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THE MEDIATING ROLE OF TECHNOLOGY ADOPTION IN THE RELATIONSHIP BETWEEN TOURISM MARKETING STRATEGIES AND BUSINESS PERFORMANCE

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ABSTRACT

Tourist accommodation is a segment of the tourism industry that provides guests with temporary shelter and comfort, allowing them to stay long enough to enjoy a locality's amenities, services, and attractions while their spending contributes to the local economy. This study examined the mediating role of technology adoption in the relationship between tourism marketing strategies and business performance among accommodation operators in the Caraga Region, Philippines. Using a descriptive-correlational quantitative design, data were collected from 135 operators through a structured questionnaire and analyzed using descriptive statistics, group-difference tests, linear regression, and mediation analysis. Operators rated tourism marketing strategies (overall M = 2.28), technology adoption (M = 2.34), and business performance (M = 2.30) as poor, low, and weak, respectively. Weaknesses were most evident in pricing, accessibility, and promotion, and in low occupancy, limited revenue growth, poor customer satisfaction, and operational inefficiency. Digital transaction security was a relative strength, whereas technology adoption was constrained by integration and usability challenges. Business performance did not differ significantly by type of accommodation, type of ownership, or years of operation. Tourism marketing strategies had a modest but significant effect on business performance (β = .254, p = .003), with promotion the only significant marketing-mix predictor (β = .413, p < .001). Marketing strategies also predicted technology adoption, which in turn predicted business performance. The indirect effect through technology adoption was significant (IE = .0642, 95% CI [.00497, .123]) and the direct effect remained significant, indicating partial mediation. The findings underscore the importance of strategic technology integration in tourism marketing. By closing technology adoption gaps and refining their marketing approaches, accommodation operators in the Caraga Region can improve their competitive positioning and business performance. A 12-month Technology Adoption Development Plan is proposed.

Keywords: *digital transformation, tourism marketing, technology adoption, business performance, hospitality industry, customer relationship management*

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INTRODUCTION

Background and Context

Technology helps companies stand out and drives major change across industries. At the same time, businesses that use technology come to realize that not every technology fits what a company wants to achieve. Each year, people around the world travel for leisure or business to explore new places, and technology contributes substantially to that experience (Tan, 2021). In tourism, technology adoption improves how marketing operations work and increases the effectiveness of businesses that provide accommodation. Its advantages include changing how a business operates, improving customer service, and adjusting marketing methods through software such as Customer Relationship Management (CRM) systems, online booking websites, and data analytics (Smith et al., 2023). Managing technology adoption through an integrated change-management and digital capability-building perspective can lead to sustainable digital innovation. Practitioners can use such a framework to systematically evaluate the potential of emerging technologies, develop the required digital competencies, and manage organizational culture shifts and user resistance to change.

Since the United Nations launched the Sustainable Development Goals (SDGs) in September 2015, sustainable development has become a focal area of debate among governments, practitioners, and policymakers internationally. Studies have highlighted the critical role of the tourism and hospitality industry in achieving the SDGs (Kronenberg & Fuchs, 2021; Lockstone-Binney & Ong, 2022; Scheyvens, 2022). However, academics and policymakers have predominantly focused on the strategic role of the tourism sector in sustainable tourism development, that is, its economic, social, and environmental sustainability. Technology adoption can also support tourist accommodations by enabling participation and giving local stakeholders a voice in decisions in which they previously had none. It can educate both tourists and locals, create learning opportunities that were not previously available, and give communities alternative ways of preserving and sharing their culture, languages, and artifacts with future generations. Researchers are therefore beginning to examine how technology can offer powerful and practical changes in the sustainable management of tourism. The value of technology adoption in achieving the SDGs in tourism depends on how tourism stakeholders engage with it, which has prompted calls for studies and good practices on the adoption and development of information technology in tourism and hospitality (Ye et al., 2020).

Technology greatly affects how tourists enjoy their trips and how businesses in the industry market themselves, and it is increasingly central to tourism marketing (Cruz et al., 2023). The internet allows places to reach a global audience, and future travelers use social media and other devices to learn about attractions, services, and amenities. Technology also helps tourism and hospitality businesses overcome the challenges that traditional paradigms face in today's marketplace, which require collaborative efforts to unlock synergies, shared visions, and ecosystems capable of delivering value to diverse stakeholders and fostering inclusive, sustainable progress.

