramount, as it is critical for long-term economic gains.

6. Developing a Digital Roadmap (S-6)

Implementing a formal, documented digital tourism strategy provides a structured framework for investment and execution. Digital tourism strategies include using social media and influencers, search engine optimization (SEO) and digital content, applying technologies such as VR/AR and the metaverse, and partnering with online platforms to improve promotions and tourist experiences. In addition, it needs a strong technological infrastructure and an easy digital payment system such as QRIS. The data show that 60% of large hotel and tourism businesses report having a roadmap that details their digital maturity diagnosis, benchmarks against international best practices, and business cases for investment. This roadmap is designed to increase online visibility, increase digital transactions, and ensure data-driven decision-making. In contrast, other segments, especially Tourism Villages, generally lack formal planning and rely on external support through ad hoc projects, making sustainable digital growth difficult.

7. Strengthening Cybersecurity Measures (S-7)

The Personal Data Protection Act (PDP Act) requires business management to protect customers' and employees' personal data through lawful collection, secure processing, and responsible use. The data show that compliance among hotel managers and tourism businesses classified as large businesses is high (85%), but readiness for compliance in other segments is low. In a study on the relationship between data protection compliance and business performance metrics, Kone, Bila & Pituel, Labone & Elly, Billy (2024) found that there is a significant positive relationship between data protection compliance and business performance; data protection compliance can have a positive impact on revenue growth, customer satisfaction, and employee engagement; and data security and privacy by design are very important factors that affect business performance.

8. Establish Strategic Partnerships (S-8)

The survey showed that 70% of respondents said strategic collaboration is the most effective way to achieve digital competitiveness, especially for tourism businesses with limited resources. Collaboration with local startups is seen as a necessary strategy to overcome the low Digital Infrastructure (DI) and Digital Literacy (DL) indices that plague many MSMEs. This partnership accelerates the adoption of Industry 4.0 standards and helps balance the competitive environment.

9. Building a Digital Ecosystem (S-9)

Managers expressed a strong reliance on government policies and funding mechanisms to facilitate digital literacy and infrastructure development. However, today's frameworks are often considered fragmented. While there are calls for public-private collaboration, there is a recognized need to coordinate marketing policy with broader economic development policies—using mechanisms such as financing and green lending—to facilitate desired behavioral change. An inclusive ecosystem must promote accessibility and affordability, especially regarding immersive tourism technologies.

Digital Maturity and Sectoral Segmentation

This study uses the Technology-Organization-Environment (TOE) research framework to measure digital technology adoption across sectors of Yogyakarta's tourism industry. The nine tourism industry strategies align with the four dimensions of an

organization's digital maturity: culture, technology, insights, and organization. These dimensions provide a framework for comparing maturity and identifying organizational loci of the digital divide. The four segments reviewed have inherently different operational dynamics, competitive pressures, and capex capabilities. Hotels have historically faced significant pressure in adopting advanced technology for service optimization and revenue management. In contrast, tourism businesses in the micro, small, and medium enterprise categories, as well as tourism villages and restaurants, face constraints related to scale and limited access to professional management systems. The following profile shows the basic asymmetry that affects the adoption analysis.

Table 1. Digital Profile of the Tourism Segment

Segments	Digital Focus	Technology Adoption Focus	Key Digital Challenges
Hotel	Optimization and Customer Experience	AI, IoT, Intelligent Systems, Revenue Management Software	Integration of old systems, high investment costs, talent shortage
Tourism Business	Online Distribution and Presence	E-commerce platforms, Mobile apps, CRM systems	Cybersecurity risks, data privacy, stiff competition from OTAs
Restoran	Operational Efficiency and Delivery	POS System, Inventory Management, Online Ordering	Low profit margins limit investment, high employee turnover
Tourism Village	Basic Access and Visibility	Simple Website, Social Media, Basic Booking Links	Limited infrastructure, low digital literacy, lack of a clear government strategy

Source: primary data processing 2025

The digital divide in tourism sector businesses is identified through a descriptive analysis measuring the average adoption status (X) of nine strategies implemented in the digital era, rated on a 5-point Likert scale. A low average score indicates low digital adoption or a deficit in a particular strategic area. These quantitative measurements show gaps across segments. The data obtained describe the adoption rates for the nine digital strategies as follows:

