Artificial Intelligence in Smart Tourism Marketing: Business Model Analysis of Selected Startups across Different Regions (2018–2025)

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Received: 05/05/ 2026 *Accepted: 06/09/ 2026* *Published:15/09/2026*

Abstract:

This research aims to analyze the role of AI-driven business models in reshaping smart tourism marketing, through an applied study of seven (07) startups based in India, China, the United Arab Emirates, and Italy over the period 2018–2025. The study draws on key business models, including multi-sided platforms, subscriptions, customer data monetization, and hybrid dynamic pricing, alongside the Business Model Canvas. An inductive approach based on multiple case studies was adopted.

The research concludes that there is no single ideal business model; rather, models vary according to market context and the value proposition—such as automation, platforms, subscriptions, and dynamic pricing. Moreover, hybrid models combining human expertise with artificial intelligence have proven capable of enhancing trust and delivering greater customer value. The study also emphasizes that transitioning to smart marketing requires integrated ecosystems, not merely isolated technical tools. It recommends selecting business models based on the targeted value, fostering frugal innovation, and investing in specialized language models.

Keywords: Smart tourism marketing, Artificial intelligence, Business models, Startups, hyper-personalization, Dynamic pricing.

JEL Classification: L83, M31, O33, M13, C88

1. Introduction

1.1 Preamble: The tourism sector is undergoing a radical transformation driven by rapid advancements in advanced technological capabilities, most notably artificial intelligence, big data analytics, and the Internet of Things. Traditional methods of tourism marketing are no longer capable of meeting the expectations of the contemporary tourist, who seeks personalized experiences, real-time interaction, and added value throughout their journey. In this context, the concept of "Smart Tourism Marketing" has emerged as an advanced paradigm that reshapes the relationship between tourism businesses and customers. This paradigm shifts from conventional marketing segmentation logic towards hyper-personalization, and from passive waiting to real-time interaction and needs prediction. Startups around the world serve as living laboratories for the application of these concepts, developing flexible and scalable business models that leverage artificial intelligence as a fundamental tool for value creation and achieving competitive advantage.

1-2 Research Problem: Despite the growing awareness of the importance of artificial intelligence in the tourism sector, there remains a knowledge gap regarding how to translate these technologies into innovative and sustainable marketing business models, particularly for startups operating with limited resources. The applications of artificial intelligence range across automation, personalization, predictive analytics, and dynamic pricing; however, the fundamental

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question remains as to which of these models is most effective in terms of creating customer value and achieving corporate profitability across different geographical and market contexts. Accordingly, the main research problem can be formulated as follows:

How can AI-based business models in smart tourism marketing startups reshape the engineering of marketing value creation, and what are their operational mechanisms across diverse contexts during the period 2018–2025?

1-3 Sub-Questions: Stemming from the main research problem, this study seeks to answer the following sub-questions:

(a) What are the fundamental dimensions underpinning the concept of smart tourism marketing?

(b) What are the most prominent artificial intelligence technologies employed by startups in the tourism sector?

(c) How are different business models translated to maximize the value of artificial intelligence in tourism?

(d) What are the substantive differences in smart tourism marketing models among startups in different markets?

(e) How can an intelligent AI-based dynamic pricing model be designed to suit specialized markets such as long-term stays?

1-4 Objectives: This research aims to achieve a set of objectives, as follows:

(a) To analyze the theoretical framework of smart tourism marketing and identify its fundamental dimensions and technologies.

(b) To explore and classify the innovative business models of seven (07) global startups that rely on artificial intelligence in tourism marketing.

(c) To assess how each business model (automation, two-sided platform, subscriptions, dynamic pricing, hybrid) contributes to achieving operational efficiency, personalization, and real-time interaction.

(d) To propose a hybrid intelligent dynamic pricing model tailored for a startup operating in the long-term stays market.

(e) To derive lessons learned and practical recommendations for startups and tourism enterprises seeking to adopt smart marketing.

1-5 Time Frame: The research covers the period from 2018 to 2025, a critical phase that witnessed the transition from initial uses of artificial intelligence in tourism (such as simple recommendation systems) to a stage of maturity and advanced applications (such as large language models, intelligent agents, and predictive marketing). The selection of this period allows for tracking the evolution of business models and the responsiveness of startups to rapid technological shifts, particularly regarding the revolution of Large Language Models (LLMs) and generative AI after 2022.

1-6 Hypotheses: This research tests the validity of the following hypotheses:

•**Hypothesis (1):** Startups adopting an AI-powered multi-sided platform model are capable of achieving faster growth and greater scalability compared to those relying on traditional models.

•**Hypothesis (2):** There is a direct positive relationship between the level of "marketing process automation" using artificial intelligence and the reduction of operational cost structures, particularly in the context of emerging markets (frugal innovation).

•**Hypothesis (3):** Business models that integrate trusted human sources (such as local communities) with AI-driven personalization achieve higher customer trust and greater long-term value compared to fully automated models.