Regional Context

To address regional tourism challenges, local government groups are partnering with the Department of Tourism (DOT) and investing in infrastructure projects. Among these are a PHP 2.5 million walking trail at Poneas Island Hidden Lake and a PHP 100 million boardwalk along the Gibong River in Agusan del Sur (Department of Tourism, 2023). More comprehensive efforts, however, are needed to overcome the region's tourism challenges. Enterprise activity in the region also increased in the last quarter of 2021, with 1,818 new business name registrations recorded by the Department of Trade and Industry (DTI). According to the Philippine Statistics Authority, a total of 22,422 businesses have been established in the region, including 1,079 registered tourist accommodations in Caraga classified as hotels, resorts, tourist inns, apartels, and pension houses.

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Theoretical Framework

This study draws on three complementary perspectives. The Technology Acceptance Model (TAM; Davis, 1989) holds that perceived usefulness and perceived ease of use are central to whether technology is accepted and used. The Technology-Organization-Environment (TOE) framework (Tornatzky & Fleischer, 2018) explains adoption as the product of technological, organizational, and environmental (for example, competitive and market) conditions. Kotler et al.'s Digital Marketing Model emphasizes targeted promotion and strategic communication in building brand visibility and customer engagement. The four technology adoption indicators measured here (performance expectancy, effort expectancy, social influence, and facilitating conditions) correspond to the constructs of the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003), which extends TAM. Marketing strategy was assessed through the four elements of the marketing mix (product, price, place, and promotion), and business performance through occupancy rate, revenue growth, customer satisfaction, and operational efficiency.

Research Gap and Purpose

Although books and articles worldwide examine how technology deployment affects organizational performance, studies focused exclusively on the Caraga Region are scarce. The researcher was able to retrieve literature on the application of technology adoption and its influence on business performance in the international context, but there is not enough literature in the local setting of the Caraga Region that applies the Technology Acceptance Model to tourist accommodations. This study aims to fill that gap by focusing on the region's tourism sector, particularly technology adoption in tourist accommodations, and by examining how TAM and the TOE framework can help explain and improve technology adoption in Caraga's tourism industry. It also seeks to contribute to the tourism industry's need for business restart and to add relevant information to the existing body of knowledge. Specifically, the study investigates how management's continued use of technology relates to perceived organizational performance.

Objectives of the Study

The study sought to answer the following questions:

1. What is the profile of the accommodation operators in terms of type of accommodation, type of ownership, and years of operation?

2. How do the respondents assess tourism marketing strategy in terms of product, price, place, and promotion?

3. How do the respondents assess technology adoption in terms of performance expectancy, effort expectancy, social influence, and facilitating conditions?

4. How do the respondents assess business performance in terms of occupancy rate, revenue growth, customer satisfaction, and operational efficiency?

5. Is there a significant difference in business performance when operators are grouped according to type of accommodation, type of ownership, and years of operation?

6. Does tourism marketing strategy have a significant influence on business performance?

7. Does tourism marketing strategy have a significant influence on technology adoption?

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8. Does technology adoption have a significant influence on business performance?

9. Does technology adoption mediate the influence of tourism marketing strategy on business performance?

10. Based on the results, what technology adoption development plan may be crafted for accommodation operators to improve their business performance?

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METHODOLOGY

Research Design

The study employed a descriptive-correlational, quantitative research design. This approach was chosen because it allows associations among variables to be examined without adjusting or controlling any of them. Specifically, the study examined technology adoption as a mediator between tourism marketing strategy and business performance. The regression component determined whether the independent variables, tourism marketing strategies and technology adoption, have a significant influence on the dependent variable, business performance (Alves & Ferreira, 2023). Data were gathered through a structured survey. The research was largely deductive in nature, since it tested hypotheses formulated from the literature review. Participants' remarks gathered during the survey were used to illustrate and contextualize the quantitative findings.

Locale and Respondents

The study was conducted among managers and operators of tourist accommodations in the Caraga Region, Philippines, where 1,079 registered tourist accommodations are classified as hotels, resorts, tourist inns, apartels, and pension houses. A total of 135 respondents participated: 39 hotels, 34 resorts, 27 inns, 19 pension houses, and 16 apartels.

Research Instrument

A structured questionnaire measured three constructs on a four-point scale. Tourism marketing strategy was measured through product, price, place, and promotion. Technology adoption was measured through performance expectancy, effort expectancy, social influence, and facilitating conditions. Business performance was measured through occupancy rate, revenue growth, customer satisfaction, and operational efficiency. Responses were interpreted using the following mean ranges: 1.00–1.75 (very poor/very low/very weak), 1.76–2.50 (poor/low/weak), 2.51–3.25 (good/high/strong), and 3.26–4.00 (very good/very high/very strong).

