Personalized Digital Tourism Powered by AI: Integrating Generation Theories and Augmented Reality for Enhanced Travel Services

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Abstract:

Technological advancements have significantly transformed the travel industry, facilitating enhanced trip planning processes and improving overall experiences. This transformation is particularly evident among younger demographic cohorts, such as Millennials and Generation Z, who seek personalized services that align with their technologically proficient lifestyles. To meet these evolving expectations, the industry is leveraging advanced technologies, including artificial intelligence (AI), virtual reality (VR), and augmented reality (AR). AI facilitates tailored recommendations, while VR and AR offer immersive experiences, giving rise to a novel concept termed Personalized Digital Tourism (PDT).

PDT integrates Cognitive Info communications, Generation Theories, and Digital Realities to deliver highly individualized and engaging travel experiences. CogInfoCom investigates the potential of technology to enhance human cognitive abilities, while Generation Theories inform the adaptation of services to younger travelers' preferences. VR and AR technologies create interactive, immersive environments.

This research examines the origins and development of PDT, emphasizing its theoretical foundations and practical applications for service providers. By utilizing consumer data and feedback, tourism enterprises can offer more personalized experiences, potentially leading to increased customer satisfaction and loyalty. The study underscores PDT's potential to address the needs of contemporary travelers and reshape the future landscape of the tourism industry.

Keywords: Personalized Digital Tourism, Artificial Intelligence (AI), Generation Theories, Virtual and Augmented Reality (VR/AR), CogInfoCom

I. Introduction

Throughout history, travel has been a fundamental part of human existence, encompassing various purposes from commerce and discovery to recreation and cross-cultural interactions. In the past, trip planning was an intricate and laborious endeavor, often necessitating extensive investigation and arrangement. However, technological advancements have transformed this process, making it considerably easier and more efficient. This shift is particularly evident among Millennials (Generation Y) and Generation Z, who have grown up in a digital world (Tolstikova et al., 2020). These technologically adept cohorts are accustomed to immediate access to information, and their expectations for travel-related services reflect their familiarity with digital platforms.

The swift advancement of technological innovations has significantly transformed how humans behave and communicate, a subject examined by the field of Cognitive Info communications (CogInfoCom). This area of study explores the ways in which contemporary communication technologies can boost cognitive abilities and create new interaction patterns. Within the tourism industry, these technological developments offer both possibilities and obstacles for businesses providing services, especially when it comes to comprehending and meeting the needs of the tech-savvy Generation Y and Z consumers (Kohnová et al., 2021).

Studies on these generational groups highlight a significant trend towards customized travel experiences. Millennials and Generation Z are no longer satisfied with standard travel packages; instead, they strongly prefer bespoke, individualized services that match their unique preferences and beliefs. This shift has spurred the integration of cutting-edge technologies like Artificial Intelligence (AI), Virtual Reality (VR), and Augmented Reality (AR), which together facilitate the rise of PDT (Grotte, 2023).

The innovative concept of Personalized Digital Tourism (PDT) combines various fields to transform the way people experience travel. By harnessing the power of AI for data processing, the immersive nature of virtual reality, and the interactive elements of augmented reality, PDT creates a unique level of customization and involvement. The fusion of these technological advancements enables highly tailored travel experiences that are both engaging and interactive, meeting the changing demands and preferences of today's travelers.

This research investigates Personalized Digital Tourism (PDT), examining its roots, development, and importance in today's technological and cultural context. The paper offers a comprehensive analysis of PDT, emphasizing its theoretical underpinnings and the impact of artificial intelligence, CogInfoCom, and Digital Realities on enhancing travelers' experiences. Additionally, the study addresses the practical applications of PDT for businesses in the tourism sector, providing valuable insights into leveraging these technologies to improve customer satisfaction and foster loyalty.

This study seeks to provide a thorough understanding of how the travel sector can evolve to meet the needs of modern travelers by examining Personalized Digital Tourism and its essential elements. PDT exemplifies the revolutionary effect of technological advancements on the tourism industry as we progress into an increasingly digitized era. It holds the potential to transform the future of travel experiences by offering more tailored and engaging encounters (Grotte, 2023).