•**Hypothesis (4):** Hybrid dynamic pricing models (based on length of stay, seasonal demand, and occupancy rates) are the most effective in maximizing revenue and customer satisfaction in specialized tourism markets.

1-7 Methodology: This research adopted an inductive approach through the study of multiple cases of seven (07) startups from different regions (India, China, the United Arab Emirates, Italy). These companies were purposively selected to represent diverse patterns of business models and AI applications. Each case was analyzed using specific methodological tools: HECT India was analyzed using the Business Model Canvas; Billy Information and tripAI were analyzed using the multi-sided platform model and the subscription model; and a hybrid dynamic pricing model was proposed for estaie. The analysis relied on secondary data from reliable sources (financial reports, academic articles, founder interviews) which have been documented in the reference list.

2. Theoretical Framework: The Concept of Smart Tourism Marketing

2-1 Definition of Smart Tourism Marketing: Smart Tourism Marketing relies on the deployment of modern digital technologies such as artificial intelligence, the Internet of Things, and big data analytics. The objective is to understand traveler patterns and behaviors in order to design personalized marketing offers that are delivered to them through the appropriate channels at optimal times, with an emphasis on interactivity that enhances the quality of the customer experience and its long-term value.

2-2 Dimensions of Smart Tourism Marketing: These consist of a set of elements that depend on digital technology, data, and artificial intelligence to improve the tourist experience and enhance the efficiency of tourism enterprises. The most prominent of these dimensions are:

(a) Personalization: The concept of personalization in smart tourism marketing transcends the idea of traditional market segmentation, reaching the stage of hyper-personalization at the individual level. This means delivering different tourism offers and recommendations for each tourist, designed based on their past behavior, personal interests, and current circumstances at the moment of interaction. (Florido-Benítez, L, 2024)

(b) Real-time Interaction: Virtual assistants are employed for continuous interaction with the tourist, from providing instant responses to their inquiries through to completing booking procedures, instantaneously throughout their journey (Wüst, K., et al, 2025).

(c) Predictive Analytics: Machine learning models are used to forecast demand volume, optimize dynamic pricing mechanisms, as well as anticipate tourist needs even before they explicitly request or express them (Mantri, A, 2019).

(d) Marketing Automation: Automation is utilized to execute routine marketing tasks such as sending emails, managing advertising campaigns, and distributing content, which leads to a significant enhancement in operational efficiency (Murphy, D, 2018).

3. Artificial Intelligence Technologies Used in Tourism: The artificial intelligence technologies leveraged by startups in the tourism sector are diverse, the most prominent of which are:

(a) Natural Language Processing (NLP): Used to understand and generate human language, forming the basis of virtual assistants.

(b) Large Language Models (LLMs): Aimed at creating comprehensive and personalized travel plans based on user-provided information in natural formats (such as text or voice) (Aarni Tuomi et al, 2025).

(c) Augmented and Mixed Reality (AR/MR): Used to create immersive experiences at tourist and archaeological sites, adding layers of information and interactive narratives.

(d) Recommender Systems: Used to suggest destinations, hotels, and activities based on user preferences and behavior (Kzaz, L., et al, 2018).

4. Analytical Study of Startups: In this section, we present an in-depth analysis of seven (07) startups representing the global smart tourism marketing landscape.

4-1 HECT India: Automation for Cost Reduction

4-1-1 Company Overview: HECT India is an Indian startup that has radically transformed from a traditional event management entity into a travel platform fully based on artificial intelligence technologies. The company allocated approximately 18 crore Indian rupees (equivalent to over two million US dollars) to develop a platform that analyzes the quality of travel plans and automates bookings involving multiple vendors simultaneously (Moneycontrol News, 2026).

HECT India adopts an operational model with low reliance on human labor, replacing manual coordination with artificial intelligence. The company's founder claims that this transformation saved them over 100 crore rupees in potential operational expenses. The company targets middle-income customers through a "chatbot" that acts as a virtual advisor, evaluating travel plans according to real-time price fluctuations and logistical feasibility (Moneycontrol News, 2026).

HECT India represents a model of low-cost innovation (frugal innovation) among startups, as it relies on self-funding and builds its own tools rather than importing expensive software. This type of innovation is a modern management and entrepreneurial concept aimed at producing high-quality services and products with minimal resources and at low cost, particularly in emerging markets (Radjou, N., et al, 2015).

4-1-2 Analysis of the Company Using the Business Model Canvas (Osterwalder, 2004)

First: The Business Model Canvas: The elements of a business model can be analyzed using the Business Model Canvas developed by Alexander Osterwalder and Yves Pigneur (2004), which is used to diagnose how a company creates, delivers, and captures value. It consists of nine (9) interconnected key elements (Osterwalder, A., et al, 2005) . In essence, this model answers a fundamental question: How does a company create value for the customer and convert it into sustainable financial returns?