Table 2. Digital Strategy Adoption Rate

Digital Strategy	Hotel	Tourism Business	Restoran	Tourism Village	Sector (N=80)	Average
S-1	4.35	3.80	2.55	1.90	3.15	
S-2	4.10	3.65	2.10	1.85	2.93	
S-3	4.55	4.40	3.90	3.15	4.00	
S-4	3.95	3.15	2.45	1.70	2.81	
S-5	4.20	3.70	3.05	2.30	3.31	
S-6	4.60	4.05	3.45	2.65	3.69	

Digital Strategy	Hotel	Tourism Business	Restoran	Tourism Village	Sector (N=80)	Average
S-7	3.85	3.30	2.75	1.55	2.86	
S-8	4.05	3.50	2.30	1.65	2.88	
S-9	3.70	3.00	2.05	1.45	2.55	

Source: primary data processing, 2025

The table reveals differences in adoption priorities. The highest overall adoption rates were seen in strategies directly related to customer acquisition and basic commerce: S-3 (Marketing/Digital Presence, $X=4.00$) and S-6 (Mobile Ordering/Payments, $X=3.69$). This shows that competitive pressures and the transactional demands of direct customers are the dominant forces driving digital engagement across all segments. In contrast, the lowest sectoral adoption scores were recorded at S-9 (Accessibility Features, $X=2.55$) and S-4 (Employee Digital Training, $X=2.81$). These low scores for internal training and capacity building indicate a sector-wide failure to drive the organizational support needed for sustainable digital growth.

An interesting pattern emerges when comparing customer-facing strategies (S-3, S-6) with strategies that require employee effort and organizational investment (S-4, S-8: Internal Digital Workflows, $X=2.88$). The difference in average adoption scores between these two groups suggests that external pressures drive perceived adoption. In contrast, internal investments in organizational readiness and cultural alignment, factors known to be important for successful adoption, are ignored. This operational asymmetry confirms that external adoption without commensurate internal support is fundamentally unsustainable and can jeopardize future efforts to adopt complex technologies such as AI or IoT, even in resource-rich segments such as hotels. The technology adoption gap in the Yogyakarta tourism industry is measured directly using the three hierarchical levels established in the digital divide (Korovkin et al., 2023; Maurer & Lutz, 2011).

Based on this data, it is known that there are 3 types of gaps that occur in the tourism industry sector of Yogyakarta, namely:

1. Type 1: Digital Access Gap (Infrastructure and Affordability)

Level 1 Access Gap: hinders these groups from using digital services effectively. Access Gap refers to the struggle to buy the necessary technology or live in an area with limited infrastructure. This fundamental bottleneck is most evident in the Tourism Village segment, which shows low critical scores in basic strategies such as Cloud Integration (S-1, $X=1.90$) and Cybersecurity (S-7, $X=1.55$). A score below 2.0 indicates strong disagreement regarding adoption. The physical or financial constraints inherent in remote or nascent operations directly hinder the implementation of advanced, security-dependent infrastructure such as cloud computing.

2. Type 2: Digital Literacy Gap (Skills and Training)

Literacy gaps occur when individuals lack the skills to use digital tools effectively, especially among groups such as older adults or low-educated employees. The universally low score for S-4 (Employee Digital Training, Sector $X=2.81$), especially in Tourism Villages ($X=1.70$) and Restaurants ($X=2.45$), confirms the widening skills gap. This lack of digital proficiency, confirmed by this low score, prevents the successful implementation of sophisticated internal functions, such as seamless internal digital

workflows (S-8 = 2.88). These structural weaknesses confirm that resource-constrained groups need tailored education initiatives to improve digital literacy.

3. Type 3: Digital Impact Gap (Accessibility and Strategic Value)

Impact gaps arise when organizations fail to design accessible content, preventing disadvantaged groups (e.g., people with disabilities) from fully benefiting from digital services. S-9 (Accessibility Feature, Sector X=2.55) is the only mandate with the lowest score across the sector. This extreme deficit underscores a systemic failure to develop an easy-to-use, accessible platform, suggesting the digital exception is an active design failure, not just a residual effect of limited access.

