

PREDICTIVE MODEL OF INTERNATIONAL TOURIST EXPENDITURE IN BALI FOR THE DEVELOPMENT OF DATA-DRIVEN TOURISM MARKETING STRATEGIES

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Abstract

This study aims to analyze international tourist spending patterns in Bali and identify factors influencing these spending levels to support the development of data-driven tourism marketing strategies. The research focuses on comparing tourists from Australia and China, two key tourism markets in Bali. The approach used is quantitative, using multiple regression analysis, the Mann-Whitney test, and the development of a data-driven predictive model. Data was obtained from 200 respondents through online and offline surveys, as well as secondary data from relevant agencies. The results indicate that most tourists fall into the mid-range spending category. Chinese tourists have higher average spending than Australian tourists, despite shorter visit durations, with shopping activities predominating. In contrast, Australian tourists tend to allocate spending on accommodation and food and beverage consumption during longer stays. Furthermore, statistical tests show significant differences in spending by gender, with male tourists spending more than female tourists. Factors such as country of origin, length of stay, accommodation type, and tourist characteristics have been shown to influence spending. This study concludes that a data-driven predictive analytics approach can provide a more comprehensive understanding of tourist behavior and serve as a basis for formulating more effective, segmented tourism marketing strategies oriented toward improving the quality and value of tourist spending.

Keywords: *Tourist Expenditure, Predictive Analysis, Bali Tourism, Consumer Behavior, Marketing Strategy.*

INTRODUCTION

Tourism constitutes one of the strategic sectors in both global and national economic development. This sector relies not only on physical infrastructure but also integrates cultural values and tourist experiences as its primary attractions. According to the World Travel and Tourism Council (WTTC), the travel and tourism sector contributes approximately 10.4% to global Gross Domestic Product (GDP) and supports one in ten jobs worldwide. The total global revenue generated by this sector is estimated at US\$8.3 trillion, underscoring its significant role as a catalyst for cross-sectoral growth. As an archipelagic country with more than 17,000 islands, Indonesia possesses extraordinary tourism potential through a combination of cultural diversity, natural beauty, and rich historical heritage. Bali, widely known as the “Island of the Gods,” serves as the main icon of Indonesian tourism and has long been recognized internationally. Tourism in Bali represents one of the major industries contributing significantly to Indonesia’s global economic development (Tarigan, Bayupati, & Putri, 2021).

Destinations such as Ubud, Seminyak, Nusa Dua, Uluwatu, and Kuta have become major attractions for international tourists. According to Al Haris et al. (2023), accurate forecasting of international tourist arrivals can assist the government in formulating appropriate tourism development policies. Research findings indicate that countries with higher GDP per capita tend to generate higher tourist arrivals to Bali (Sasrawan & Budiningsih, 2021). The number of international tourist arrivals is a key indicator of tourism development (Tarigan, Bayupati, & Putri, 2021). In recent years, tourists from Australia and China have consistently ranked among the top three contributors to international arrivals in Bali. Historical data on international arrivals to Bali, as illustrated in Figure 1, show significant fluctuations, particularly influenced by global events. After experiencing a drastic decline in 2020 and reaching its lowest point in 2021 with only 51 total arrivals, Bali’s tourism industry has demonstrated a strong recovery. The number of arrivals increased substantially to 2,155,747 in 2022, then surged to 5,273,258 in 2023, and reached 6,333,360 in 2024.

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Further analysis based on country of origin identifies several key markets that significantly contribute to arrival numbers. In 2024, Australia ranked as the largest source of tourists to Bali, with a total of 1,544,141 arrivals. Meanwhile, the Asian market also showed an impressive recovery; India recorded 550,379 arrivals, while China contributed 448,446 arrivals during the same period. However, the increasing volume of tourist arrivals does not necessarily correspond proportionally to real economic contributions, particularly at the local level. Although the number of arrivals is relatively high, the quality of tourists’ economic contributions—in terms of spending levels and their distribution across sectors still exhibits considerable variation. Many small businesses, mid- to lower-tier accommodations, and non-primary tourist destinations have not fully benefited from this growth. This indicates a gap between the actual condition (high number of arrivals) and the ideal condition (high and evenly distributed spending levels).