Second: Why this Model is Appropriate: Because HECT India operates in a highly competitive market, it thus needs to: (a) reduce fixed costs; (b) scale rapidly without increasing labor; (c) serve large numbers of customers automatically; (d) achieve a price advantage against larger companies. This aligns with Teece's (2010) assertion that an effective business model explains how a company creates, delivers, and captures value (Teece, D. J, 2010).

Third: Application of the Model to HECT India: This is presented across nine (9) fundamental elements with significant interconnections among them:

1. Value Proposition: HECT India provides a distinctive value consisting of: (a) intelligent and instant travel planning; (b) real-time price comparison; (c) automated booking with multiple providers; (d) reduced service costs compared to traditional agencies; (e) a virtual advisor operating 24/7. This reflects the principle of delivering better service at lower cost, which is the essence of frugal innovation (Radjou, N., et al, 2015).
2. Customer Segments: The company focuses on: (a) the middle class in India; (b) price-sensitive customers; (c) travelers seeking fast and flexible solutions; (d) young digital users.
3. Channels: The company relies on fully digital channels: (a) mobile applications; (b) website; (c) AI chatbot agent; (d) low-cost digital marketing.
4. Customer Relationships: Instead of traditional employees, the company relies on: (a) self-service; (b) AI-powered automated support; (c) personalized recommendations based on customer behavior.
5. Revenue Streams: The company can generate revenue through: (a) booking commissions; (b) premium planning service fees; (c) partnerships with hotels and airlines; (d) digital advertising.
6. Key Resources: (a) AI platform; (b) algorithms; (c) real-time pricing data; (d) cloud infrastructure; (e) a small, highly efficient technical team.
7. Key Activities: (a) algorithm development; (b) price data analysis; (c) platform management; (d) user experience optimization; (e) establishing supplier partnerships.
8. Key Partners: (a) airlines; (b) hotels; (c) electronic payment providers; (d) cloud data providers.
9. Cost Structure: Characterized by significant reductions in: (a) personnel costs; (b) office and branch costs; (c) manual operations. Expenditure is concentrated on: (a) software; (b) technical development; (c) digital marketing.
Fourth: Summary of the Model Analysis: The results of analyzing HECT India through this model can be summarized in a central idea: the company represents a modern model for startups transitioning from "labor-intensive operations" to "intelligent, data-driven, AI-powered operations," where efficiency, low cost, and scalability become the core of competitiveness.

4-2 Billy Information: Artificial Intelligence in the "During-Trip" Scenario

4-2-1 Company Overview: Billy Information is a Chinese startup specializing in smart tourism solutions, which recently secured Series A+ funding worth millions of renminbi. The company is distinguished by a unique methodology focusing on the "during-trip" phase rather than solely on pre-trip planning. Its flagship product is an application that functions as an intelligent agent (AI Agent) named "Bubble Loves Travel," which was launched in the West Lake National Park area, providing tourists with context-aware recommendations tailored to the appropriate time and place for each traveler (Zhong Yixuan, 11/2025).

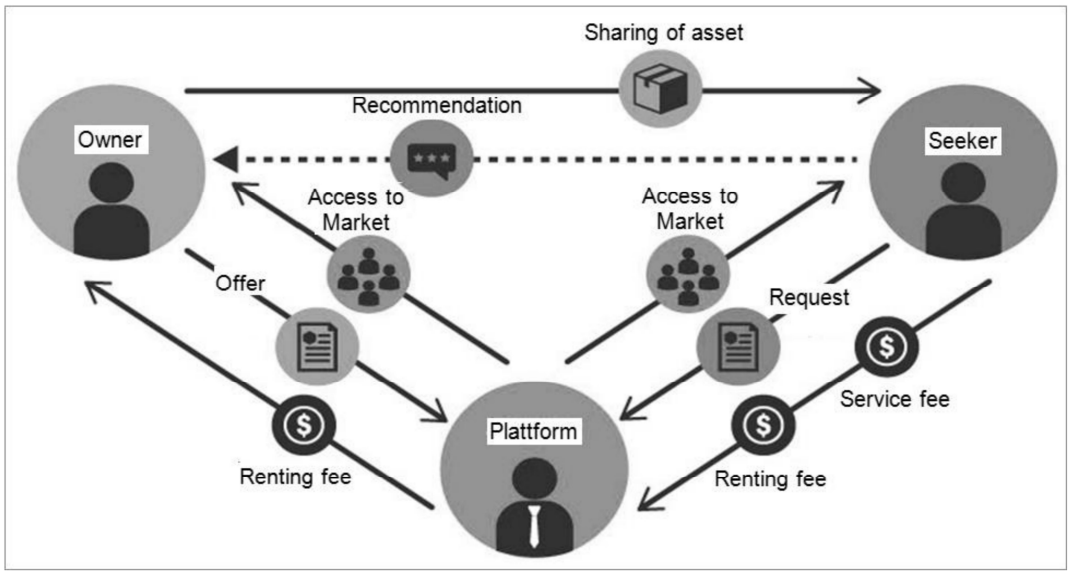
Billy Information is founded on the concept of the "scenario economy," positing that the tourism sector suffers from a structural mismatch between supply and demand, and that addressing this problem lies in understanding the tourist's circumstances and context at every moment. Its application displays only six (06) pieces of content most relevant to the user's "current state," which may include interactive videos, directional maps, or discount coupons (Zhong Yixuan, 11/2025).