Data Analysis

Means and standard deviations described the respondents' profile and their assessments of the three constructs. Differences in business performance across profile groups were tested using the Kruskal-Wallis test, supplemented by omnibus group comparisons reported as F statistics with two sets of degrees of freedom. Simple and multiple linear regression examined the influence of tourism marketing strategy on business performance and technology adoption, and of technology adoption on business performance. Mediation analysis estimated the path from marketing strategy to technology adoption ($X \rightarrow M$), the total effect of marketing strategy on business performance ($X \rightarrow Y$), the effect of technology adoption on business performance ($M \rightarrow Y$), the direct effect of marketing strategy after accounting for the mediator, and the indirect effect with its 95% confidence interval. Statistical significance was set at $p < .05$.

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RESULTS

Profile of the Accommodation Operators

Table 1. Profile of the Respondents

Profile	Frequency	Percentage
Type of accommodation		
Apartelle	16	11.9
Hotel	39	28.9
Inn	27	20.0
Pension house	19	14.1
Resort	34	25.2
Total	135	100.0
Type of ownership		
Single proprietorship	60	44.4
Partnership	31	23.0
Corporation	44	32.6
Total	135	100.0
Years of operation		
Less than 3	17	12.6
3 to 5	61	45.2
More than 5	57	42.2
Total	135	100.0

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Table 1 presents the respondents' profile. By type of accommodation, most respondents operated hotels (28.9%), followed by resorts (25.2%), inns (20.0%), and pension houses (14.1%); apartelles were the smallest group at 11.9%. By type of ownership, most operated as single proprietorships (44.4%), followed by corporations (32.6%) and partnerships (23.0%). By years of operation, 45.2% had operated for three to five years and 42.2% for more than five years, while 12.6% had been in business for less than three years. A significant number of accommodations have therefore established themselves beyond the start-up phase, indicating relative stability in the industry.

Assessment of Tourism Marketing Strategy

Table 2. **Summary of Respondents' Assessment of Tourism Marketing Strategy**

Indicator	Mean	SD	Description	Interpretation
1. Product	2.23	0.87	Disagree	Poor
2. Price	2.27	0.87	Disagree	Poor
3. Place	2.32	1.02	Disagree	Poor
4. Promotion	2.31	1.06	Disagree	Poor
Overall	2.28	0.96	Disagree	Poor

Note. Legend: 1.00–1.75 = Very Poor; 1.76–2.50 = Poor; 2.51–3.25 = Good; 3.26–4.00 = Very Good.

All four elements of the marketing mix were rated "Disagree," interpreted as "Poor." The overall mean of 2.28 (*SD* = 0.96) indicates that, on average, respondents did not find their tourism marketing strategy effective. Product received the lowest mean (2.23) and place the highest (2.32). This may reflect gaps in how products, pricing, distribution (place), and promotion are managed, especially in a highly competitive and digitally driven market. In sum, tourism marketing strategies in the area are perceived as weak, lacking in inclusiveness, adaptability, and engagement. Local stakeholders' voices point to a strong need for improvements in product promotion, dynamic pricing, destination accessibility, and more compelling, interactive promotional content.

Assessment of Technology Adoption

Table 3. **Summary of Respondents' Assessment of Technology Adoption**

Indicator	Mean	SD	Description	Interpretation
1. Performance expectancy	2.28	1.03	Disagree	Low
2. Effort expectancy	2.33	1.13	Disagree	Low
3. Social influence	2.34	1.15	Disagree	Low

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Indicator	Mean	SD	Description	Interpretation
4. Facilitating conditions	2.41	1.16	Disagree	Low
Overall	2.34	1.12	Disagree	Low

Note. Legend: 1.00–1.75 = Very Low; 1.76–2.50 = Low; 2.51–3.25 = High; 3.26–4.00 = Very High.

Table 3 shows respondents' assessment of technology adoption. From highest to lowest, the means were facilitating conditions (2.41), social influence (2.34), effort expectancy (2.33), and performance expectancy (2.28). All indicators were described as "Disagree" and interpreted as "Low," indicating that respondents generally assessed technology adoption at a low level (overall $M = 2.34$, $SD = 1.12$).

