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Article

The Impact of Customer Preferences, Pricing, and Technological Innovation on Hotel Revenue in Melaka, Malaysia

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Abstract

This study investigates the impact of customer preference and expectation, room rate and price, and technology innovation on hotel revenue in Melaka, Malaysia. A quantitative research design was adopted, and data were collected from hotel employees through a structured, self-administered online questionnaire. Convenience sampling was used, and a total of 100 valid responses were analyzed. The data were examined using Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the proposed relationships among variables. The measurement model confirmed that all constructs met the required reliability and validity standards. The structural model results revealed that room rate and price have the strongest positive influence on hotel revenue, followed by customer preference and expectation. Technology innovation also shows a significant positive effect, although comparatively weaker than the other predictors. These findings indicate that pricing strategy remains the most critical factor in enhancing hotel financial performance, while customer expectations and technological advancements play supporting roles. The study demonstrates that hotel revenue is driven by a combination of effective pricing strategies, responsiveness to changing customer expectations, and the adoption of innovative technologies. The results provide practical implications for hotel managers to optimize pricing decisions, improve service quality, and integrate technology to enhance operational efficiency and competitiveness in the hospitality industry.

Keywords: tourism; pricing; hotel revenue; customer preference; technology; innovation

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1. Introduction

The hospitality industry is widely recognized as a key driver of economic growth and social development worldwide. In 2023, the tourism sector in Malaysia contributed 14.7% to the nation's GDP. Additionally, it accounted for 23% of total employment in the country (Begum et al., 2025; Raihan et al., 2025), supporting approximately 1.5 million jobs both directly and indirectly. Beyond its economic significance, the industry supports ancillary sectors such as retail, transportation, and entertainment, generating a wide-reaching impact on regional development. The hotel sector, in particular, plays a pivotal role in accommodating both domestic and international travelers, facilitating tourism, and promoting Malaysia as a competitive global destination (Chong & Malakhova, 2025).

Despite its importance, the Malaysian hotel industry faced unprecedented challenges during the COVID-19 pandemic. In 2020, movement control measures, border closures, and health regulations led to significant

declines in tourism activity, causing sharp reductions in hotel occupancy rates and revenue (Miller, 2024). Malaysia's hotel occupancy dropped to 20% in 2020, reflecting a severe contraction in demand (Abhari et al., 2022). Globally, cities such as Buenos Aires, Argentina, experienced prolonged lockdowns exceeding 200 days, highlighting the widespread vulnerability of the hospitality sector to public health crises. The pandemic also disrupted employment, with Malaysia experiencing an increase in unemployment from 3.26% pre-pandemic to 4.54% in 2020, reflecting workforce reductions across hospitality and related sectors. Although borders reopened in 2021 and hotel occupancy improved to 25.8%, the industry continues to face structural challenges in regaining pre-pandemic performance levels.

The pandemic not only affected operational and financial aspects but also reshaped customer behavior, preferences, and expectations (Hu et al., 2021). Travelers have become increasingly concerned with health and safety, affordability, and flexibility in booking. Many customers now prefer lower-priced accommodations while maintaining expectations for cleanliness, convenience, and personalized services. These shifts highlight the importance of understanding customer preferences and expectations as key determinants of hotel revenue in a post-pandemic context. Moreover, research indicates that hotels that adopt customer-centric strategies, including responsive service design and flexible pricing policies, are better positioned to retain loyalty and improve occupancy (Al-Kumaim et al., 2025).

Pricing strategies have become particularly critical in driving hotel revenue. Room rates directly influence customers' perceived value, purchase decisions, and willingness to return, especially during economic uncertainty (Ampountolas et al., 2021; Jawabreh et al., 2023). Hotels must balance affordability with profitability, using promotional packages, seasonal discounts, and dynamic pricing mechanisms to optimize revenue while meeting customer expectations. In addition, technology adoption has emerged as a strategic factor in enhancing operational efficiency, service quality, and customer satisfaction. Innovations such as online booking systems, contactless check-in and check-out, mobile apps, and enhanced hygiene monitoring have become essential to address health concerns, streamline processes, and meet modern consumer expectations.