Billy presents an advanced model of "contextual marketing," wherein the role of artificial intelligence is not limited to recommendation but extends to understanding the tourist's "moment" and "place." This model reinforces the first hypothesis (personalization and real-time interaction) and opens new horizons for immediate on-trip consumption—a domain not yet fully dominated by major OTA platforms.

4-2-2 Business Model Analysis Using the Multi-Sided Platform Model

First: The Multi-Sided Platform Model: The multi-sided platform business model is based on an important principle: the sharing economy. The platform brings together two parties: those seeking a specific asset they wish to use temporarily without purchasing it, and asset owners who can provide it according to the required specifications in exchange for a specified fee (Belk, R, 2014). See the illustrative figure below.

Figure (01): Operational Model of a Multi-Sided Platform



(Business Model Toolbox Team, 2026)**Source:**

This model is also known as the aggregator business model, where services are offered under the platform's brand, which brings together asset owners and beneficiaries. Prominent examples include Uber for individual transportation, Airbnb for short-term rentals, and Zipcar for car rental. In most cases, these companies do not own any of the assets listed on their platforms; rather, they act as intermediaries connecting owners with those seeking the service and facilitate transactions between them in exchange for a commission. For instance, Uber and Zipcar do not own a single car, nor does Airbnb own a single room.

Second: Why this Model is Appropriate: This model is appropriate because Billy Information essentially functions as an intermediary between two parties that do not communicate directly (the tourist and the local service provider), and relies on "temporary access economy," the "moment," and "artificial intelligence"—all of which are fundamental characteristics of multi-sided platforms. Furthermore, it thereby avoids direct competition with major tourism platforms that operate under a traditional model.

Third: Application of the Model to Billy Information

1. Nature of the Model: Billy Information adopts a multi-sided platform model, operating as an intermediary bringing together two main parties:

(a) Tourists (Travelers): Those seeking personalized, on-trip (in-travel) experiences.
(b) Local Tourism Service Providers: Such as restaurants, tourist attractions, content producers (multimedia videos), or entities offering discount coupons.
It is worth noting that the platform primarily aims to solve the problem of supply and demand mismatch in the travel industry.
2. Platform Value: The platform does not merely provide static recommendations; rather, it employs an intelligent AI agent to understand:
(a) The tourist's current moment;
(b) Instantaneous emotions and needs.
This makes the platform different from traditional platforms (e.g., Booking.com), which focus on the pre-travel phase.
3. Analysis of Sides and Value Loops: There are relationships among the parties—the tourist, the service provider, and the platform itself—as well as value loops (what each provides to the platform and what each receives from the platform). These are summarized in the illustrative table below.

Table (01): Analysis of Party Aspects and Value Loops

Party	What it Provides to the Platform	What it Receives from the Platform
-Tourist	-Real-time behavioral data, interaction, geolocation	-Contextual personalized recommendations, instant vouchers, local content
-Service Provider	-Exclusive offers, content, real-time discounts	-Exposure to the target audience at the right time, increased sales
-The Platform Itself	-AI algorithms, data analysis	-Commission fees or a transaction-based revenue model

Source: Prepared by the researcher.

From the table, and as illustrated by Belk (2014), multi-sided platforms rely on the economy of temporary access rather than ownership. This applies to Billy Information, which enables the temporary use of local assets without owning them.
Fourth: Summary of the Model Analysis: The Billy Information model represents an advanced evolution of two-sided platforms, as it adds: (a) a temporal dimension (the present moment); (b) an emotional dimension (sentiment analysis during travel); (c) a technological dimension (an AI Agent operating in real time). Thus, the model transcends the traditional platform economy, which focuses solely on place and price, moving toward an economy of real-time experience.
4-3 tripAI: Automated Generation of Travel Plans
4-3-1 Company Overview: tripAI, headquartered in Shenzhen, China, is the world's first large-scale, multimodal large language model specialized in creating travel plans. The platform was launched by Shenzhen Soulv Wisdom Technology in 2025. tripAI enables users to obtain detailed and personalized travel plans within no more than ten seconds (10 seconds), whether they are on their daily commute or have changed their destination at the last minute (Ivanov, S., et al, 2019).