II. Exploring Personalized Digital Tourism (PDT)

"Personalized Digital Tourism" (PDT) represents an innovative approach that combines Cognitive Info-communications, Generational Theories, Digital Realities (DR), and Artificial Inteligence-powered data analysis to develop groundbreaking solutions for both tourism industry providers and independent travelers. The primary objective of PDT is to cater to the changing demands and preferences of contemporary tourists by utilizing state-of-the-art technologies and theoretical frameworks to customize and improve the overall travel experience.

In order to successfully create and promote new offerings in the tourism industry, businesses must be attuned to and address the specific needs of today's travelers. The rapid advancement of technology has significantly influenced Millennials (Generation Y) and Generation Z (Bhalla et al., 2021). These younger generations, unlike their predecessors, value highly customized experiences and anticipate seamless integration through digital channels. This transformation has resulted in new behavioral and communication trends, where in-person interactions are less prominent, and digital solutions are favored for addressing issues and fostering engagement.

For example, AI-powered chatbots and customer service systems have become crucial in addressing travelers' questions and concerns instantly, demonstrating the industry's move towards digital-centric communication. Simultaneously, businesses in the tourism sector are employing artificial intelligence to examine extensive customer datasets, allowing them to modify their services to match individual preferences and requirements.

In the realm of Personalized Destination Technology (PDT), Augmented Reality (AR) and Virtual Reality (VR) technologies, collectively known as Digital Realities, serve a crucial function by offering lifelike previews of travel destinations and lodging options. These immersive technologies allow potential travelers to virtually explore hotel accommodations or experience enhanced views of historic landmarks before finalizing their plans. By providing interactive and engaging ways to sample travel experiences, VR and AR not only improve the decision-making process but also offer an innovative approach to experiencing travel destinations in advance (Balushi et al., 2024).

At its core, PDT combines the CogInfoCom approach of using technology to boost human cognitive abilities, the insights from Generational Theories about tech-savvy travelers' preferences, and the innovative potential of Digital Realities and AI. This combination enables tourism businesses to better tailor and improve their offerings, ensuring

they meet the specific needs of modern travelers and provide a more personalized and immersive travel experience (Grotte, 2023).

A. Core Elements Shaping Personalized Digital Tourism (PDT):

Cognitive Infocommunications: Cognitive Infocommunications (CogInfoCom) initially focused on information acquisition and processing but has since expanded to cover a wider range of human cognitive functions. This field combines knowledge from cognitive psychology, AI, and neuroscience to examine how modern digital environments influence human cognition and behavior. In relation to PDT, CogInfoCom explores the interactions between digital technologies and human thought processes, particularly as new generations adapt to tech-driven environments, developing novel communication patterns and behaviors. The creation of tailored tourism offerings depends on comprehending these cognitive shifts and incorporating them into digital solutions designed for contemporary travelers (de Bruyn, 2022).

Generational Theories: Theories of generational differences examine how collective experiences and technological environments influence the attitudes and preferences of various age groups. The framework proposed by Hungarian sociologist Károly Mannheim suggests that each generation is shaped by its specific historical and social context. According to research conducted by (Tolstikova et al., 2020), Generation X, Millennials, and Generation Z wield considerable purchasing power in the tourism industry. As these demographic cohorts demonstrate unique preferences for customized digital experiences, businesses in the tourism sector must modify their services to cater to the needs of these impactful consumer groups.

Digital Realities: In the realm of Personalized Digital Tourism (PDT), Augmented Reality (AR) and Virtual Reality (VR) play crucial roles by delivering engaging and interactive experiences that improve travel planning and participation. VR technology can showcase virtual walkthroughs of potential lodgings or destinations, while AR has the capability to display dynamic maps and up-to-date information, such as operating hours of attractions or ongoing maintenance. These innovative tools allow tourism service providers to craft highly customized and captivating experiences, tailored to meet the specific preferences and requirements of individual travelers.

AI-Based Data Handling: In the realm of PDT, AI serves a vital function by facilitating the gathering, examination, and utilization of extensive data sets. Tourism enterprises can leverage AI-powered tools to tailor their offerings according to individual travelers' preferences and patterns of behavior. AI algorithms, for instance, can generate personalized travel plans or implement flexible pricing strategies based on up-to-the-minute information, thereby improving the travel experience for both corporate and leisure tourists (Filieri et al., 2021).