This issue reflects two main types of gaps. The first is a practical (contextual) gap, namely the lack of in-depth understanding among stakeholders regarding tourist behavior and spending patterns based on country of origin. Existing promotional strategies tend to be general and insufficiently targeted toward specific market preferences. The second is a theoretical (research) gap, referring to the limited number of data-driven studies employing predictive approaches to accurately model tourist spending behavior using recent data. Economic benefits of tourism can be assessed through indicators such as the number of tourists, length of stay, and average tourist expenditure in destination areas (Wijaya & Mustika, 2014, p. 125). Data on the average length of stay of foreign guests in star-rated hotels in Bali Province, as presented in Tables 1, 2, and 3, reveal variations across hotel classes and months over the period 2023–2025. For instance, in March 2024, the average length of stay across all hotel categories was 3.14 days, while in March 2025 it declined to 2.84 days. These differences, along with variations among hotel classifications, highlight the complexity of tourist behavior patterns related to length of stay.

Table 1. Average Length of Stay of Foreign Guests in Star Hotels by Class and Month in Bali Province (Days), 2025

Hotel Class	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
5-Star	3.25	2.53	2.72	-	-	-	-	-	-	-	-	-	-
4-Star	3.00	2.86	2.83	-	-	-	-	-	-	-	-	-	-
3-Star	3.46	3.23	3.08	-	-	-	-	-	-	-	-	-	-
2-Star	3.48	3.02	3.16	-	-	-	-	-	-	-	-	-	-
1-Star	3.93	4.03	4.10	-	-	-	-	-	-	-	-	-	-
All Classes	3.20	2.75	2.84	-	-	-	-	-	-	-	-	-	-

Table 2. Average Length of Stay of Foreign Guests in Star Hotels by Class and Month in Bali Province (Days), 2024

Hotel Class	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
5-Star	2.96	3.11	3.10	3.44	3.41	3.44	3.31	3.62	3.51	3.27	3.15	3.06	-
4-Star	3.05	2.84	3.06	2.93	3.01	2.92	2.98	2.85	2.98	2.77	2.91	2.95	-
3-Star	3.14	3.42	3.54	3.42	3.08	3.00	3.15	3.04	2.90	2.98	3.07	3.10	-
2-Star	1.89	2.33	3.04	2.63	2.63	2.43	2.29	2.38	2.46	2.69	2.59	2.26	-
1-Star	2.52	2.66	2.82	2.73	2.61	2.69	2.39	3.64	2.82	2.28	3.02	2.70	-
All Classes	2.94	2.95	3.14	3.18	3.15	3.11	3.09	3.16	3.14	2.99	3.01	2.98	-

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Table 3. Average Length of Stay of Foreign Guests in Star Hotels by Class and Month in Bali Province (Days), 2023

Hotel Class	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
5-Star	2.72	3.32	3.15	2.88	2.88	2.80	3.20	3.07	2.96	3.00	3.08	3.08	-
4-Star	2.96	3.08	3.01	3.09	2.92	2.63	2.81	2.56	2.69	2.75	2.85	2.92	-
3-Star	2.85	2.97	2.70	3.20	2.38	2.75	2.84	2.76	2.88	2.93	3.00	3.13	-
2-Star	2.61	2.15	2.52	2.47	2.02	1.88	2.15	2.28	2.26	2.13	1.81	2.15	-
1-Star	2.20	3.68	3.52	3.37	2.49	2.97	2.99	2.87	3.12	2.69	3.42	3.03	-
All Classes	2.83	3.04	2.95	3.02	2.75	2.67	2.94	2.79	2.81	2.84	2.89	2.97	-

The primary motivation of this study is to address the research gap in predictive analysis of tourist expenditure and to provide practical solutions for decision-making in the tourism sector. Tourism demand forecasting is crucial for identifying sectoral recovery and formulating appropriate strategies and policies (Prasetyo et al., 2024). Without accurate understanding and data-driven projections, destination development and promotional strategies risk being misaligned, resulting in lost economic opportunities and uneven or stagnant tourism growth. This study is expected to generate in-depth insights into the spending behavior of tourists from China and Australia, develop data-driven predictive models, and provide targeted marketing strategy recommendations. These findings are anticipated to assist policymakers in formulating more effective strategies to increase tourist arrivals to Bali (Prianda & Widodo, 2021).