The company's Chairman and CEO emphasizes the need to shift the question from "Will I travel?" to "Will the travel experience be satisfying?" considering that artificial intelligence will

move the sector from the stage of "offering the same thing to everyone" toward a model of "everyone has their own journey." tripAI identifies four (04) key areas for artificial intelligence applications in tourism, which it calls the "golden areas": (a) intelligent travel planning; (b) dynamic pricing and revenue management; (c) virtual assistants and customer service; (d) computer vision applications.

tripAI represents a breakthrough in the "inspiration and planning" phase of the customer's journey. By reducing the time and effort required to create a travel plan from hours to seconds, tripAI lowers the barriers to booking a trip, which may increase conversion rates. This underscores the role of artificial intelligence in improving marketing efficiency by delivering immediate value to the user.

4-3-2 Business Model Analysis Using: Subscriptions + Customer Data Monetization: tripAI employs a multi-sided platform model, partially integrating it with the subscription model and customer data monetization in later stages. This choice is logical because the company does not merely sell an application; rather, it connects multiple parties within the digital travel ecosystem.

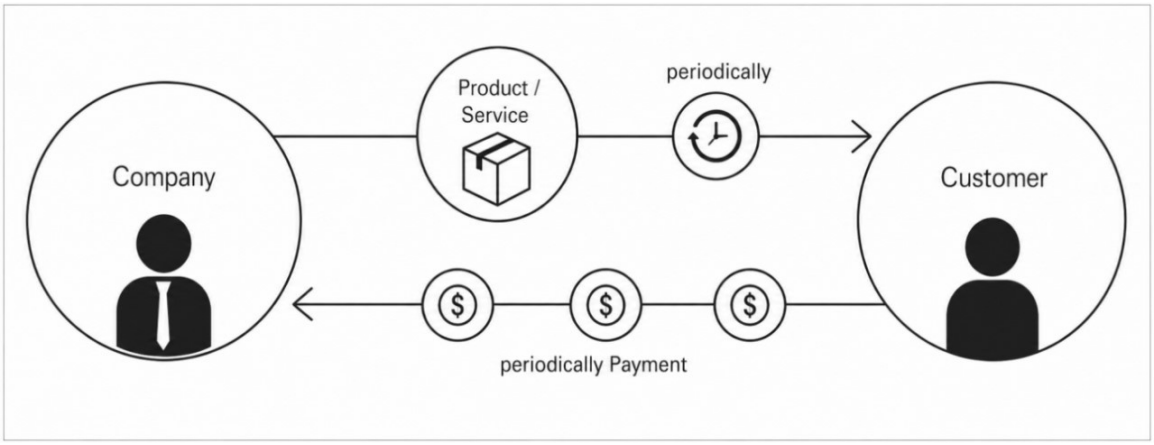
First: Why this Model is the Most Suitable for tripAI? tripAI operates in the field of intelligent travel planning, thus connecting: (a) travelers seeking personalized and fast travel plans; (b) tourism service providers such as hotels, airlines, restaurants, and activities; (c) advertisers and commercial partners wishing to reach the right customers.

Thus, it fully aligns with the concepts of the three (03) models mentioned above, as the company creates value by bringing together different parties on a single platform and facilitating interaction among them. The customer receives a travel plan, while tourism entities benefit from direct access to customers with high purchase intent.

Second: Analysis of the Business Model Using the Subscription Model

The subscription business model is defined as a commercial model that generates recurring revenue from customers in exchange for continuous access to a product or service over specified periodic intervals (monthly or annually), as opposed to a one-time sale model. This model aims to build lasting relationships with customers and maximize their marketing value over the long term (Wirtz, B. W, 2020). This is the model used by on-demand streaming platforms such as Netflix and Shahid, as well as Ed-Tech platforms such as Udemy, Almentor, and Yanfaa. See the figure below.

Figure (02): Subscription Business Model



Source: Prepared by the researcher.