The low adoption of S-2 (Data Analysis/Insights) in the hotel sector (X = 2.93), especially in the tourism, restaurant, and tourism village business segments (X = 2.10), reveals significant strategic-level problems. This strategy maps directly to the 'Insights' dimension of digital maturity, which requires clear and measurable goals to measure digital success. Low scores indicate a failure to derive strategic value rather than technology adoption. Most of these sectors use unstructured digital tools to measure efficacy, making investment justification subjective and strategic growth impossible. This systemic weakness reflects a fundamental gap in management competence in data-driven decision-making, confirming the prevalence of the "Digital Impact Gap" at the organization's strategic level (Leung, X. Y., 2024).

A descriptive analysis of digital maturity across four tourism segments in Yogyakarta confirms transformation asymmetry. The Hotel segment shows the highest maturity level, consistent with its characteristics as a larger, more established company (conceptually close to *Differentiators* or *Collaborators* in the maturity model). In contrast, tourism businesses, restaurants, and tourist villages show low maturity levels, reflecting the characteristics of skeptics or early adopters. Table 3 presents a comparison of the average maturity score across the four core dimensions (using a Likert scale of 1-5, where 5 = Optimal Maturity):

Table 3: Average Digital Maturity Level by Tourism Segment (n=80)

Maturity Dimensions (Likert Scale 1-5)	Hotel (N=20)	Tourism Business (N=20)	Restaurants (N=20)	Tourist villages (N=20)	Gap Significance (ANOVA)
Culture	4.25	3.50	2.85	2.10	p < 0.001
Technology	4.10	3.65	3.05	2.45	p < 0.01
Insights	3.90	3.40	2.60	1.95	p < 0.001
Organisasi	4.35	3.30	2.70	2.05	p < 0.001

Table 3 shows a significant gap between hotels and tourism businesses, including tourist villages and restaurants, across all dimensions. A key finding is that p < 0.001 appears in the Culture, Insights, and Organization dimensions, not only in the Technology dimension. This shows that the core problem faced by the most backward segments (tourism businesses, restaurants, and tourist villages) is not just a lack of access to hardware or infrastructure (digital divide type 1). Instead, the most severe deficits stem from a lack of managerial skills, organizational structure, and the strategic mindset needed to internalize and use technology (digital divide type 2). For example, a low score

on the insight dimension (1.95 for tourism villages) indicates an inability to collect and analyze customer data, which severely limits differentiation and evidence-based decision-making.

Determinants of Managerial Commitment

To understand the factors that drive or limit managerial commitment to digital transformation, this study uses multivariate linear regression analysis. The model as a whole showed moderate but significant explanatory power, with an adjusted R^2 of 0.38, meaning the three predictor variables explained 38% of the variance in Managerial Commitment.

Table 4: Predictors of Managerial Commitment

Predictor Variable	Coefficient Beta (β)	T-Statistics	P-Value	Meaning
Positive attitude towards Change	0.45	4.15	< 0.001	***
Financial Resources	0.22	2.97	0.003	**
Regulatory Environment	0.08	1.05	0.297	Small

Description: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Dependent variable: Managerial commitment to Digital Transformation.

Dominance of Psychological Determinants

The regression results showed that Positive Attitude to Change was the strongest and most statistically significant predictor of managerial commitment ($\beta = 0.45$, $p < 0.001$). This high beta coefficient confirms the importance of the Peak Management Support factor, consistent with TOE framework literature (Ratnasari, M.A., & Hasnawati, 2023). In the tourism MSME ecosystem, the drive for digital transformation fundamentally comes from leadership will and vision. This correlation helps explain why the Culture and Organization dimensions show the largest gaps in the tourism, restaurant, and tourism village business segments (Table 1). Top management's positive attitude catalyzes digital adoption by overcoming common internal barriers, such as resistance to new procedures and low HR capacity. Without this psychological catalyst, technology adoption efforts tend to fail because they lack ongoing support during complex implementation phases (Mohamad Irhas Effendi et al., 2020).

Digital Maturity Asymmetry

Comparative analysis reveals a statistically significant digital maturity gap across all strategic dimensions between the adult segment (Hotels) and the nascent segment (Restaurants, Tourism Villages).