The low rating for facilitating conditions ($M = 2.41$) points to weaknesses in infrastructure, kiosk placement, and user support. The highest-rated item under this indicator was the security of using self-service technologies ($M = 2.70$), whereas kiosk placement was rated lowest ($M = 2.01$). As one participant remarked, "The kiosks are there, but they're in odd corners where guests don't naturally go." Another noted, "The technology's good, but unless it's visible and easy to use, people just end up going to the front desk instead." These observations align with Flipdish (2023) and Olea Kiosks Inc. (2023), who emphasized that strategic placement in high-traffic areas and user-friendly interfaces with clear instructions are crucial to increasing adoption and effectiveness.

Assessment of Business Performance

Table 4. Respondents' Assessment of Business Performance

Indicator	Mean	SD	Description	Interpretation
1. Occupancy rate	2.42	1.13	Disagree	Weak
2. Revenue growth	2.09	1.02	Disagree	Weak
3. Customer satisfaction	2.39	1.22	Disagree	Weak
4. Operational efficiency	2.29	1.01	Disagree	Weak
Overall	2.30	1.10	Disagree	Weak

Note. Legend: 1.00–1.75 = Very Weak; 1.76–2.50 = Weak; 2.51–3.25 = Strong; 3.26–4.00 = Very Strong.

From highest to lowest, the means were occupancy rate (2.42), customer satisfaction (2.39), operational efficiency (2.29), and revenue growth (2.09). All indicators were described as "Disagree" and interpreted as "Weak," indicating general dissatisfaction with business performance. The overall mean of 2.30 ($SD = 1.10$) indicates that respondents, on average, assessed their business performance negatively, particularly in growth and efficiency. These low scores suggest that respondents do not perceive their businesses to be performing strongly on the key indicators, which may point to challenges in sustaining or improving performance, whether from external factors such as market competition or from internal operational inefficiencies.

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Differences in Business Performance by Profile

Table 5. Test of Differences in Business Performance by Profile

Profile variable	Test statistic	df	*p*	Decision on H_0	Remarks
Type of accommodation	$F = 0.353$	4, 52.8	.841	Fail to reject	Not significant
Type of ownership	$F = 0.279$	2, 75.2	.758	Fail to reject	Not significant
Years of operation	$F = 0.782$	2, 45.1	.464	Fail to reject	Not significant

Table 6. Business Performance by Profile Group

Profile variable and group	*N*	Mean	SD	SE
Type of accommodation				
Apartelle	16	2.27	0.340	0.0849
Hotel	39	2.28	0.257	0.0411
Inn	27	2.27	0.311	0.0599
Pension house	19	2.33	0.289	0.0662
Resort	34	2.34	0.296	0.0507
Type of ownership				
Corporation	44	2.29	0.255	0.0385
Partnership	31	2.27	0.301	0.0541
Single proprietorship	60	2.32	0.311	0.0401
Years of operation				
Less than 3	17	2.21	0.289	0.0701
3 to 5	61	2.31	0.318	0.0407

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Profile variable and group	*N*	Mean	SD	SE
More than 5	57	2.30	0.258	0.0342

Type of accommodation. Mean business performance varied minimally across accommodation types. Apartelles (M = 2.27, SD = 0.340), hotels (M = 2.28, SD = 0.257), and inns (M = 2.27, SD = 0.311) were nearly identical, while pension houses (M = 2.33, SD = 0.289) and resorts (M = 2.34, SD = 0.296) scored marginally higher. This slight edge could be attributed to market positioning, guest experience, or operational efficiencies, but the difference was not significant (p = .841).

Type of ownership. Corporations (M = 2.29, SD = 0.255) and partnerships (M = 2.27, SD = 0.301) performed at closely aligned levels, while single proprietorships reported a slightly higher mean (M = 2.32, SD = 0.311). Regardless of ownership structure, businesses performed at comparable levels in occupancy rate, revenue growth, customer satisfaction, and operational efficiency. The slight advantage of single proprietorships may reflect more flexible decision-making or a more personalized management approach, but it was not statistically significant (p = .758).

Years of operation. Businesses operating for three to five years (M = 2.31, SD = 0.318) and for more than five years (M = 2.30, SD = 0.258) performed similarly, while those operating for less than three years had a slightly lower mean (M = 2.21, SD = 0.289). Longer operating experience may offer marginally greater stability, customer retention, and market adaptation, yet the differences were small and not significant (p = .464), indicating that newer businesses can still perform competitively.

Table 7. Summary of Kruskal-Wallis Tests on Business Performance by Profile

Profile variable	Test used	Statistic	*p*	Decision on H_0
Type of accommodation	Kruskal-Wallis	1.330	.856	Fail to reject
Type of ownership	Kruskal-Wallis	0.469	.791	Fail to reject
Years of operation	Kruskal-Wallis	$\chi^2(2) = 1.170$	.558	Fail to reject

Note. A p-value below .05 indicates a statistically significant difference.