Melaka, a prominent tourist destination in Malaysia, illustrates the combined effect of these factors on hotel performance. The city's hotels are gradually recovering from pandemic-induced disruptions, yet face ongoing challenges in occupancy management, service quality, and competitive pricing. Understanding the interplay between customer preferences and expectations, pricing strategies, and technological innovation is therefore essential for sustaining revenue growth in this context. By examining these variables, hotel managers can implement evidence-based strategies that improve service delivery, enhance customer satisfaction, and strengthen competitiveness in a post-COVID-19 hospitality landscape.

This study aims to examine the impact of customer preferences and expectations, pricing strategies, and technological innovation on hotel revenue in Melaka, Malaysia. Using a quantitative approach, the research provides empirical insights into the determinants of revenue generation in the post-COVID-19 hospitality landscape. The findings are expected to guide hotel managers and policymakers in designing effective strategies that improve customer satisfaction, drive revenue growth, and ensure long-term sustainability in the Malaysian hotel industry.

2. Literature Review

COVID-19 has significantly disrupted life, business, and the economy, particularly impacting service industries like restaurants, airlines, and hotels. The pandemic has led to adverse effects on the tourism sector, resulting in employee attrition, absenteeism, and financial instability (Mohamad Said et al., 2021). Staff express uncertainty about the industry's recovery and expect government intervention to enhance tourism activities (Zainol et al., 2021). Hotels have adapted their business strategies in response to the pandemic, focusing on innovative approaches to recover revenue losses. In the post-COVID-19 stage, they emphasize enhanced standard operating procedures (SOP) for cleanliness and virus control to ensure customer satisfaction.

2.1. Consumer Preference and Expectations, and Hotel Revenue

The COVID-19 pandemic has led to changes in customer preferences for accommodations, with satisfaction affected by situational factors like hygiene standards and contactless payments, and personal factors such as service quality, product offerings, and pricing. These personal factors are influenced by individual goals, including health concerns and life values (Yau et al., 2020). Guest expectations for hotel accommodations have

shifted post-COVID-19, with a heightened demand for advanced technology focused on health, safety, and contactless services (Chen et al., 2021). Key digital solutions such as contactless check-ins, mobile key access, QR code menus, digital payments, and improved sanitization have become essential, driven by hygiene concerns and the need for social distancing. Technology is now perceived as a basic service requirement rather than a luxury. Key theories influencing consumer preferences, expectations, and hotel outcomes are Theory of Planned Behavior (TPB). The Theory of Planned Behavior (TPB) proposed by Ajzen (1991) emphasizes that an individual's intention to perform a behavior is influenced by three main constructs, namely attitude towards the behavior, subjective norms, and perceived behavioral control. Based on this framework, this study extends TPB by integrating hotel-specific constructs such as consumer preference, and hotel revenue as antecedent factors to intention to stay. This approach allows for a more holistic understanding of how the consumer preference & expectations and hotel revenue influenced the customer expectations.

H1: Consumer preference and expectations influence hotel revenue.

2.2. Room Rate and Price, and Hotel Revenue

Hoteliers should skillfully implement pricing strategies based on customer behavior to maximize revenue. It's essential to set clear guidelines for acceptable booking platform behaviors. Weekend room rates usually align with market trends, though they may vary due to last-minute discounts or surcharges, influenced by special events and fairs, which can also affect pricing before and after their occurrence (Guizzardi et al., 2022). Customers influence both brand selection and purchasing quantity. Marketing strategies for accommodations and promotions must be carefully developed to ensure effective communication with guests. Effective advertising requires meticulous planning and exclusivity to successfully attract customer attention, particularly with pricing strategies (Ali & Anwar, 2021). In making a hotel evaluation, the evaluation methods that can be used are the Cost Method, the Comparison Method, and the Income Method (Majumdar, 2019). However, studies by past researchers have stated the challenges in making a hotel evaluation. These challenges are classified according to the evaluation method used.

H2: Room rate and price influence hotel revenue.