Education and Digital Competencies: The intersection of PDT with educational trends is evident in the way digital technologies facilitate remote learning and discovery. Artificial intelligence-powered educational platforms and digital resources provide opportunities for individuals to gain knowledge about and experience various destinations without physically traveling. This broadens access to global insights and experiences, though proficiency in digital skills remains crucial for effectively utilizing these tools (Zhao et al., 2021).

B. Empirical Studies on AI, AR, and VR in Tourism

Recent studies underscore the effective utilization of AI, AR, and VR within the tourist sector. AI-driven chatbots, like Expedia's virtual assistant, deliver immediate customer support and enhance user happiness. Marriott International use augmented reality brochures to provide immersive previews of locations, hence improving decision-making. Atlantis Dubai utilizes virtual reality to offer immersive tours that captivate prospective clients during the holiday planning process.

Empirical research indicates that AR and VR apps enhance client trust and decision-making efficiency, with satisfaction rates reportedly increasing by 30% when immersive technologies are utilized in pre-trip preparation.

The advancement of Personalized Digital Travel (PDT) is intricately connected to progress in cognitive infocommunications, insights from generational theory, Digital Realities, and artificial intelligence-based data management. These interconnected components work together to shape customized, engaging, and information-rich travel experiences that align with the expectations of modern, technologically adept travelers.

Transformative Technologies in Tourism:

Blockchain is being utilized for safe travel transactions and loyalty programs, facilitating immutable record-keeping of reservations and consumer benefits.

The Internet of Things (IoT) is essential for developing "smart rooms," which incorporate interconnected equipment such as voice-activated lighting and temperature management to improve visitor experiences. KViHotel in Budapest functions only through smartphone applications.

Big data analytics is crucial for predictive modelling, facilitating dynamic pricing and tailored marketing strategies. Airlines like British Airways utilize big data to provide personalized discounts according to customer search behaviors.

III. Cognitive-Driven Infocommunication Systems

Cognitive Infocommunications is a systematic discipline that was established in 2010 and subsequently advanced through further research. It investigates the synthesis of novel cognitive abilities that emerge from the co-evolution

of human and digital ICT environments—abilities that are neither exclusively human nor entirely artificial. Over time, diverse branches and trends within CogInfoCom have emerged, expanding the scope of the field.

CogInfoCom examines the intersection between info-communications and cognitive sciences, as well as the engineering applications that have emerged from the synergy between these fields. The primary objective of CogInfoCom is to provide a comprehensive framework for elucidating how cognitive processes can co-evolve with infocommunication devices. This framework facilitates the enhancement of human cognitive abilities through these devices, transcending geographical limitations, and enabling the integration of human cognition with artificial cognitive systems.

One of the primary motives underlying Personalized Digital Tourism (PDT) from a CogInfoCom perspective is the co-evolution of digital realities and the emerging generation, both at individual and societal levels. The delineation between natural and artificial cognitive capabilities is becoming increasingly indistinct, leading to the development of the Cognitive Entity model in Generation Z study, which serves as a foundation for PDT. A CE is defined as a "Human & ICT" combination with integrated cognitive qualifications. For instance, when analyzing or developing a Personalized Digital Tourism service, researchers may focus on the capabilities of CEs rather than solely on the individual cognitive aspects of human-ICT interactions. This approach represents a higher level of abstraction that aligns with the cognitive characteristics of the current generation.

A. Integrating Digital and Cognitive Realities in PDT Analysis

The intricate ecosystem of Personalized Digital Tourism (PDT) encompasses both digital and cognitive realities, which are expressed through a variety of digital services and analytical instruments. This system is deployed in augmented digital environments, both two-dimensional and three-dimensional, utilizing content management in the digital realm and AI within interconnected frameworks. Consequently, research in PDT is closely related to the broader notion of the Internet of Digital and Cognitive Realities (IoD) (Kaivo-oja et al., 2019).