Table 7 summarizes the Kruskal-Wallis tests. None of the three profile variables was associated with a significant difference in business performance; for years of operation, $\chi^2(2) = 1.17$, p = .558. Since all p-values exceed .05, neither accommodation type, ownership structure, nor length of operation significantly influences business performance.

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Influence of Tourism Marketing Strategy on Business Performance

Table 8. Linear Regression of Tourism Marketing Strategy on Business Performance

Predictor	*B*	*SE*	β	*t* (*p*)	Interpretation
Model 1					
(Constant)	1.543	0.319	–	4.836 (.000)	
Product	−0.119	0.069	−0.138	−1.718 (.088)	Not significant
Price	0.067	0.068	0.079	0.976 (.331)	Not significant
Place	−0.018	0.065	−0.022	−0.280 (.780)	Not significant
Promotion	0.358	0.070	0.413	5.094 (.000)	Significant
Model 2					
(Constant)	1.648	0.193	–	8.536 (.000)	
Tourism marketing strategy	0.260	0.086	0.254	3.027 (.003)	Significant

Note. Model 1: adjusted $R^2 = .149$, $F = 6.864$, $p < .001$. Model 2: adjusted $R^2 = .057$, $F = 9.165$, $p = .003$.

Model 1 regressed business performance on the four elements of the marketing mix. The model was significant overall, $F = 6.864$, $p < .001$, with an adjusted R^2 of .149. Only promotion emerged as a significant predictor (β = .413, $t = 5.094$, $p < .001$), indicating a strong positive relationship: greater promotional effort is associated with better business performance. Product (β = −.138, $p = .088$), price (β = .079, $p = .331$), and place (β = −.022, $p = .780$) were not significant, suggesting that, for this set of respondents, product offerings, pricing strategies, and distribution channels may not have a substantial short-term impact on performance.

In Model 2, tourism marketing strategy as a whole significantly predicted business performance (β = .254, $t = 3.027$, $p = .003$; $F = 9.165$, $p = .003$). However, the adjusted R^2 of .057 shows that the model explains only a small proportion of the variance, implying that other unexamined factors also play a substantial role in the performance of tourism businesses.

Influence of Tourism Marketing Strategy on Technology Adoption

Table 9. Linear Regression of Tourism Marketing Strategy on Technology Adoption

Predictor	*B*	*SE*	β	*t* (*p*)	Interpretation
Model 1					

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Predictor	*B*	*SE*	β	*t* (*p*)	Interpretation
(Constant)	1.858	0.366	–	5.083 (.000)	
Product	−0.068	0.080	−0.073	−0.857 (.393)	Not significant
Price	−0.032	0.078	−0.035	−0.405 (.686)	Not significant
Place	0.033	0.075	0.037	0.440 (.661)	Not significant
Promotion	0.245	0.081	0.260	3.034 (.003)	Significant
Model 2					
(Constant)	1.648	0.209	–	8.001 (.000)	
Tourism marketing strategy	0.276	0.093	–	2.959 (.004)	Significant

Note. Model 1: adjusted R^2 = .045, F = 2.583, p = .040. Model 2: adjusted R^2 = .062, F = 8.758, p = .004.

Among the marketing-mix elements, only promotion significantly predicted technology adoption (β = .260, p = .003), indicating a positive relationship; product, price, and place did not (all p > .05). Model 1 was significant overall (F = 2.583, p = .040) but explained little variance (adjusted R^2 = .045). When tourism marketing strategy was entered as a single predictor (Model 2), it significantly predicted technology adoption (B = 0.276, p = .004; F = 8.758, p = .004; adjusted R^2 = .062). Promotional activities, particularly digital campaigns, can therefore prompt tourism operators to adopt new technologies for better customer interaction and service delivery.

Influence of Technology Adoption on Business Performance

Table 10. Linear Regression of Technology Adoption on Business Performance

Predictor	*B*	*SE*	β	*t* (*p*)	Interpretation
Model 1					
(Constant)	0.774	0.287	–	2.693 (.008)	
Performance expectancy	0.065	0.065	0.079	1.007 (.316)	Not significant
Effort expectancy	0.330	0.063	0.409	5.212 (.000)	Significant
Social influence	0.129	0.070	0.168	1.847 (.067)	Not significant

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Predictor	*B*	*SE*	β	*t* (*p*)	Interpretation
Facilitating conditions	0.061	0.068	0.082	0.897 (.371)	Not significant
Model 2					
(Constant)	1.591	0.178	–	8.945 (.000)	
Technology adoption	0.277	0.076	0.299	3.618 (.000)	Significant

Note. Model 1: adjusted R^2 = .188, F = 8.740, p < .001. Model 2: adjusted R^2 = .083, F = 13.091, p < .001.