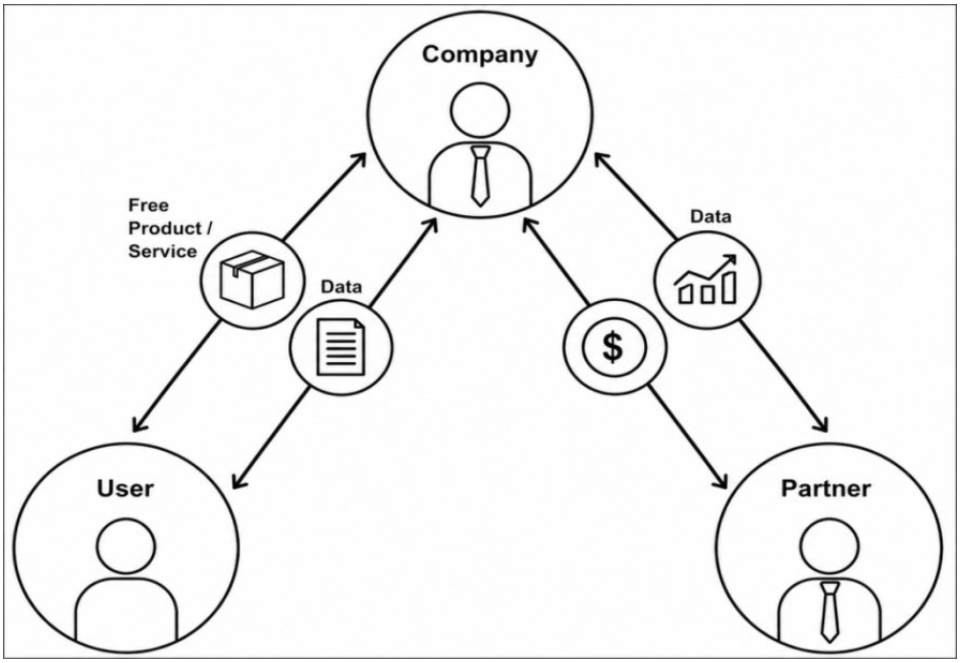
For example, instead of the customer paying to purchase a single movie or a single training course, they pay a monthly subscription that grants them access to all the content available on the platform. As platforms continue to produce and offer more content, the customer is encouraged to renew their subscription to the platform.

•**Application of this Model to Billy Information:** tripAI has successfully applied the subscription model by offering an intelligent travel platform that provides continuous value to the user through instant and personalized travel planning, making the customer willing to pay periodically for convenience, speed, and high personalization. This model is highly suitable for the data-driven, AI-powered digital tourism sector.

Third: Analysis of the Business Model Using Customer Data Monetization

The customer data monetization business model is defined as a model in which a company takes the customer information it collects as a primary source of revenue. This is done either directly, such as by selling or sharing that data with third parties, or indirectly, by employing analytics to improve internal processes, support decision-making, reduce costs, and increase sales (Elorza, M., et al, 2022). See the figure below.

Figure (03): Operational Model of Customer Data Monetization



Source: Prepared by the researcher.

Examples of companies using this model include PatientsLikeMe, which is a community designed to help patients. In return, the company obtains customer data on diseases, anonymizes it, and sells it to companies in the medical sector, such as pharmaceutical companies.

•**Application of this Model to Billy Information:** Billy Information has presented an advanced practical application of the model used by tripAI, but it differs from it in one key aspect: instead of focusing on the "inspiration and planning" phase as in tripAI, Billy Information focuses on the "during-trip" phase, where purchasing decisions are more impulsive and urgent. This makes it not merely an efficiency tool, but a true driver of revenue growth in the tourism and hospitality sector,

by transforming every screen and every room into an intelligent platform for serving and selling experiences.

4-4 estaie: Artificial Intelligence in Specialized Markets

4-4-1 Company Overview: estaie, headquartered in the United Arab Emirates, is an AI-native platform specialized in long-term stays (ranging from 30 to 365 nights). The underlying premise of estaie is that the long-term stays market suffers from severe fragmentation, manual processes, and inconsistent pricing models (Mustafa Eid, 2026).

estaie employs artificial intelligence technologies to implement a flexible and dynamic pricing system, ensuring that guests receive a discount of at least 32% compared to the rates offered by other service providers, while simultaneously helping property operators maximize the utilization of their unbooked units. The net result is a platform that effectively aligns supply with demand in this specialized market. The platform has demonstrated an early ability to attract customers, having signed agreements with over 400 hotels (Mustafa Eid, 2026).

4-4-2 Analysis: estaie demonstrates that artificial intelligence is not limited to superficial personalization; rather, it can completely reengineer business models in specialized sectors. By building an AI-native operating layer, estaie is able to create value for both the customer (lower prices) and the provider (higher occupancy).

4-4-3 Proposal for an Intelligent Dynamic Pricing Model for estaie: estaie can develop a more advanced intelligent dynamic pricing system based on artificial intelligence algorithms and big data analytics, tailored to the nature of the long-term stays market (30–365 nights), as follows:

•**Length-Based Pricing:** Progressive discounts are granted as the length of stay increases, such that daily rates are lower for longer booking periods. Example: (a) 30–60 nights: 20% discount; (b) 61–120 nights: 30% discount; (c) More than 120 nights: 40% discount. This model encourages customers to extend their stays and ensures stable cash flows for operators while reducing vacancy rates (Talluri, K., et al, 2004).

•**Seasonal Demand-Based Pricing:** The model is based on pricing according to demand seasonality, with higher prices during peak periods (e.g., conferences and holidays) and lower prices during off-peak periods to attract bookings. This relies on real-time analysis of market data and competitor rates, thereby increasing revenues and improving capacity utilization (Phillips, R, 2005).

•**AI-Powered Personalized Pricing:** The platform studies the customer's past behavior (e.g., preferred cities, budget, length of stay, decision-making speed) to offer customized deals. For example: (a) repeat customers receive loyalty rates; (b) companies booking for their employees receive contracted rates; (c) digital nomads receive flexible monthly packages. This enhances customer satisfaction and increases conversion rates (Kotler, P., et al, 2016).