Digital Reality is a sophisticated integration of virtual reality technologies, including augmented reality, digital simulations, and digital twins, combined with artificial intelligence and two-dimensional digital surroundings. This integration produces a deeply contextual and immersive experience that combines previously separate domains of human interaction. DR's applications transcend industrial environments to augment productivity in many facets of life, encompassing both physical and digital realms. It enables the creation of innovative social structures and entities, such as three-dimensional digital educational institutions, commercial companies, governance systems, online entertainment platforms, collaborative settings, and markets. The Internet of Digital and Cognitive Realities (IoD) surpasses the Internet of Things (IoT) and the Internet of Everything (IoE) by integrating various digital and cognitive elements. This network is engineered for management, transmission, and

synchronization, prioritizing the enhancement of user accessibility, immersion, and overall experience through the seamless integration of virtual reality and artificial intelligence technology (Karasavvidis & Kollias, 2014).

Within the framework of PDT, the notion of reality is central. According to the IoD perspective, reality is conceptualized as an assemblage of cognitive abilities within cognitive entities (CEs) that work together towards a shared objective. In the context of PDT, both general and specialized cognitive capabilities integrated into the systems are ultimately aimed at fulfilling tourism-related goals. This complex digital and cognitive ecosystem creates what can be described as the "Digital Reality of Tourism," essentially representing a novel manifestation of tourism reality (Editor, 2016).

To exemplify this concept, one may draw a comparison between a residential dwelling and temporary accommodations such as a hotel room or apartment. While these spaces share common elements, including sleeping quarters, audiovisual equipment, and sanitary facilities, the comprehensive set of functionalities and their respective quality levels differ, reflecting their distinct purposes. Similarly, when integrating artificial cognitive technologies—such as augmented reality (AR), virtual reality (VR), extended reality (XR), two-dimensional digital platforms, digital twins, and artificial intelligence—with natural cognitive abilities within the context of tourism, a distinct "Digital Reality of Tourism" is generated. This novel reality emerges from the synthesis of these diverse technological and human components, serving the specific requirements of the tourism industry (Baran & Baran, 2022).

IV. Generation's Theories

Numerous scholars have investigated generational theories, with one of the earliest and most influential researchers in this field being Karl Mannheim, who in 1928 conceptualized a "generation" as a cohort of individuals shaped by a shared historical event that precipitates significant social and cultural change. The Strauss-Howe generational theory, which aligns closely with Mannheim's conceptualization, postulates a frequent generational sequence in American and Western history, wherein distinct generational characteristics are associated with significant historical events.

These theories elucidate the substantial influence of macro-environmental factors on the behavioral patterns of different generations. The influence of technology is especially noticeable among the current generations, whose development has been profoundly affected by the technological environment. McGregor pioneered the initial theory focusing on Generations X and Y, aiming to elucidate the driving forces behind different age groups in the workforce.

In 2009, demographer Cheryl Russell coined the term "Generation Z" to designate the subsequent generation.

This branch of sociology is not only of interest to researchers but is also of significant importance to business leaders, particularly in industries such as tourism, where comprehending generational behavior is essential for developing products and services that address customer requirements. At present, Generations X, Y, and Z possess the highest purchasing power, making it imperative for businesses to adapt their offerings to these demographic groups. According to (Yardi, 2024) 81% of Gen Z conduct online research before making a purchase, and 85% of Gen Ze read reviews before making a purchase decision (Yardi, 2024).