In Model 1, effort expectancy was the only significant predictor of business performance (β = .409, t = 5.212, p < .001). The model was significant overall (F = 8.74, p < .001) and explained about 18.8% of the variance in business performance. Although this proportion is modest, it captures meaningful relationships, particularly with effort expectancy, and suggests that additional variables not included in the model also contribute to business performance. In Model 2, technology adoption significantly predicted business performance (β = .299, t = 3.618, p < .001; adjusted R^2 = .083), indicating that businesses that adopt technology tend to perform better on measures such as operational efficiency, customer experience, and potentially profitability.

Mediating Role of Technology Adoption

Table 11. **Summary of Mediation Results**

Path	Coefficient	SE	*p*
Marketing strategy → technology adoption (X on M)	.2760	.0925	.003
Marketing strategy → business performance (X on Y, total effect)	.2603	.0854	.002
Technology adoption → business performance (M on Y)	.2330	.0769	.002
Marketing strategy → business performance, controlling for technology adoption (X on Y, direct effect)	.1960	.0853	.021

Note. Indirect effect (IE) = .0642, significant; 95% CI [.00497, .123].

Table 11 summarizes the mediation analysis. The path from tourism marketing strategy to technology adoption was significant (B = .276, SE = .0925, p = .003), showing that marketing strategies positively influence technology adoption among accommodation operators. The total effect of marketing strategy on business performance was also significant (B = .2603, p = .002), as was the effect of technology adoption on business performance (B = .233, p = .002). The indirect effect was significant (IE = .0642; 95% CI [.00497, .123], which excludes zero). Because the direct effect also remained significant after accounting for technology adoption (B = .196, p = .021), technology adoption partially mediated the relationship between tourism marketing strategy and business performance. The indirect effect accounts for roughly one quarter of the total effect (.0642 / .2603).

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Proposed Technology Adoption Development Plan

Guided by these findings, a 12-month Technology Adoption Development Plan for accommodation operators was crafted (Table 12). The plan has four phases, each addressing a critical aspect of business improvement. This phased approach aligns technology integration with the study's findings, particularly the influence of digital marketing, system usability, smart technology, and data-driven decision-making on business performance. By integrating these initiatives progressively, operators can improve customer satisfaction, optimize revenue streams, streamline operations, and enhance occupancy without disrupting existing business processes.

Table 12. Proposed Technology Adoption Development Plan for Accommodation Operators

Area of concern	Strategic objective	Key actions	KPIs	Persons involved	Budget (monitoring: annually)
1. Booking and digital marketing (Months 1–3)	Enhance digital marketing and distribution channels	• Invest in social media marketing, SEO, and email campaigns • Use dynamic pricing algorithms • Partner with OTAs (Booking.com, Agoda, Airbnb) • Implement interactive website features (virtual tours, AI chatbots, personalized recommendations)	• Website traffic +30% • OTA conversion +5–10% • Social media engagement +20%	Marketing team; IT team; property managers	₱100,000
2. Mobile payment (Months 3–6)	Improve online booking and mobile payment usability	• Redesign the online booking interface for ease of use • Implement real-time booking updates • Expand payment options (GCash, PayPal, Apple Pay) • Introduce one-click checkout and QR code payments	• Completed bookings +20% • Mobile payment adoption +25% • Booking drop-off −15%	IT team; finance team	₱200,000

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Area of concern	Strategic objective	Key actions	KPIs	Persons involved	Budget (monitoring: annually)
3. Smart technologies (Months 6–9)	Leverage smart technologies for operational efficiency	• Install self-service kiosks and a mobile check-in/check-out system • Implement AI-powered concierge services for customer inquiries • Upgrade the cloud-based PMS to improve room management	• Check-in time −40% • Automated transactions +50% • Customer satisfaction scores +15%	IT team; front office managers; operations team	₱200,000
4. Decision making (Months 9–12)	Strengthen data-driven decision-making	• Implement big data analytics to track pricing trends • Use AI demand forecasting models for occupancy trends • Set up automated customer feedback analysis	• Demand forecasting accuracy +30% • Revenue growth from optimized pricing +20% • Customer retention +15%	Revenue management team; IT team; marketing team	₱100,000

Note. KPI = key performance indicator; OTA = online travel agency; PMS = property management system. Each phase is monitored annually.