•**Occupancy-Based Pricing:** For example, if a unit remains unbooked for an extended period, the system automatically and gradually lowers the price. Conversely, if the occupancy rate exceeds a certain threshold (e.g., 80%), the price is gradually increased. This mechanism achieves a balance between profitability and occupancy.

•**Smart Bundling:** Additional services can be included within the price, such as: (a) weekly cleaning; (b) high-speed internet; (c) airport transfers; (d) co-working space. Thus, the company

transforms from merely selling accommodation to selling a complete experience, thereby increasing the average revenue per customer.

•**Smart Market Value Index:** estaie can create an internal pricing index based on: (a) competitor rates; (b) property location; (c) customer ratings; (d) proximity to vital facilities; (e) current demand. An optimal daily price is then proposed, achieving the best balance between attractiveness and profitability.

4-4-4 Conclusion: The best dynamic pricing model for estaie is a hybrid model that combines length of stay, seasonal demand, occupancy, and personalized customer offers. This aligns with the company's philosophy of building an intelligent operational layer that restructures the long-term stays market and provides it with a sustainable competitive advantage in a specialized market.

4-5 Hint: Trusted Information from the Local Community

4-5-1 Company Overview: Hint, an Italian startup formerly known as Mr. Franz, raised €500,000 in seed funding to develop an AI-powered travel application (Startup Business Editorial Staff, 2026) .

The fundamental premise of Hint is that content generated by general AI models (such as ChatGPT) may be inaccurate or unreliable, and that traditional online reviews may carry a degree of misinformation or falsification. Therefore, the company follows a hybrid approach that relies on data collected from real, verified local residents (referred to as "franzini"), which is then processed and adapted by AI algorithms. Hint compares the tourist's profile with the recommendations of these residents through artificial intelligence to provide a "digital travel companion" that offers genuine and individually tailored advice. The company achieved operational break-even just two months after its launch (Startup Business Editorial Staff, 2026).

4-5-2 Model Used: Hint presents a model that addresses two major challenges in tourism marketing: (a) trust (by using reliable human sources); (b) personalization (by using artificial intelligence).

This blend of the human touch and technological power may be the key to building deeper relationships with customers. This case challenges the hypothesis that artificial intelligence will replace humans, and demonstrates how AI can enhance the value that humans provide.

4-6 Passprt Trips: Vertical AI vs. General Models

4-6-1 Company Overview: Passprt Trips is an Indian startup that raised $500,000 USD to develop an "integrated suite of travel technologies" based on artificial intelligence. The distinguishing feature of this company is its focus on building a specialized vertical large language model (Vertical LLM) trained on community-sourced data, rather than relying on general AI models. The company targets the concept of an "advanced and differentiated booking experience," providing a unified interface that combines travel inspiration, planning, and the booking process in one place (ET Travel World Team, 2025).

4-6-2 Model Used: The Passprt Trips model points to an emerging trend: specialized AI models focused on a specific tourism domain may outperform general models in terms of accuracy and contextual relevance. This requires investment in domain-specific data and expertise, but may constitute a sustainable competitive advantage.

4-7 Thomas Cook India (TACY): Digital Identity Marketing

4-7-1 Company Overview: Although Thomas Cook India is not a startup, its launch of TACY—a digital "avatar" serving as a brand ambassador and AI-powered travel assistant—represents an important case in smart tourism marketing. TACY is the digital face of a generative AI-powered chatbot, aimed at delivering immersive, conversational interactions with customers, from the inspiration stage through to trip selection. This illustrates how large corporations can adopt startup-driven innovation to create more engaging marketing interactions (Campaign India Team, 2025).

4-7-2 The Model Presented by Thomas Cook India: This can be classified under the AI-Driven Digital Identity Marketing Model. This model combines several key dimensions:

•**Digital Avatar Branding:** A virtual personality is created for marketing purposes, enhancing the company's visual and interactive identity;

•**Conversational Marketing:** Relies on generative artificial intelligence to conduct natural conversations with customers, from the inspiration stage through to the booking decision;

•**Immersive Customer Experience:** Provides personalized, continuous interaction resembling that with a real travel advisor, thereby increasing engagement and trust;

•**Transition from Traditional to Smart Marketing:** Represents a shift from static advertisements and content to a dynamic, interactive, data-driven, AI-powered experience.

Thus, in conclusion, the essence of this model lies in transforming tourism marketing from static content to personalized, dynamic interaction through an intelligent digital identity (the TACY avatar).