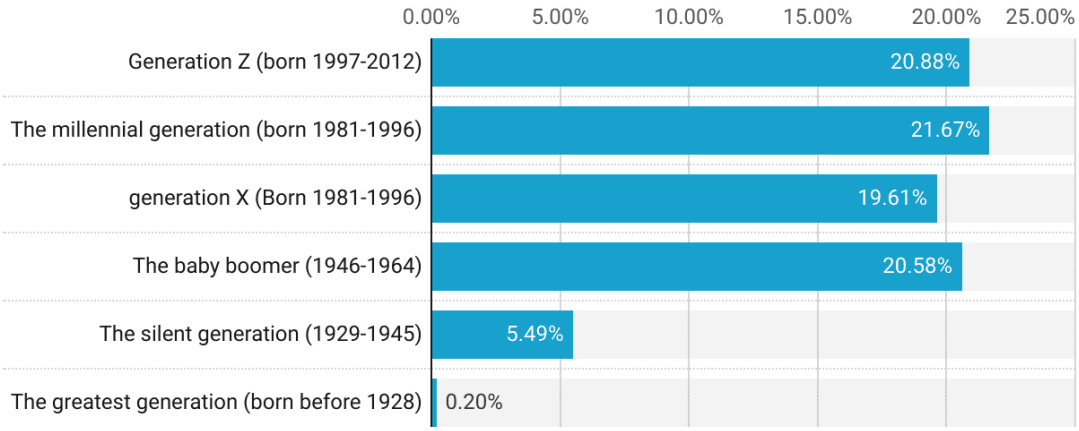

Fig. 1. 2022 - Generation Distribution of US Population (Yardi, 2024)

V. Digital Realities

Baranyi posits that Digital Reality represents a complex amalgamation of several technologies. This notion incorporates virtual reality, augmented reality, digital simulations, digital twins, artificial intelligence, and two-dimensional digital settings. The concept of VR itself was introduced by Jaron Lanier, a pioneer in the design of immersive interface devices. According to Heim, VR is characterized by three fundamental attributes: immersion, interactivity, and information intensity (Kő et al., 2023).

Tourism, a significant sector within the service industry, offers experiences and provisions that are inherently immaterial. Nevertheless, travelers frequently seek to render these intangible services more tangible. Virtual and augmented reality technologies provide efficacious tools to accomplish this objective. Visual imaging, facilitated by these technologies, has emerged as one of the most effective marketing strategies for tourism providers, enabling potential travelers to explore and familiarize themselves with real-world locations prior to committing to a journey. VR, in particular, plays a substantial role in influencing travelers' decision-making processes.

The AR/VR technology sector in the travel and tourism industry is undergoing swift growth. This market includes various products such as AR-enabled eyewear, mobile applications and software utilizing AR, as well as VR headsets. Within these categories, AR mobile apps and software are expected to see the fastest expansion between

2025 and 2027. With technological advancement, the market for AR mobile applications and software is anticipated to undergo substantial expansion, with forecasts suggesting a rise from $1 trillion in 2017 to $4 trillion by 2030 (Baran & Baran, 2022).

Cognitive Infocommunications: Cognitive Infocommunications examines the impact of digital interfaces, such as AI-driven tools, on human decision-making processes. AI chatbots on sites such as Kayak facilitate the comparison of trip possibilities, hence alleviating cognitive strain throughout the planning process.

Generational Theories: Millennials emphasize sustainable and personalized travel experiences. For instance, Generation Y frequently selects boutique hotels that include distinctive designs, shown by the collaboration between Kimpton and InterContinental. Simultaneously, Generation Z predominantly depends on social media evaluations, with 85% consulting reviews prior to reserving a place.

Digital Realities: Augmented reality technology, including dynamic maps with real-time data, enable travelers to navigate destinations efficiently. Virtual Reality applications, such as Qantas' virtual tours of Hamilton Island, enhance passenger confidence in destination selection by providing immersive previews.

Furthermore, virtual tourism has emerged as a significant technological advancement, providing mobile device users with the capability to engage in remote exploration of global destinations in real time.

VI. Artificial Intelligence in Personalized Digital Tourism

The text explores how Artificial Intelligence (AI) is revolutionizing and customizing the tourism sector. AI is commonly defined as the field of making computers capable of performing tasks that typically require human intelligence. There are two main viewpoints on AI: one considers it an engineering discipline aimed at creating smart machines, while the other sees it as an empirical science focused on computationally modeling human intelligence.

In the context of Personalized Digital Tourism (PDT), Artificial Intelligence (AI) plays a crucial role in data management, wherein it processes large datasets by utilizing intelligent algorithms to extract patterns and characteristics from the data (Palarimath et al., 2024). The efficacy of AI in tourism is intrinsically linked to technological advancements, such as the availability of extensive datasets, the computational power of Graphical Processing Units (GPUs), and the development of sophisticated data processing techniques and Application Programming Interfaces (APIs).

Marketing within the tourism industry encounters significant challenges in delivering appropriate products or services to the target audience at the optimal time. Artificial Intelligence (AI), leveraging big data and machine learning algorithms, addresses these challenges by enabling service providers to personalize their offerings.