This study offers several novel (state-of-the-art) contributions that enhance its scientific and practical relevance. First, it employs a predictive approach based on recent data from 2023–2025, distinguishing it from previous studies that are predominantly observational or descriptive. Further development of Bali’s tourism sector should consider the diversity of tourist attractions and service quality to attract more visitors (Kumara Shanti & Nasikh, 2023). The predictive model will be developed by incorporating several independent variables classified into demographic factors, travel characteristics, and external factors.

Second, the study’s focus on tourists from China and Australia enables a more precise understanding of market segmentation. These two countries exhibit distinct cultural characteristics, travel preferences, and responses to external factors such as promotional strategies and exchange rates. From a practical perspective, the findings of this study can be utilized by tourism authorities, the hospitality industry, travel agencies, and policymakers to:

1. Develop more targeted marketing strategies,
2. Adjust products and services to meet the needs of tourists from specific countries, and
3. Predict economic potential based on tourist characteristics.

From a theoretical perspective, this study is expected to enrich the literature in tourism economics, particularly in the application of predictive methodologies to analyze tourist spending behavior. Furthermore, this approach may serve as a replicable model for other tourist destinations in Indonesia. An in-depth analysis of tourist visitation patterns is essential to understanding the dynamics of tourism in Bali, which remains one of the most popular tourist destinations in the world (Della Evania & Siregar, 2024).

METHOD

This study employs a quantitative approach with two main focuses: analyzing the factors influencing tourist expenditure using multiple regression analysis, and developing a predictive model to forecast future expenditure. Prior to analysis, the research instruments are tested for validity and reliability to ensure data accuracy. The study is conducted in Bali Province, focusing on major tourist destinations such as Kuta, Seminyak, Ubud, Nusa Dua, Uluwatu, and Jimbaran, which represent diverse tourism activities. The independent variables include demographic factors, travel characteristics, and external factors, while the dependent variable is tourist expenditure. The data consist of primary data collected through surveys of tourists from China and Australia, as well as secondary data obtained from official institutions such as Statistics Indonesia (BPS Bali). Data collection techniques include both online and offline surveys, along with the retrieval of secondary data. The sample is determined using purposive sampling, with the main research instrument being a structured questionnaire designed to quantitatively measure the study variables.

RESULTS AND DISCUSSION

Tourist Travel Characteristics and Expenditure Patterns

This section analyzes how tourists from each country allocate their budgets during their stay in Bali. Understanding these patterns is essential for identifying consumption behavior that underpins the prediction of tourist expenditure.

Length of Stay and Accommodation Preferences

There are significant differences in travel styles between the two groups. Australian tourists tend to have longer lengths of stay (on average 7–10 days) with a focus on relaxation. In contrast, Chinese tourists have shorter stays (on average 4–6 days) but follow more intensive travel itineraries.

In terms of accommodation, although both groups show interest in luxury hotels, Australian tourists are more likely to choose accommodations in tranquil areas, whereas Chinese tourists tend to prefer villas or hotels with convenient access to shopping centers.

Table 4. Tourist Travel Characteristics Based on Accommodation Type

Travel Characteristics	Category	Frequency	Percentage
Length of Stay	1–3 Days	22	11%
	4–6 Days	83	41,5%
	7–10 Days	54	27%
	>10 Days	41	20,5%
Accommodation Type	Hostel/Guesthouse	34	17%
	1–3 Star Hotels	56	28%
	4–5 Star Hotels	110	55%

Analysis of Average Total Expenditure

Based on the collected data, the estimated total expenditure of tourists during their stay in Bali differs descriptively:

Table 5. Average Total Expenditure by Country

Country of Origin	Average Expenditure (Estimated)	Dominant Expenditure Category
Australia	IDR 28,500,000	Accommodation & Food & Beverage
China	IDR 36,750,000	Shopping & Accommodation

Chinese tourists have a higher average expenditure by IDR 8,250,000 compared to Australian tourists. This indicates that despite shorter lengths of stay, Chinese tourists exhibit higher spending intensity. The preference for 4–5 star hotels suggests that most tourists in this study belong to the upper-middle segment with relatively strong purchasing power.