2.3. Technology and Innovation, and Hotel Revenue

Advanced technologies adopted by hotels post-COVID-19 have significantly influenced room rates and pricing. Hoteliers are enhancing digital transformation to maintain operations, bolster safety standards, and restore consumer confidence (Rahimizhian & Irani, 2021). Implementations such as contactless check-in and check-out systems, mobile applications, smart room technologies, automated housekeeping, and improved sanitization have boosted operational efficiency and service quality. Pricing strategies are justified as guests are willing to pay for premium rooms with advanced technology that enhances safety and overall experience, fostering loyalty and supporting higher room rates for hotel revenue (Wu et al., 2020). Technology now serves as a strategic asset, impacting perceived value, competitive positioning, and revenue optimization. Hoteliers who integrate innovation into their operations are better equipped to implement dynamic and value-driven pricing strategies in the post-COVID-19 market.

The perception of safety among customers has changed since before the pandemic, prompting hotels to enhance safety perceptions and reduce anxiety through risk-reduction strategies. Implementing technological innovations to decrease guest-staff interactions and increase cleanliness can effectively mitigate health risks during hotel stays (Kussmann, 2020). Branded hotels are adopting advanced cleaning technologies, such as electrostatic sprayers and UV-light, to enhance disinfection and meet heightened cleanliness expectations. These innovations aim to reduce both real and perceived health risks, helping to alleviate patrons' concerns about potential health dangers (Yildiz et al., 2023). The use of advanced technologies in the hospitality sector has gained momentum after COVID-19, as customers now favor robotic services for their role in reducing virus transmission and supporting social distancing. This technological shift has led to enhanced customer satisfaction, enabling hotels to adapt and thrive amid ongoing operational challenges due to the pandemic.

H3: Technology & Innovation influence hotel revenue.

2.4. Conceptual Framework

The conceptual framework of this study illustrates the relationships between three independent variables—customer preferences and expectations, room rates and pricing, and technological innovation—and one dependent variable, hotel revenue in the post-COVID-19 hospitality context. It highlights how hotels leverage these factors to enhance revenue, retain customer loyalty, and ensure long-term sustainability. Figure 1 presents research model.

Customer preferences and expectations have shifted significantly following the pandemic. Guests now prioritize safety, cleanliness, flexibility in booking, and personalized experiences. To align with these expectations, hotels are increasingly focusing on service and technological innovations. Investments in technology, such as contactless payment, online booking platforms, self-check-in systems, and customer relationship management tools, allow hotels to understand guest behaviors, tailor services, and enhance overall satisfaction. Satisfied customers are more likely to return, fostering loyalty and repeat revenue. Additionally, health and safety measures, including UV-C disinfection, antimicrobial surfaces, air purification, and flexible booking options, have become essential in rebuilding trust and confidence among travelers.

Pricing strategies and revenue management are equally critical. Post-COVID-19, hotels face cautious consumer spending and fluctuating demand, requiring dynamic pricing approaches to optimize revenue. Revenue management theory guides strategies such as daily demand forecasting, market segmentation, overbooking, and inventory allocation to maximize revenue per available room (RevPAR). Hotels are increasingly targeting profitable local and regional markets, designing culturally immersive packages that combine accommodations with local attractions, guided tours, and discounts at nearby establishments. This approach not only enhances the guest experience but also strengthens the connection between hotels and local tourism economies.

Technological innovation complements both customer satisfaction and revenue management. By leveraging online reviews, membership programs, and data analytics, hotels can customize offerings, improve operational efficiency, and identify opportunities for new services. Continuous innovation ensures that hotels remain agile and responsive to evolving market conditions. Staff training is critical to ensure the effective use of new technologies while maintaining high service quality.