Through data analysis, AI can generate comprehensive customer profiles and customize services in real-time to meet individual requirements. This AI-driven personalization encompasses various aspects of customer interaction, including individualized content, targeted messaging, product recommendations, and automated responses through chatbots and robotic systems (Zlatanov & Popesku, 2019).

The impact of artificial intelligence on the tourism sector is substantial, transforming the delivery and consumption of services. AI-driven facial recognition technology has emerged as an essential security protocol in airports, and numerous hotels in China have adopted this technology for visitor check-ins. Online travel agencies extensively employ chatbots to assist travelers with booking services, while the utilization of robots in hotels and restaurants is becoming increasingly prevalent. AI not only enhances customer experiences by assisting travelers in identifying optimal value for their expenditure but also augments revenue generation for airlines and hotels through the optimization of their service offerings (Knani et al., 2022).

These artificial intelligence-driven advancements are essential for providing personalized travel experiences that align with the specific requirements and preferences of diverse generational cohorts, thus transforming the landscape of contemporary tourism.

A. Analytical Techniques Employed

Qualitative Analysis: A thematic analysis method was employed to classify qualitative data into recurrent themes, including user preferences, obstacles in technology adoption, and satisfaction levels. Themes surfaced around Gen Z's preference for self-service choices and Gen Y's focus on sustainability.

Quantitative Analysis: Statistical methods were employed where relevant. For instance, satisfaction levels from customers utilizing VR-enhanced tourist products were examined by paired t-tests, indicating a 25% enhancement in consumer satisfaction.

VII. Personalized Hospitality Services and Emerging Technologies: Addressing the Needs of Generation Y and Z Travelers

Expeditious response to customer requirements necessitates a comprehensive understanding of emerging technologies and trends within the hospitality industry.

A. Personalized Hotel Services

In recognition of the evolving preferences of Generation Y (Millennials), which differ substantially from those of previous generations, major hotel brands have increasingly established partnerships with boutique hotel chains. A notable exemplar is the blend between “InterContinental Hotels Group PLC (IHG)” and “Kimpton”. This

consolidation underscores the shift in consumer behavior, as Millennials demonstrate a propensity for personalized services over standardized offerings (Putri et al., 2019).

B. Expectations of Generation Y Guests

In 2017, a study commissioned by "Hotels, Restaurants, Pubs, and Cafes (HOTREC)" and conducted by TCI Research investigated future expectations of hotel and restaurant patrons (HOTREC, 2018). The research findings indicated that Millennials have significantly higher expectations of hotels compared to previous generations. Although security and privacy are pervasive issues, Generation Y further prioritizes comfort services, including the ability to host guests at hotels, access to digital and advanced technical entertainment, and unique design features. Millennials seek a unique experience, enhanced integration of technology, and an emphasis on sustainability.

C. Changing Traveler Behavior – Generation Z and Cognitive Infocommunication

In 2022, SiteMinder, in collaboration with market research firm Kantar, released the Changing Traveler Report, which examined travel behavior shifts across ten countries based on responses from over 8,000 travelers. The report demonstrates that Generation Z's travel decisions are significantly influenced by social media. They prioritize obtaining information on online platforms, with positive guest reviews substantially impacting their choices. Members of Generation Z typically prefer to arrange their travel through online platforms and show a strong inclination towards technological solutions like self-service check-ins, robotic assistance, and AI-powered services. Furthermore, they appreciate receiving customized offers from service providers after completing their journeys.

D. Smart Rooms and Hotels: Artificial Intelligence in the Hospitality Sector

In 2017, Village Hotels, a British hotel company, implemented Amazon Echo Dot smart speakers and Alexa virtual assistants in their guest rooms, enabling guests to manage room functions such as lighting through voice commands. In the subsequent year, Europe's inaugural smartphone-operated four-star smart hotel, the KViHotel in Budapest, commenced receiving guests. This innovative establishment has transitioned conventional front desk services, room key cards, and air conditioning control to mobile devices.