Budget Allocation Patterns

When analyzed based on expenditure allocation, the consumption patterns of the two groups are as follows:

1. Australian tourists: Allocate a larger proportion of their budget to culinary experiences (Food & Beverage) and hotel services. Their spending tends to be leisure-oriented.
2. Chinese tourists: Show a dominant allocation toward shopping (on average exceeding 30% of total expenditure). This is influenced by cultural practices of purchasing souvenirs and branded goods while traveling abroad.

Table 6. Tourist Travel Characteristics Based on Purpose of Visit

Purpose of Visit	Percentage
Leisure	51%
Leisure + Honeymoon	13.5%
Leisure + Other Purposes	35.5%

These findings reinforce Bali’s position as a global leisure tourism destination focused on experiential travel.

The Influence of External Factors (Exchange Rates and Promotions)

The data indicate that Chinese tourists are more sensitive to exchange rate fluctuations and promotional offers. Approximately 38% of Chinese respondents stated that exchange rates strongly influence their purchasing decisions, whereas Australian tourists tend to be more stable and less affected by short-term currency fluctuations. This sensitivity can be explained through the Exchange Rate Pass-Through Theory, which posits that exchange rate movements influence the relative prices of goods and services consumed by international tourists. When the currency of the origin country appreciates or depreciates against the destination currency, tourists’ purchasing power changes accordingly. In this study, the higher sensitivity of Chinese tourists suggests that their spending decisions in Bali are influenced by fluctuations in purchasing power resulting from exchange rate movements.

Descriptive Analysis of Tourist Expenditure

The data reveal significant variations in expenditure across different sectors. The following table summarizes the average expenditure distribution:

Table 7. Descriptive Analysis of Tourist Expenditure

Expenditure Component	Average Contribution (%)	Behavioral Trend
Accommodation	40%	Highest expenditure; preference for villas and resorts
Food & Beverage	25%	Tourists explore fine dining and local cafés
Transportation	15%	Use of motorbike rentals and online transport services
Shopping & Others	20%	Focus on local crafts and wellness services (spa)

Inferential Analysis: Mann–Whitney U Test

To develop an accurate predictive model, the researcher employed the Mann–Whitney U test to examine whether the variables of nationality and gender significantly influence total tourist expenditure.