Table 5. Digital Maturity Gap Comparison

Digital Maturity Dimension	Average score of adults (N=40)	New Segment Average Score (n=40)	Digital Maturity Gap	P-value (T-test)
Culture (Strategies 3, 5)	4.38	2.98	-1.40	< 0.001
Technology (Strategies 1, 6)	4.48	2.64	-1.84	< 0.001

Digital Maturity Dimension	Average score of adults (N=40)	New Segment Average Score (n=40)	Digital Maturity Gap	P-value (T-test)
Insights (Strategies 2, 7)	3.98	2.09	-1.89	< 0.001
Organization (Strategies 4, 8)	4.00	2.24	-1.76	< 0.001

Note: Very significant p-values ($p < 0.001$) across all dimensions confirm that the observed differences are not due to random variation but represent profound, non-random structural differences in digital readiness.

Asymmetry and Strategic Vulnerability Analysis

Organizational Intelligence Deficit

The most severe deficit was observed in the Insight Dimension (Gap = -1.89), followed by the Technology Dimension (Gap = -1.84). The severity of the Insights gap, which includes Data Analytics and Cybersecurity, suggests that the new segment is inherently incapable of deriving meaningful strategic value or business intelligence from its limited digital interactions.

These quantitative shortcomings point to a deficit in organizational intelligence rather than just a hardware shortage. This segment cannot use data effectively to justify the capital expenditure required for the technology, perpetuating the financial constraints identified in their challenge profiles. This creates a detrimental cycle in which a lack of strategic insight prevents the acquisition of advanced systems needed to deepen organizational understanding.

Implications for Resilience

The significant gaps observed across all four dimensions reflect fundamental differences in organizational resilience. Previous studies have shown that hotels affected by the COVID-19 pandemic are more likely to adopt digital technology (Nikopoulou, Maria, et.al., 2023). Resilience in crisis requires strong internal systems—including effective internal workflows (organizational dimension), data security (insight dimension), and modern infrastructure (technology dimension). Because the gap in each area exceeds -1.76 points, the data show that restaurants and tourist villages are significantly less resilient to future external shocks (e.g., economic downturns, unexpected crises) than their hotel counterparts, risking widespread sectoral instability.

Cultural Barriers as the Main Obstacle

The Cultural Dimension shows a statistically significant gap, though it is numerically the smallest (Gap = -1.40). This gap, however, is strategically critical. Research confirms that organizational culture is the single most significant determinant of digital technology adoption (Ezzaouia, I., & Bulchand-Gidumal, J., 2020). Culture involves fostering a supportive environment and strategically guiding technology use, which fundamentally influences employees' willingness to adopt new solutions.

A 1.40-point deficit in cultural alignment means that even if targeted funding successfully bridges the technology or insights gap, implementation is likely to fail because of internal resistance and a lack of a supportive organizational climate in the new segment. As a result, effective policies must first target change management, leadership

vision, and employee empowerment to overcome these cultural barriers before technical investments can produce sustainable results.

Predictive Determinants of Managerial Commitment

To understand the motivational forces behind digital transformation efforts, Multiple Linear Regression (OLS) was conducted using a total managerial sample (N=80). This model aims to determine the relative influence of internal psychological factors and external operational/contextual factors on the dependent variable: managerial commitment to digital transformation. Independent Variables (IV) include psychological predictors (perceived benefits from digital transformation and attitudes to change) and Operational/Contextual Predictors (TOE): Type of segment (Hotel=1, Other=0), Availability of Financial Resources, and Regulatory Environment. The model achieves an R-square of 0.612, indicating that five selected predictors explain 61.2% of the variance in Managerial Commitment, confirming the model's strong predictive utility.