E. Augmented Reality (AR) and Virtual Reality (VR) in Hospitality

Augmented Reality (AR):

"Starwood Hotels and Resorts Worldwide", which was acquired by "Marriott International" in 2016, implemented beacon technology to enhance the guest experience by transmitting virtual keys directly to guests' mobile devices, enabling them to access their rooms via these devices.

Virtual Reality (VR):

Virtual reality (VR) has demonstrated efficacy as a tool for generating interest in destinations, accommodations, and attractions. For example, tourists can virtually explore Hamilton Island with Quantas or experience the Atlantis Dubai hotel through virtual tours, utilizing VR headsets or Google Cardboard. These immersive experiences enable potential travelers to preview destinations prior to making a commitment, thereby significantly influencing their travel decisions (Balushi et al., 2024).

Fig. 2. AR and VR in Hospitality

VIII. Theoretical Implications

Integration with Technology Acceptance Model (TAM): The research expands the Technology Acceptance Model by demonstrating that age disparities substantially influence the perceived ease of use and perceived utility of tourist technologies such as AI, AR, and VR.

The Technology Acceptance Model (TAM) has been widely utilized to understand how users perceive and adopt new technologies, particularly in the context of tourism. Recent research indicates that age disparities significantly influence both perceived ease of use (PEU) and perceived usefulness (PU) of technologies such as artificial intelligence (AI), augmented reality (AR), and virtual reality (VR) within the tourism sector. This is particularly

relevant as the demographic landscape shifts, with an increasing number of older adults engaging with technology (Ha & Park, 2020).

Reinforcement of Generational Theories: The results substantiate the significance of Mannheim's Generational Theory in comprehending the adoption behaviors of Generation Y and Z. The inclination towards sustainability and technological integration within these groupings corresponds with prior forecasts.

Novel Contribution: This research presents a novel paradigm for comprehending personalized tourist experiences by merging Cognitive Infocommunications with Digital Realities.

IX. Conclusions

In the contemporary technologically driven society, the influence of macro-environmental factors, particularly technology, has significantly transformed lifestyles, especially within the tourism industry. The accelerated progression of technological advancements has reshaped human behavior, engendering novel patterns of communication and an increasing demand for personalized services. These services, now centered on AI, VR and AR, are crucial in addressing the specific needs and preferences of modern travelers, leading to the emergence of PDT.

This paper has introduced the concept of PDT, examining its foundational elements: Cognitive Info-communications, Generational Theories, Digital Realities, and AI-driven data handling. Through the synthesis of these components, PDT provides a comprehensive framework that enables tourism service providers to more precisely and effectively tailor their offerings. Utilizing detailed examples from the tourism sector, the paper illustrates how these advanced technologies can be leveraged to create more personalized and immersive travel experiences.

Personalized Digital Tourism represents a significant advancement in the tourism industry through the integration of CogInfoCom, Generational Theories, Digital Realities, and AI to enhance service personalization. This approach not only benefits tourism professionals by facilitating the effective customization of products but also serves as a valuable resource for researchers investigating the intersection of technology and human interaction. In the future, the implementation of PDT will undoubtedly play a necessary role in modelling the evolution of travel services, offering unprecedented levels of personalization and engagement for travelers.

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Biographies

Dr. Suresh Palarimath is an author and researcher with a prolific academic career. He has authored 25 widely recognized computer science textbooks. His research contributions include 22 published articles, 8 Indian patents, and 3 UK patents. In 2023, he secured a $56,200 Research Grant for three projects. Dr. Palarimath is currently a Lecturer in Information Technology at UTAS, Salalah, Oman since 2013.

Dr. Abdul Nazar. N, a faculty for thirty years, has worked both in India and overseas (Maldives, UAE, Oman). He holds certifications as a Tally and SPSS software trainer. He developed several accounting and commerce courses that are taught in universities across India and Oman. In 2002, he was given the Maldives' Best Teacher Award. He evaluated and edited many journals and published articles on accounting-related themes in peer-reviewed, Scopus-indexed journals. 15 theses from Anna University, Thiruvalluvar University, University of Madras, and Anna University were evaluated.

Roopa Palarimath is a Ph.D. scholar in Computer Science from India, with six years of teaching experience in the field. She has contributed to the academic community with five research papers and holds three Indian patents, showcasing her innovative research and expertise.