Descriptive Analysis

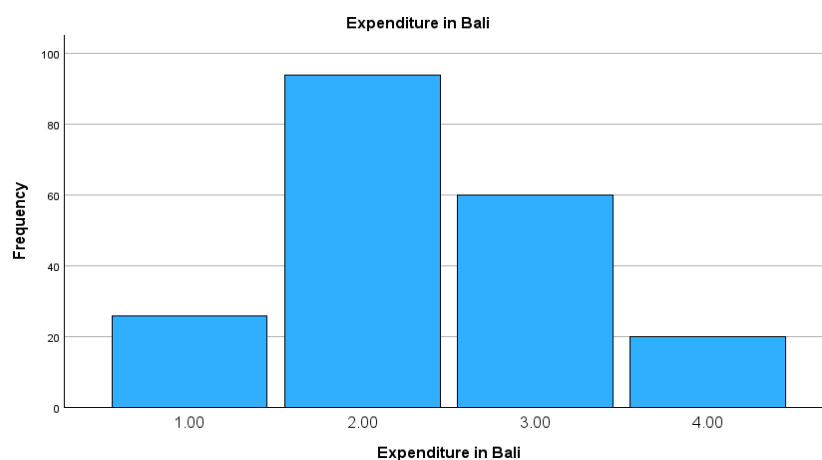


Figure 1. Expenditure in Bali

Descriptive analysis was conducted to obtain an initial overview of the distribution of international tourist expenditure levels in Bali. Based on data from 200 respondents, tourist expenditure is classified into four categories. The results indicate that the medium expenditure category (Category 2) is the most dominant, with 94 respondents or approximately 47% of the total sample. This suggests that the majority of international tourists visiting Bali fall into the middle-spending segment. Meanwhile, the high expenditure category (Category 3) consists of 60 respondents (30%), while the low expenditure category (Category 1) includes 26 respondents (13%), and the very high expenditure category (Category 4) represents the smallest group with 20 respondents (10%). This distribution shows that the structure of the international tourist market in Bali is still dominated by medium-spending tourists, while the very high-spending segment remains relatively limited.

Gender Distribution

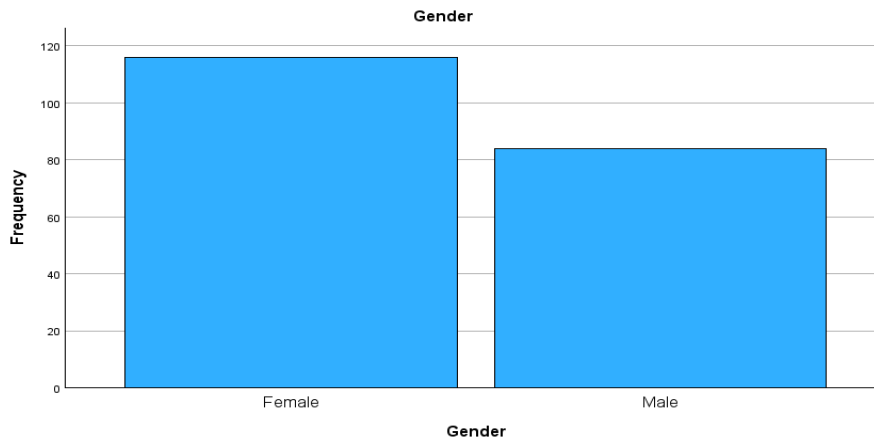


Figure 2. Gender Tourism in Bali

The gender distribution shows that female respondents account for 116 individuals (58%), while male respondents account for 84 individuals (42%) of the total sample.

This indicates that female tourists represent a larger proportion of respondents. In tourism behavior studies, gender is often associated with differences in travel preferences, consumption patterns, and spending decisions. Therefore, further analysis is needed to determine whether these differences also result in significant variations in expenditure levels.

Crosstabulation Analysis (Crosstabs)

Table 8. Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Gender * Expenditure in Bali	200	100.0%	0	0.0%	200	100.0%

The Case Processing Summary table presents the number of data used in the analysis process. Based on the table, all 200 respondent cases (100%) are valid and included in the analysis, with no missing data.

This indicates that the quality of the data used in this study is sufficiently reliable, allowing the statistical analysis to provide a more accurate representation of international tourist expenditure patterns in Bali.

Table 9. Gender × Expenditure in Bali Crosstabulation

			Expenditure in Bali				Total
			1.00	2.00	3.00	4.00	
Gender	Female	Count	26	81	6	3	116
		% within Gender	22.4%	69.8%	5.2%	2.6%	100.0%
	Male	Count	0	13	54	17	84
		% within Gender	0.0%	15.5%	64.3%	20.2%	100.0%
Total	Count	26	94	60	20	200	
	% within Gender	13.0%	47.0%	30.0%	10.0%	100.0%	

The results of the Gender × Expenditure crosstabulation show that there are differences in expenditure distribution patterns between male and female tourists.

Among female tourists (116 respondents):

1. 26 respondents fall into the low expenditure category
2. 81 respondents fall into the medium expenditure category
3. 6 respondents fall into the high expenditure category
4. 3 respondents fall into the very high expenditure category

This distribution indicates that female tourists tend to exhibit relatively moderate expenditure patterns during their stay in Bali.

In contrast, among male tourists (84 respondents):

1. No respondents fall into the low expenditure category
2. 13 respondents fall into the medium expenditure category
3. 54 respondents fall into the high expenditure category
4. 17 respondents fall into the very high expenditure category

These findings indicate that male tourists have a greater tendency to fall into the high and very high expenditure categories.