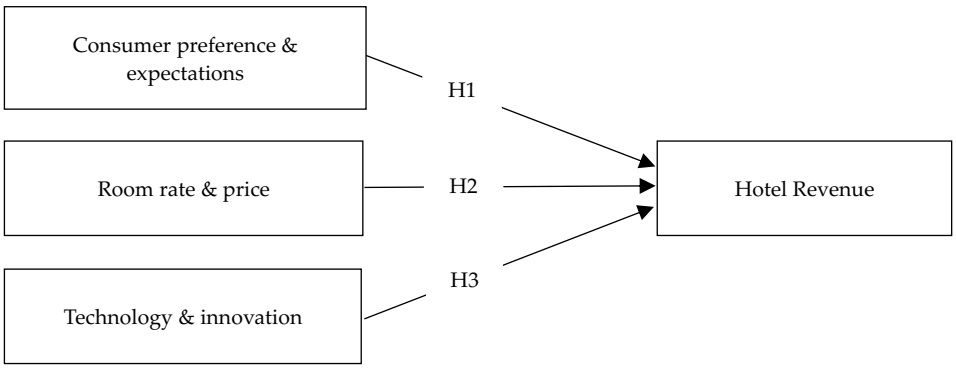

Figure 1. Research model.

3. Methodology

A quantitative research design was adopted to examine the influence of consumer preference and expectations, room rate and pricing, and technology and innovation on hotel revenue. This approach is appropriate as it enables the systematic measurement of relationships among variables and facilitates statistical analysis for hypothesis testing. The study focused on employees working in hotels located in Melaka, Malaysia, as they possess operational insights into pricing strategies, customer behavior, and the adoption of technological innovations that directly affect revenue performance.

Data were collected in December 2025 using an online, self-administered questionnaire. The instrument was developed based on an extensive review of prior literature to ensure content validity and alignment with established constructs. A five-point Likert scale was employed, ranging from 1 (strongly disagree) to 5 (strongly agree), which is widely used in hospitality and management research for capturing perceptions and attitudes

in a standardized manner. Prior to the main survey, a pilot study was conducted with 30 participants to evaluate the clarity, reliability, and validity of the measurement items. Feedback from the pilot test led to minor refinements, ensuring that the final questionnaire was both reliable and easy to comprehend.

A convenience sampling technique was utilized to recruit respondents. This method was considered appropriate due to practical constraints such as time, accessibility, and resource limitations, particularly in obtaining responses from hotel employees with varying schedules and operational responsibilities. Additionally, convenience sampling allowed the researcher to efficiently reach respondents who were readily available and willing to participate, thereby improving data collection feasibility. Although this approach may limit generalizability, it is commonly applied in exploratory and applied hospitality research where access to a complete sampling frame is not feasible.

A total of 150 questionnaires were distributed, out of which 100 usable responses were obtained, resulting in a response rate of 66.7%, which is considered acceptable for survey-based research. The sample size meets the minimum requirements for multivariate data analysis techniques. For data analysis, Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed, as it is suitable for predictive research models, handles complex relationships among constructs, and performs effectively with relatively small sample sizes. This analytical technique enabled the assessment of both the measurement model and the structural relationships among variables.

4. Results

Table 1 presents the demographic profile of the respondents. The sample is slightly female-dominated, with 57.0% females and 43.0% males. Most respondents are aged 28–43 years (65.0%), followed by 44–58 years (28.0%). In terms of education, respondents are mainly undergraduates (36.4%) and secondary school graduates (35.0%), with smaller proportions holding tertiary (18.6%), postgraduate (6.1%), and professional qualifications (4.0%). This reflects a generally well-educated sample. Regarding income, most respondents fall within the RM3001–RM5000 range (45.9%), followed by RM5001–RM10000 (31.6%), with fewer earning below RM3000 (14.3%) or above RM10001 (8.2%). This indicates a predominantly middle-income group. Finally, work experience is mainly concentrated in the 1–5 years category (42.0%), followed by 6–10 years (25.0%), less than 1 year (18.0%), and more than 10 years (15.0%), showing a mix of early and moderately experienced employees.

Table 1. Respondents' profile.