The first phase (Months 1–3) focuses on digital marketing optimization: improving online visibility through better digital marketing strategies, partnerships with online travel agencies, and social media engagement. This phase rests on the finding that promotion significantly influences technology adoption (p = .003), and on the premise that robust marketing efforts can drive digital transformation. Targeted social media campaigns and OTA partnerships can expand market reach and increase online bookings. The second phase (Months 3–6) addresses booking and mobile payment usability, the third (Months 6–9) introduces smart technologies for operational efficiency, and the fourth (Months 9–12) builds data-driven decision-making. Across the four phases, the indicative budget totals ₱600,000.

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DISCUSSION

Marketing Strategy, Technology Adoption, and Business Performance

Respondents rated tourism marketing strategy as poor, technology adoption as low, and business performance as weak. This pattern is consistent with the view that gaps in managing products, pricing, distribution, and promotion in a competitive, digitally driven market could be addressed through technologies such as mobile applications and dynamic pricing (Johnson & Brown, 2023; Garcia et al., 2024). The relatively favorable view of transaction security, set against low ratings for kiosk placement, usability, and integration, suggests that operators trust digital tools but are not yet deploying them in ways that guests find visible and easy to use.

Promotion was the one element of the marketing mix that significantly predicted business performance. This aligns with studies showing that well-executed promotional campaigns drive customer engagement and lead to higher bookings, occupancy, and revenue in the tourism industry (Taylor et al., 2023; Garcia et al., 2024). Product, price, and place showed no significant independent effects in this sample, although they remain important in other contexts. Promotion also significantly predicted technology adoption, consistent with literature that emphasizes how promotional activities, particularly digital campaigns, encourage the adoption of new technologies (Taylor et al., 2023; Burgess et al., 2024; Johnson & Brown, 2023). Operators who invest in promotion may therefore be prompted to adopt tools that improve customer interaction and service delivery.

Technology adoption, in turn, significantly predicted business performance, and effort expectancy was the strongest component. This supports TAM's emphasis on ease of use and agrees with research showing that technology adoption improves key operational areas in tourism, such as property management systems, online booking tools, and mobile payment solutions, which streamline operations, reduce costs, and improve service (Johnson & Brown, 2023; Garcia et al., 2023; Lopez et al., 2024). Peer influence and environmental support were less influential, underscoring that internal readiness and system design are essential for realizing the benefits of technology.

The Mediating Role of Technology Adoption

The mediation results show that marketing strategy influences business performance both directly and through technology adoption. Marketing efforts alone were not sufficient to drive strong business outcomes; their effect was significantly enhanced when supported by effective technology adoption. These findings are consistent with Johnson et al. (2023), who argued that technology-based applications in tourism marketing directly enhance operators' operational efficiency and market reach, and with Smith and Garcia (2024), who emphasized that aligning marketing with technology adoption improves occupancy, revenue growth, and customer satisfaction. As Williams and Brown (2023) noted, leveraging technology in accommodation services enables providers to personalize guest experiences, streamline operations, and foster customer loyalty, which are key drivers of business success. Because the indirect effect explains about a quarter of the total effect and the direct effect remains significant, technology adoption is best viewed as an important but partial pathway, and other factors also shape performance.

Differences by Operator Profile

The absence of significant differences in business performance by type of accommodation, type of ownership, and years of operation suggests that structural characteristics do not determine business success. This supports the TOE framework: external factors such as market conditions and competition, together with managerial strategies and internal organizational capacities, appear to play a more pivotal role than structural attributes. Management practices, market positioning, innovation, and service quality are likely more critical than tenure, so newly established and long-standing businesses alike should focus on strategic improvement and customer satisfaction.

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Implications for Practice and Policy

The findings point operators toward integrating technology into marketing: investing in well-designed digital marketing through social media and interactive content; keeping online booking, payment, and property management systems user-friendly; and placing self-service technologies where guests will use them. The relationship between marketing and technology adoption reflects the environmental pressures identified in the TOE framework, in which competitive forces and market demands push organizations toward technological innovation. For policymakers and tourism stakeholders, the findings support capacity-building programs, digital infrastructure improvements, and incentives for small and medium enterprises to adopt innovative technologies and modern marketing practices.