Conceptually, these results reflect differences in tourism consumption behavior between male and female tourists, which may be influenced by factors such as preferences for tourism activities, types of accommodation chosen, and patterns of consumption of tourism services.

Mann–Whitney U Test Based on Gender

To determine whether the differences in expenditure between male and female tourists are statistically significant, a Mann–Whitney U test was conducted.

Tabel 10. Ranks Analysis

Ranks					
		Gender	N	Mean Rank	Sum of Ranks
Expenditure in Bali	Female		116	67.06	7779.00
	Male		84	146.68	12321.00
	Total		200		

The rank analysis results show the following Mean Rank values:

1. Female tourists: 67.06
2. Male tourists: 146.68

The higher Mean Rank value for male tourists indicates that, in general, their expenditure levels are higher than those of female tourists in this sample. This difference suggests that male tourists have a greater spending capacity or tendency during their stay in Bali.

Table 11. Mann-Whitney U Test Results

Test Statistics^a	
	Expenditure in Bali
Mann-Whitney U	993.000
Wilcoxon W	7779.000
Z	-10.318
Asymp. Sig. (2-tailed)	<.001

a. Grouping Variable: Gender

The Test Statistics table presents the results of the Mann–Whitney U test used to assess whether there is a significant difference in tourist expenditure based on gender. The results are as follows:

1. Mann–Whitney U = 993
2. Z = -10.318
3. Asymp. Sig (2-tailed) < 0.001

Since the p-value is less than 0.05, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted. Therefore, it can be concluded that there is a statistically significant difference in expenditure between male and female tourists during their stay in Bali. These findings indicate that gender is a significant variable influencing the expenditure patterns of international tourists, with male tourists tending to have higher expenditure levels than female tourists. From a practical perspective, these results can serve as a basis for developing data-driven tourism marketing strategies, such as designing premium and high-value tourism packages targeted at tourist segments with greater spending potential.

Discussion

Expenditure Patterns of International Tourists in Bali

The results of the descriptive analysis indicate that the majority of international tourists in this study fall within the medium expenditure category, accounting for 47% of the total respondents. This finding suggests that the structure of the tourist market in Bali is still dominated by the segment of moderate-spending tourists, often referred to as middle-spending tourists. This phenomenon can be explained through the Experience Economy Theory proposed by B. Joseph Pine II and James H. Gilmore. The theory posits that in the modern economy, consumers do not merely purchase goods or services, but also seek experiences as the primary value of consumption. In the context of tourism, tourists tend to allocate their expenditures toward activities that provide unique and memorable experiences during their travel.

In this study, tourist expenditures are largely allocated to accommodation, food and beverages, and other tourism-related activities associated with recreational experiences. This indicates that tourists visiting Bali are not only seeking basic travel facilities but also aiming to obtain authentic experiences such as enjoying local cuisine, visiting cultural destinations, or engaging in relaxation activities such as spa and wellness tourism. The dominance of the middle expenditure group also reflects Bali’s capacity to attract diverse tourist segments with varying purchasing power. The wide range of tourism products available in Bali allows tourists with different expenditure levels to still obtain satisfying travel experiences. Therefore, the findings of this study highlight that experiential value is a key factor influencing tourist expenditure patterns at the destination. These results are consistent with Dolnicar et al. (2018), who found that the majority of international tourists fall within the medium expenditure segment. Similarly, Thrane (2015) reported that tourist expenditure distribution tends to be dominated by moderate spenders rather than high-spending segments.

Differences in Expenditure Patterns Based on Gender

The results of cross-tabulation analysis and the Mann–Whitney test reveal significant differences in tourist expenditure levels based on gender. Male tourists in this study tend to fall into higher expenditure categories compared to female tourists. This difference in spending behavior can be explained through the perspective of Behavioral Economics Theory developed by Richard H. Thaler and Cass R. Sunstein. This theory explains that individual economic decisions are not always fully rational, but are often influenced by psychological factors, personal preferences, and perceived value derived from consumption activities.