Table 6. Managerial Commitment to Digital Transformation (DT)

Predictor Variable	Standard Coefficient (Beta)	T-Statistics	P-Value	Interpretasi	
(Constant)	N/A	1.55	0.125	Basic Level	Commitment
Perceived Benefits of DT	0.38***	4.92	< 0.001	Strong correlation	positive
Attitude to Change	0.45***	5.81	< 0.001	The most significant psychological drivers	
Segment Type (Hotel=1, Other=0)	0.15*	2.01	0.048	The hotel shows a much higher commitment	
Availability of Financial Resources	0.22**	3.10	0.003	Significant operational support	
Regulatory Environment	0.08	1.05	0.297	Moderate and insignificant influence	

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Interpretation of Significant Predictors and Strategic Leverage Points

Dominance of Psychological Drivers and Managerial Bottlenecks

The results determined that Attitude to Change (beta=0.45) was the strongest positive predictor of Managerial Commitment, followed by Perceived Benefits of DT (beta=0.38). These findings empirically confirm the research's statement that the 'Culture' element of digital maturity, which profoundly shapes managerial mindsets and acceptance of strategic directions, is the most important antecedent to adoption intentions.

The critical implication is the existence of managerial bottlenecks. The manager's internal psychological orientation is far more influential than financial conditions or external regulations. Low managerial commitment, driven by poor attitudes or skepticism about benefits, directly results in low adoption rates for internal strategies such as employee training (S-4) and digital workflows (S-8). The core challenge for

transformation is not technology availability, but management's willingness to initiate and sustain cultural change. Therefore, any effective policy intervention must prioritize changing managers' mindsets and reduce perceived risks associated with digital transformation.

Financial Resources and the Double Limit Paradox

The availability of Financial Resources ($\beta=0.22$) was a significant, positive predictor of commitment, supporting the literature that sufficient capital positively affects the adoption and implementation of digital technology (Ezzaouia, I., & Bulchand-Gidumal, J., 2020). This factor overcomes the gap in organizational readiness.

However, the analysis reveals a paradox of double constraints. While the nascent segment clearly requires financial capital to execute DT (overcoming the resource constraints documented in Table 6, the lower significance of financial factors compared to Attitudes to Change ($\beta=0.45$) suggests that financial support alone is not enough. Managers must first have a strong and positive cultural attitude to acquire, budget, and deploy financial resources effectively toward strategic digital goals. Interventions that fail to pair financial incentives with mandatory training focused on digital strategies tend to result in capital abuse and low utilization.

Ineffectiveness of Regulations and Environmental Context

The Environmental Regulation variable ($\beta = 0.08$) did not reach statistical significance at the standard $p < 0.05$ threshold ($p = 0.297$). Previous research has shown that government regulations can moderately influence adoption as a positive facilitator (Ezzaouia, I., & Bulchand-Gidumal, J., 2020). This research shows that current government programs or incentives lack the mandate or structural appeal needed to overcome the sector's prevailing internal psychological and financial resistance.

To leverage the environmental context of the TOE framework, policymakers must shift regulations from insignificant, moderate drivers to high-impact catalysts. This requires moving away from ambiguous or voluntary guidance and instituting stronger, more tangible incentives (e.g., tax reductions associated with adopting data analytics, or mandated minimum accessibility standards (S-9) to force commitments where internal drivers are weak.

CONCLUSION AND RECOMMENDATIONS

This study confirms substantial digital transformation asymmetry across tourism segments in Yogyakarta, particularly among restaurants and tourism villages, where weaknesses extend beyond technology to the cultural, insight, and organizational dimensions. Managerial commitment is driven primarily by internal psychological factors, with attitude toward change showing the strongest effect ($\beta = 0.45$), followed by perceived benefits ($\beta = 0.38$), while financial resources also contribute ($\beta = 0.22$). The regulatory environment, however, was not statistically significant. Theoretically, these findings extend the Technology-Organization-Environment (TOE) perspective by demonstrating that managerial psychological factors should be considered alongside technological, organizational, and environmental conditions in explaining digital transformation commitment. Practically, tourism policies should adopt differentiated support, particularly for restaurants and tourism villages, through financial assistance, digital training, technical mentoring, and leadership development rather than relying solely on regulatory measures.

This study is limited by its purposive sample of 80 managers, cross-sectional design, focus on four tourism segments, and reliance on self-reported perceptions, which may limit generalizability and causal interpretation. Future research should use larger, longitudinal samples across different destinations and examine additional factors such as digital leadership, employee digital competence, organizational culture, and actual digital investment. Further studies could also test whether managerial commitment mediates the relationship between psychological and financial factors and actual digital transformation outcomes.

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