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	43	43.0
	Female	57	57.0
Age	18–27 years	5	5.0
	28–43 years	65	65.0
	44–58 years	28	28.0
	59 years and above	2	2.0
Highest Education Level	Secondary school	35	35.0
	Tertiary education	19	18.6
	Undergraduate	36	36.4
	Postgraduate	6	6.1
	Professional qualification	4	4.0
Income	Under RM3000	14	14.3
	RM3001–RM5000	46	45.9
	RM5001–RM10000	32	31.6
	RM10001 and above	8	8.2
Work Experience	Less than 1 year	18	18.0
	1–5 years	42	42.0
	6–10 years	25	25.0
	More than 10 years	15	15.0

Table 2 presents the assessment of the measurement model, including outer loadings, internal consistency reliability, composite reliability, and convergent validity. For customer preference and expectation, all items load adequately (0.710–0.820), with Cronbach's alpha (0.730), composite reliability (0.893), and AVE (0.610) confirming satisfactory reliability and validity. For room rate and price, outer loadings range from 0.800 to 0.880. Although Cronbach's alpha is slightly lower (0.674), composite reliability (0.854) and AVE (0.630) confirm acceptable internal consistency and convergent validity. Technology innovation shows strong item loadings

(0.720–0.770), with good reliability ($\alpha = 0.748$, CR = 0.856) and high convergent validity (AVE = 0.770), indicating a well-measured construct. Finally, hotel revenue demonstrates very strong outer loadings (0.890–0.930), with Cronbach's alpha (0.750), composite reliability (0.853), and AVE (0.610) confirming reliable and valid measurement. Overall, all constructs meet the required thresholds for measurement quality.

Table 2. Measurement model.

Items with Construct	Loading	Cronbach's Alpha	Composite Reliability	AVE
Customer Preference & Expectation		0.730	0.893	0.610
CPE1: The COVID-19 pandemic has significantly changed guest preferences and expectations for hotel services.	0.780			
CPE2: Guests now tend to prefer higher service quality even when prices are higher.	0.820			
CPE3: Guests expect service quality to match or exceed the price they pay.	0.750			
CPE4: Hotel guests expect facilities and equipment to be modern, clean, and visually appealing.	0.790			
CPE5: Guests expect prompt and efficient service from hotel staff.	0.710			
Room Rate & Price		0.674	0.854	0.630
RRP1: Guest sensitivity toward hotel room pricing has increased after the COVID-19 pandemic.	0.850			
RRP2: Guests prefer hotel rooms that are reasonably priced.	0.880			
RRP3: Competitive room rates combined with essential amenities attract more guests.	0.830			
RRP4: Room price is a key factor influencing guest booking decisions.	0.810			
RRP5: Guests are more likely to choose lower-priced hotels when service quality is similar.	0.800			
Technology & Innovation		0.748	0.856	0.770
TI1: Advanced hygiene technologies (e.g., HEPA filters and UV systems) improve guest perceptions of safety.	0.740			
TI2: Self-check-in and automated systems enhance the overall guest experience.	0.770			
TI3: Contactless payment systems improve convenience and reduce health-related risks for guests.	0.760			
TI4: Hotels that use innovative technologies such as mobile check-in or service automation offer better service efficiency.	0.750			
TI5: Technology adoption in hotels reduces physical contact and increases guest confidence in safety.	0.720			
Hotel Revenue		0.750	0.853	0.610
HR1: Hotel revenue is generated from room sales, group bookings, and contract-based demand.	0.900			
HR2: Room department costs include salaries, wages, benefits, and related payroll expenses.	0.920			
HR3: Room operating expenses include housekeeping supplies, reservation systems, and guest service costs.	0.910			
HR4: Other hotel departments contribute significantly to overall hotel revenue performance.	0.930			
HR5: Non-labor operational expenses include utilities, supplies, and service-related costs.	0.890			

Table 3 presents the discriminant validity results using the Fornell–Larcker criterion. The diagonal values (square roots of AVE) for all constructs—room rate & price (0.736), customer preference & expectation (0.764), technology innovation (0.773), and hotel revenue (0.780)—are higher than their corresponding inter-construct correlations. This indicates that each construct shares more variance with its own indicators than with other constructs. Therefore, the results confirm satisfactory discriminant validity of the measurement model.