5. Conclusion

5-1 Concluding Remarks: In conclusion of this research, which examined the transformations in tourism marketing under the AI revolution through the analysis of seven (07) startups from different regions during the period 2018–2025, it can be stated that the concept of smart tourism marketing has evolved from being merely a technological add-on to becoming a central philosophy reshaping entire business models. Artificial intelligence has transcended its role as a cost-saving tool to enter the core of value creation, through hyper-personalization, real-time interaction, predictive analytics, and marketing automation. The studied startups—from India's HECT India, which embodied "frugal innovation," to China's Billy Information, which pioneered the "scenario economy," to the UAE's specialized estaie—have demonstrated that the path to leadership in smart tourism lies in a company's ability to design a business model that harmonizes technological capabilities, operational efficiency, and relevance to both local and global contexts.

5-2 Testing the Validity of the Hypotheses: Through the in-depth analysis of the seven (07) case studies, the proposed hypotheses can be tested as follows:

•**Hypothesis (1)** concerning multi-sided platforms was **partially accepted**. Billy Information and tripAI demonstrated that this model is capable of rapid growth; however, its success critically depends on the ability to solve the "cold start" problem and attract both sides of the market. HECT India, by contrast, followed a different model (direct-to-customer) and also achieved success, indicating that the platform model is not the only path, but rather the most suitable for specific contexts (such as on-trip tourism).

•**Hypothesis (2)** concerning automation and cost reduction was accepted. HECT India provides strong evidence supporting this hypothesis, having avoided estimated operational expenses of over 100 crore rupees through automation. Furthermore, dynamic pricing models and virtual assistants (TACY, Billy) demonstrated the ability to reduce the need for human intervention in repetitive tasks, confirming the positive relationship between automation and cost structure efficiency, particularly in emerging markets.

•**Hypothesis (3)** concerning hybrid human-AI models was strongly accepted. Italy's Hint presented a pioneering model proving that integrating artificial intelligence with a trusted local community generates higher value (achieving break-even within two months). This challenges fully automated models (such as some general chatbots that suffer from information inaccuracies) and confirms that trust is a scarce currency in digital marketing, and that augmenting human intelligence with AI can constitute a sustainable competitive advantage.

•**Hypothesis (4)** concerning hybrid dynamic pricing was accepted. The proposed analysis for estaie showed that single-dimensional pricing (e.g., based solely on length of stay) is insufficient in a complex market such as long-term stays. The hybrid model combining factors (length + seasonality + occupancy + customer behavior + smart bundling) is most capable of achieving a balance between yield management and customer satisfaction through fair and transparent discounts.

5-3 Findings: Based on the analysis of the hypotheses and case studies, the most prominent findings of this research can be summarized in the following points:

(a) Diversity of Value Creation Models: There is no single ideal business model for smart tourism marketing; rather, multiple patterns exist (automation for cost reduction, platforms for temporary access, subscriptions for loyalty, dynamic pricing for specialized markets).

(b) Shift from the Pre-Trip to the During-Trip Phase: Billy Information and tripAI demonstrate that greater value may be realized during the "on-trip" phase through immediate contextual marketing (the moment and place), rather than only during the planning and inspiration stage.

(c) Scalability through Ecosystems: The most successful companies did not merely offer a tool; they built ecosystems (encompassing suppliers, tourists, and content producers), using artificial intelligence as an intelligent operational layer that seamlessly connects them (as seen in estaie and Billy).

(d) The Importance of Proprietary and Specialized Data: Vertical models (such as Passprt Trips) and hybrid models (such as Hint) outperform general models (based on open-source LLMs) in terms of accuracy and contextual relevance to tourism, thereby creating a barrier to competitors.

(e) Digital Identity Marketing (Avatar Marketing): The Thomas Cook India (TACY) experiment demonstrated that generative AI-powered digital personas can be more effective than traditional chatbots in building emotional and interactive relationships with customers, marking a qualitative shift in the brand experience.

5-4 Recommendations: Based on the foregoing findings, the research recommends the following:

(a) For emerging tourism enterprises: The necessity of selecting the business model based on the type of value to be delivered. If the goal is low price and efficiency, then move toward "frugal

automation" (e.g., HECT India). If the goal is a unique on-trip experience, adopt the "contextual platform" model powered by artificial intelligence (e.g., Billy Information).

(b) For large enterprises: Adopt an interactive "digital identity" strategy (such as TACY) to transition from mass marketing to personalized conversational marketing, while investing in building vertical large language models (Vertical LLMs) specific to tourism rather than relying entirely on general models.

(c) For policymakers and innovation support centers: Encourage the "frugal innovation" model in emerging markets by providing incentives for companies that build their own intelligent tools locally, and support the creation of trusted local communities (such as "franzini" in Hint) that can be integrated with artificial intelligence to enhance trust in tourism marketing.

(d) For future research: It is recommended to conduct quasi-experimental studies to measure the return on investment (ROI) for each of the proposed hybrid dynamic pricing models, in addition to investigating the impact of digital avatars on trust and brand loyalty across different cultures. It is also recommended to expand the scope of analysis to include startups from additional regions (Latin America and Africa) to deepen the understanding of regional differences.

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