In the tourism context, male tourists often exhibit preferences for exploratory and recreational activities such as sports tourism, nightlife, or adventure-based experiences. These activities generally require higher expenditures

compared to more passive or relaxation-oriented tourism activities. Conversely, female tourists tend to be more selective in their spending decisions and place greater emphasis on the utility value of each tourism activity. This may lead to more moderate spending patterns compared to male tourists. These findings indicate that psychological factors and individual preferences play a significant role in shaping tourist consumption behavior. This finding is consistent with Wang and Davidson (2010), who found that male tourists tend to spend more, particularly on recreational activities. Meanwhile, Lehto et al. (2014) reported that female tourists are generally more cautious and selective in their spending, thus tending to fall within moderate expenditure categories.

Differences in Characteristics between Australian and Chinese Tourists

This study also identifies differences in expenditure characteristics between tourists from Australia and China. Chinese tourists demonstrate higher average expenditure levels compared to Australian tourists, despite having relatively shorter lengths of stay. This phenomenon can be explained through Conspicuous Consumption Theory introduced by Thorstein Veblen. The theory suggests that consumption is not only driven by practical needs but also serves as a means of signaling social status and prestige. In the context of international tourism, shopping activities often constitute an essential part of the travel experience, particularly for tourists from countries experiencing rapid middle-class growth. Chinese tourists in this study show a tendency to allocate more expenditure toward shopping activities, including souvenirs, local products, and branded goods.

In contrast, Australian tourists allocate more of their spending toward experience-based activities such as accommodation and food and beverage consumption. This indicates that Australian tourists tend to prioritize relaxation and experiential enjoyment of the destination rather than material consumption. These differences highlight that tourist consumption behavior is strongly influenced by cultural factors, travel preferences, and consumption styles prevalent in their countries of origin. These findings align with Jin et al. (2017), who reported that Chinese tourists exhibit a strong tendency toward shopping during international travel. Conversely, Correia et al. (2013) found that tourists from Western countries, such as Australia, tend to emphasize experiences and relaxation over material consumption.

The Influence of External Factors on Tourist Expenditure

In addition to demographic and travel characteristics, this study shows that external factors such as exchange rates and tourism promotions also influence tourist expenditure behavior. This finding can be explained through the Exchange Rate Pass-Through Theory developed by José Manuel Campa and Linda S. Goldberg. This theory posits that changes in exchange rates affect the relative prices of goods and services consumed by international tourists at a destination. When the currency of a tourist's home country strengthens against the destination currency, their purchasing power increases, leading to higher expenditure. Conversely, when the currency weakens, tourists tend to be more cautious in their spending. In this study, Chinese tourists exhibit greater sensitivity to exchange rate fluctuations compared to Australian tourists. This suggests that macroeconomic factors play a significant role in shaping tourist consumption behavior during international travel. These findings support Crouch (1994), who identified exchange rates as a key determinant of international tourism demand. Furthermore, Song and Witt (2012) emphasize that tourists from developing countries tend to be more sensitive to exchange rate changes compared to those from developed countries.

Implications for the Development of Predictive Models of Tourist Expenditure

The findings of this study also contribute to the development of predictive analytical approaches in the tourism sector. Variables such as gender, country of origin, length of stay, and type of accommodation are shown to be associated with tourist expenditure levels in Bali. In the context of modern tourism, the use of data analytics has become increasingly important for understanding tourist behavior and designing more effective destination marketing strategies. By utilizing predictive analytics approaches, destination managers can identify high-spending tourist segments and design tourism products that align with the characteristics of these markets. This approach is also consistent with the concept of smart tourism, where tourist data is utilized as a basis for decision-making in developing more competitive and sustainable tourism destinations. Thus, this study not only provides empirical insights into the expenditure patterns of international tourists in Bali but also establishes a conceptual foundation for the development of more effective data-driven tourism marketing strategies in the future.