Table 3. Discriminant validity (Fornell–Larcker Criterion).

	Room Rate & Price	Customer Preference & Expectation	Technology Innovation	Hotel Revenue
Room Rate & Price	0.736			
Customer Preference & Expectation	0.658	0.764		
Technology Innovation	0.723	0.698	0.773	
Hotel Revenue	0.715	0.580	0.670	0.780

Table 4 presents structural model results indicate that all hypothesized relationships are statistically significant. Room rate & price (β = 0.420, p = 0.001) has the strongest positive effect on hotel revenue, followed by customer preference & expectation (β = 0.350, p = 0.001). Technology innovation (β = 0.210, p = 0.039) also shows a significant positive influence on hotel revenue, although with a relatively weaker effect. Overall, all three hypotheses (H1–H3) are supported, confirming that pricing strategy, customer expectations, and technological innovation significantly contribute to hotel revenue performance.

Table 4. Path coefficients.

Paths	Beta	Standard Deviation	T Statistic	P Value	Decision
Customer Preference & Expectation → Hotel Revenue	0.350	0.363	3.850	0.001	H1 supported
Room Rate & Price → Hotel Revenue	0.420	0.058	4.850	0.001	H2 supported
Technology Innovation → Hotel Revenue	0.210	0.350	2.066	0.039	H3 supported

Figure 2 illustrates the coefficient of determination (R^2) for hotel revenue. The R^2 value of 0.65 indicates that 65% of the variance in hotel revenue is explained by customer preference & expectation, room rate & price, and technology innovation. The adjusted R^2 value of 0.63 further confirms that the model retains strong explanatory power even after accounting for the number of predictors, demonstrating that the structural model is robust and well-fitted.

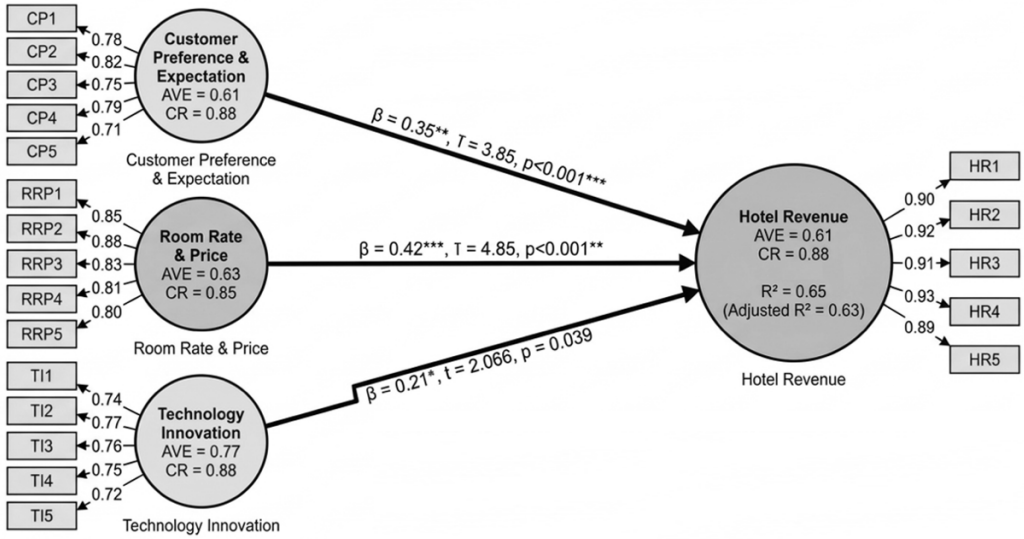

Figure 2. Structural model.