Limitations

The study relied on operators' perceptions measured at a single point in time, so the results show association rather than proof of causation. The regression models explained a modest share of variance (adjusted R^2 between .045 and .188), and the sample covered one region. The study also gave only limited attention to the state of theory development in this area of IT adoption research. Future studies should address these constraints, as outlined below.

CONCLUSION

First, business performance did not differ significantly by type of accommodation, ownership, or years of operation. Structural characteristics therefore do not determine business success; external factors and internal capacities matter more, in line with the TOE framework. Operators should focus on service quality, operational efficiency, and marketing effectiveness rather than rely on structural attributes or tenure.

Second, tourism marketing strategy had a modest but significant influence on business performance, driven chiefly by promotion. This is consistent with the Digital Marketing Model, which stresses targeted promotion and strategic communication in building brand visibility and engagement. While product and pricing showed limited direct impact, operators should invest in well-crafted digital marketing initiatives to remain competitive.

Third, tourism marketing strategy was significantly related to technology adoption. Effective promotion encourages operators to embrace digital technologies, reflecting the environmental pressures described in the TOE framework. Operators should therefore align marketing efforts strategically with technology adoption.

Fourth, technology adoption had a moderate but significant influence on business performance. In line with TAM, perceived ease of use and usefulness are central to successful integration; intuitive, efficient technologies aligned with business processes contribute positively to occupancy, revenue growth, customer satisfaction, and operational efficiency. Operators are encouraged to invest in user-friendly systems, continuous staff training, and seamless integration of technology into daily operations.

Finally, technology adoption mediated the influence of tourism marketing strategy on business performance. Promotional strategies should be reinforced by digital platforms such as streamlined booking systems, secure online payment solutions, and integrated property management systems, which support marketing and also elevate customer experience and operational efficiency. Operators in the Caraga Region should prioritize marketing effectiveness, digital transformation, and continuous operational improvement. Combining technology-integrated marketing with investment in digital literacy, customer-centric service, and strategic resource management will help them strengthen market presence and achieve sustained growth.

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RECOMMENDATIONS

Based on the findings and conclusions, the following recommendations are offered to key stakeholders.

For Tourist Accommodation Operators

Operators should strengthen their marketing strategies by prioritizing promotional efforts and improving the accessibility of their establishments. Given the significant influence of promotion on business performance, they should invest in digital marketing campaigns, strategic partnerships with travel agencies, and social media platforms to increase visibility. Operators should also integrate technology into operations, particularly by improving online booking systems, streamlining payment options, and adopting CRM tools. Since technology adoption was found to mediate the effect of marketing on performance, digital tools must be user-friendly and aligned with operational goals. Operators should also continuously assess and refine their service offerings based on customer feedback.

For the Department of Tourism (DOT)

The DOT should strengthen support for accommodation operators by facilitating access to digital marketing resources, technology adoption programs, and capacity-building initiatives. It should develop targeted campaigns that promote lesser-known accommodations and ensure equitable marketing opportunities for all operators. It should also collaborate with local government units and transport agencies to improve infrastructure and accessibility, addressing the challenges of transportation and ease of travel. To encourage digital transformation, the DOT should provide training on emerging hospitality technologies, including online booking platforms, automated customer service systems, and digital payment integration.

For the Academe

Academic institutions should incorporate updated, industry-relevant courses on digital marketing and technology integration into tourism and hospitality management curricula, equipping students with skills in digital branding, online customer engagement, and data-driven decision-making. The academe should also foster research collaborations with tourism stakeholders on strategies for improving marketing effectiveness, technology adoption, and service quality, and design internship and training programs that expose students to real-world applications of technology in tourism operations.

For Future Researchers

Future researchers should explore additional factors that influence business performance beyond marketing and technology adoption, such as customer experience management, sustainability practices, and service quality. Longitudinal studies can assess the long-term effects of digital transformation on tourism businesses, and comparative studies across regions or tourism sectors can reveal how marketing effectiveness and technology adoption vary. Future research could also examine the role of government policies and support programs in facilitating digital adoption among small and medium-sized tourism enterprises.

It would also be worthwhile to explore theoretically how the factors identified in this study apply in other sectors of the tourism industry, to analyze the technology adoption behavior of accommodation operators over time (including which technologies are most mature and which are the most recent innovations), and to examine how management priorities are reflected in the technologies operators employ. Technology adoption is a structured process that organizations follow to implement and effectively use new digital solutions, or to assess and expand existing ones. It involves team members from leadership to everyday users and requires input and buy-in from all stakeholders to succeed.

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