Integration of Research Findings with Theoretical Frameworks

To achieve a more comprehensive understanding of international tourist expenditure behavior in Bali, the findings of this study must be analyzed integratively by referring to the theoretical frameworks outlined in the literature review. This approach enables the empirical findings to be understood not merely as statistical results, but as economic behavioral phenomena explained through broader theoretical perspectives. Overall, the results indicate that tourist expenditure behavior is influenced not only by rational economic factors but also by psychological, social, and experiential characteristics sought by tourists. This aligns with the Behavioral Economics perspective proposed by Richard H. Thaler and Cass R. Sunstein, which suggests that consumption decisions are often shaped by cognitive biases, personal preferences, and social contexts.

In the tourism context, tourists' decisions to allocate expenditure during their trips are not solely based on basic travel needs such as transportation and accommodation, but are also influenced by the perceived value of experiences offered by the destination. This is consistent with the Experience Economy concept introduced by Pine and Gilmore, which emphasizes experience as a key commodity in the modern economy, particularly in tourism. Furthermore, differences in expenditure patterns between tourists from different countries can also be understood through socio-cultural consumption perspectives. Conspicuous Consumption Theory, introduced by Thorstein Veblen, explains that consumption often serves as a means of signaling social status and prestige. This phenomenon is evident among Chinese tourists in this study, who demonstrate higher expenditure in shopping activities compared to Australian tourists.

On the other hand, tourists' decisions to visit Bali can also be interpreted through the Push and Pull Motivation Theory proposed by Graham Dann and John Crompton. Push factors, such as the need for relaxation, escape from routine, and the desire for new experiences, drive tourists to travel. Meanwhile, pull factors, such as natural beauty, unique culture, and Bali's image as an international tourist destination, serve as key attractions influencing visitation decisions. In addition to behavioral and motivational factors, this study also highlights the role of macroeconomic factors such as exchange rate fluctuations in influencing tourist expenditure patterns. This can be explained through the Exchange Rate Pass-Through Theory, which states that exchange rate changes affect the relative prices of goods and services consumed by international tourists.

By integrating these theoretical perspectives, it can be concluded that tourist expenditure behavior is a multidimensional phenomenon influenced by a combination of economic, psychological, social, and experiential factors. Therefore, understanding tourist consumption behavior requires a more holistic approach that considers the interaction among these variables. This integrative approach also provides a significant contribution to the development of predictive models of tourist expenditure, which is the primary focus of this study. By understanding the relationships between tourist characteristics, travel motivations, and external economic conditions, destination managers can develop more effective, data-driven marketing strategies to enhance tourist expenditure value during their stay.

CONCLUSION

This study aims to analyze the expenditure patterns of international tourists in Bali and to identify the factors influencing their level of spending as a basis for developing data-driven tourism marketing strategies.

Based on the results of descriptive and inferential analyses conducted on 200 international tourist respondents from Australia and China, several conclusions can be drawn. First, the distribution of tourist expenditure indicates that the majority of respondents fall within the medium expenditure category. This suggests that the international tourist market in Bali is still predominantly composed of moderate-spending visitors, although a segment of high-spending tourists with substantial economic contribution potential also exists within the tourism sector. Second, there are notable differences in tourism behavior characteristics between tourists from Australia and China. Australian tourists tend to have longer lengths of stay and allocate a larger portion of their expenditure to recreational experiences such as accommodation, as well as food and beverage consumption. In contrast, Chinese tourists generally have shorter durations of stay but demonstrate higher spending intensity, particularly in shopping-related activities. Third, the results of the Mann-Whitney test indicate a statistically significant difference in expenditure levels based on gender. Male tourists tend to exhibit higher spending behavior compared to female tourists during their stay in Bali. Fourth, tourist characteristics such as country of origin, gender, length of stay, and type of accommodation are found to be associated with expenditure levels. These variables can serve as key inputs in the development of predictive models for tourist spending. Overall, the findings of this study demonstrate that a data-driven analytical approach can provide a more comprehensive understanding of tourist consumption behavior and support the formulation of more effective and targeted tourism marketing strategies.

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PREDICTIVE MODEL OF INTERNATIONAL TOURIST EXPENDITURE IN BALI FOR THE DEVELOPMENT OF DATA-DRIVEN TOURISM MARKETING STRATEGIES

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