5. Discussion

The findings of this study provide strong empirical evidence regarding the determinants of hotel revenue in Melaka, Malaysia. The structural model results indicate that room rate & price, customer preference & expectation, and technology innovation all have significant positive effects on hotel revenue, with varying degrees of influence. Among the predictors, room rate & price emerged as the most influential factor affecting hotel revenue. This suggests that pricing strategy remains a critical driver of financial performance in the hotel industry (Nair, 2019). Employees perceive that competitive pricing, combined with value-added services, plays a central role in attracting customers and increasing occupancy rates. This finding is consistent with revenue management theory, which emphasizes price optimization as a core strategy for maximizing hotel performance (Abrate & Viglia, 2016). The second strongest predictor, customer preference & expectation, also demonstrates a significant positive impact on hotel revenue. This indicates that evolving customer expectations—particularly after the COVID-19 pandemic—have reshaped service delivery standards. Employees recognize that guests increasingly demand higher service quality, improved hygiene standards, and faster service delivery. Hotels that successfully align their services with these expectations are more likely to achieve higher revenue performance (Das et al., 2024).

Technology innovation was also found to have a significant, though relatively weaker, effect on hotel revenue. This suggests that while technological advancements such as contactless services, self-check-in systems, and advanced hygiene technologies enhance operational efficiency and customer confidence, their direct contribution to revenue is still developing. However, their role in supporting customer satisfaction and competitive advantage remains important in modern hospitality operations (Song et al., 2022). The model's explanatory power is substantial, with an R^2 value of 0.65 and an adjusted R^2 of 0.63, indicating that the three predictors collectively explain a large proportion of variance in hotel revenue. This demonstrates that the selected variables are appropriate and relevant in explaining financial performance within the hotel sector.

This study contributes to hospitality management and revenue management literature by empirically validating the combined influence of customer preference and expectation, room rate and price, and technology innovation on hotel revenue. The results reinforce revenue management theory, particularly the importance of pricing strategy as the most dominant predictor of financial performance. Additionally, the findings extend customer expectation theory by showing that post-pandemic behavioral shifts significantly shape perceived service value in the hotel industry. The inclusion of technology innovation also strengthens the growing body of literature on digital transformation in hospitality, confirming its role as a complementary rather than primary revenue driver.

For hotel managers, the findings provide clear strategic guidance. First, pricing strategies should be prioritized, as room rate and pricing decisions have the strongest impact on revenue performance. Hotels should adopt dynamic pricing models that reflect market demand and perceived value. Second, managers must continuously monitor and respond to changing customer expectations, particularly regarding service quality, hygiene standards, and speed of service delivery. Aligning service offerings with these expectations can enhance occupancy rates and customer retention. Third, although technology innovation has a relatively weaker direct effect on revenue, it remains an essential operational tool. Hotels should invest in contactless technologies, self-check-in systems, and automated services to improve efficiency and enhance guest experience. These technologies indirectly support revenue growth by increasing customer satisfaction and competitiveness.

From a broader industry perspective, hospitality stakeholders and policymakers should encourage the adoption of digital transformation initiatives in the hotel sector. Training programs and incentives can support hotels—especially small and medium enterprises—in integrating new technologies effectively. Additionally, pricing transparency guidelines and industry benchmarks may help ensure fair competition while maintaining service quality standards.

6. Conclusions

This study investigated the impact of customer preference and expectation, room rate and price, and technology innovation on hotel revenue in Melaka, Malaysia. The findings demonstrate that all three factors significantly influence hotel revenue, though their effects vary in strength and managerial importance. Among the predictors, room rate and price emerged as the most dominant factor influencing hotel revenue. This highlights the critical role of effective pricing strategies in enhancing hotel financial performance and competitiveness. Customer preference and expectation also show a strong positive influence, indicating that hotels must continuously adapt to changing guest expectations, particularly in terms of service quality, cleanliness, and responsiveness in the post-pandemic environment. Technology innovation was also found to have a significant impact on hotel revenue, although its effect is relatively weaker compared to pricing and customer-related factors. These findings emphasize the importance for hotel managers to adopt a holistic approach that integrates competitive pricing, customer-centric service delivery, and gradual technological transformation. By doing so, hotels can enhance operational effectiveness, improve guest satisfaction, and ultimately strengthen revenue performance in a highly competitive hospitality market.

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Visualization: Hemaloshinee Vasudevan.
Writing –original draft: Gui Poh Chean.
Writing –review & editing: Hemaloshinee Vasudevan.
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