The artificial intelligence-enabled customer experience in tourism: a systematic literature review

Nada Ghesh, Matthew Alexander and Andrew Davis

Abstract

Purpose – The increased utilization of artificial intelligence-enabled applications (AI-ETs) across the customer journey has transformed customer experience (CX), introducing entirely new forms of the concept. This paper aims to explore existing academic research on the AI-enabled customer experience (AICX), identifying gaps in literature and opportunities for future research in this domain.

Design/methodology/approach – A systematic literature review (SLR) was conducted in March 2022. Using 16 different keyword combinations, literature search was carried out across five databases, where 98 articles were included and analysed. Descriptive analysis that made use of the Theory, Characteristics, Context, Methods (TCCM) framework was followed by content analysis.

Findings – This study provides an overview of available literature on the AICX, develops a typology for classifying the identified AI-ETs, identifies gaps in literature and puts forward opportunities for future research under five key emerging themes: definition and dynamics; implementation; outcomes and measurement; consumer perspectives; and contextual lenses.

Originality/value – This study establishes a fresh perspective on the interplay between AI and CX, introducing the AICX as a novel form of the experience construct. It also presents the AI-ETs as an integrated and holistic unit capturing the full range of AI technologies. Remarkably, it represents a pioneering review exclusively concentrating on the customer-facing dimension of AI applications.

Keywords Customer experience (CX), Artificial intelligence (AI), AI-enabled customer experience (AICX), AI-enabled technologies (AI-ETs), Tourism, Systematic review, TCCM framework

Paper type Literature review

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Declaration: An AI language model, namely ChatGPT, was used to assist in editing the final draft of the manuscript text.
La experiencia del cliente en el turismo posibilitada por la inteligencia artificial: Una revisión sistemática de la literatura

Resumen

Objetivo: La creciente utilización de aplicaciones habilitadas por inteligencia artificial (AI-ET) a lo largo del recorrido del cliente han transformado la experiencia del cliente (CX), introduciendo formas totalmente nuevas del concepto. Este artículo pretende explorar la investigación académica existente sobre la experiencia del cliente a través de la IA (AICX), identificando las lagunas en la literatura y las oportunidades para futuras investigaciones en este ámbito.

Diseño/metodología/enfoque: En marzo de 2022 se llevó a cabo una revisión bibliográfica sistemática (SLR). Utilizando 16 combinaciones diferentes de palabras clave, se realizó una búsqueda bibliográfica en 5 bases de datos en las que se incluyeron y analizaron 98 artículos. El análisis descriptivo que hizo uso del marco Teoría, Características, Contexto, Métodos (TCCM) fue seguido del análisis de contenido.


Originalidad/valor: El estudio establece una nueva perspectiva sobre la interacción entre la IA y la CX, introduciendo la AICX como una forma novedosa del constructo experiencia. También presenta las AICX como una unidad integrada y holística que capta toda la gama de tecnologías de la IA. Notablemente, representa una revisión pionera que se concentra exclusivamente en la dimensión orientada al cliente de las aplicaciones de la IA.

Palabras clave Palabras clave Experiencia del cliente, Inteligencia artificial, Revisión Sistemática de la literatura, Turismo, TCCM, Tecnologías basadas en la IA

Tipo de papel Revisión de literatura

1. Introduction

Customer experience (CX) is a key aspect of the service encounter, encompassing various reactions of customers to a market offering (Lemon and Verhoef, 2016). While debates are surrounding the definition and nature of CX (Becker and Jaakkola, 2020; Brakus et al., 2009; Lemon and Verhoef, 2016; Verhoef et al., 2009), one area of closer consensus is the impact of technology on the experience (Hoyer et al., 2020). Increased personalization, customer involvement and co-creation enhance opportunities for customer–technology interactions through emerging touchpoints and encounters. This, in turn, presents formidable challenges in comprehending and effectively managing CX, considering the elevated expectations of customers towards flawless experiences. The integration of AI is expected to enhance these effects and introduce a new concept known as AI-enabled customer experience (AICX) (Buhalis et al., 2019; Hoyer et al., 2020). AICX refers to customers’ cognitive, emotional, behavioural, sensorial and social responses to the integration of AI-enabled technologies into service encounters throughout the customer journey. It addresses the CX construct through the AI lens and therefore focuses on the impact of AI technologies in shaping and enhancing the overall experience.

AI is defined as machines’ ability to mimic cognitive functions associated with human intelligence (Winston and Prendergast, 1984). It stands out as a transformative force, generating novel AI-based applications and revolutionizing other pre-existing technologies (Bulchand-Gidumal et al., 2023). To capture this broad range, the term “artificial intelligence-enabled technologies” (AI-ETs) is used in this study. Current AI-ETs draw upon several overlapping subfields, methods and techniques that are expected to continue expanding both in depth and breadth (see Figure 1). These AI-ETs, however, can be allocated on a spectrum ranging from behind the scenes like personalized recommendations and demand forecasting to customer-facing AI like virtual reality travel experiences, virtual assistants and chatbots (Ostrom et al., 2019). This study focuses on customer-facing AI that visibly impacts the CX and enhances the experiential aspect of the customer journey (Tussyadiah et al., 2018). Managerial-focused AI implementations and AI playing a supporting role in the service encounter are beyond the scope of this study.
With an increased reliance on AI-ETs and the role it plays in reshaping experiences (Goel et al., 2022), understanding the impact of AI integration and the resulting AICX emerged as a top priority for academic researchers and marketing professionals alike (Verma et al., 2021). The advancements of AI, customers’ expectations and ethical concerns about its implementation, to name a few, are collectively contributing to this prioritization (Ameen et al., 2021; Jabeen et al., 2022). Available literature, however, is rather limited and fails to adequately consider the experiential aspects of AI integration. Drawing on the valuable insights of Buhalis et al. (2019) regarding technological disruptions in services and building upon the assertions of Hoyer et al. (2020) that AI advancements will bring about a paradigm shift and redefine the CX, this research intends to fill this gap by introducing a systematic literature review (SLR) that explores academic research on customer-facing AI-ETs and CX in tourism. The literature pertaining to AICX in tourism, specifically customer-facing AI-ETs, has not been thoroughly explored. Therefore, this study seeks to identify knowledge gaps, direct future research and thereby contribute to the theoretical understanding of the CX.

The tourism sector is chosen as the context for studying AICX due to its experiential nature, wide adoption of customer-facing AI-ETs, economic importance and diverse customer base. From hotel guests interacting with intelligent voice assistants (IVAs) for room service and museum visitors using augmented reality for tours to restaurant customers being served by robots, a range of compelling examples demonstrates the potential of AICX in tourism (Buhalis and Moldavska, 2022; Fusté-Forné, 2021; Ivanov et al., 2023; Trunfio and Campana, 2020).

This paper is structured as follows. The next section outlines the research approach adopted. This is followed by descriptive analysis for the retrieved articles using the Theory, Characteristics, Context, Methods (TCCM) framework (Rowley and Paul, 2021). The AI-ETs

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**Figure 1** The AI-ETs

Sources: Adapted from Ostrom et al. (2019); Villanueva and Ma Louella (2018)
categorizing the AI-ETs is then presented. The subsequent section introduces the identified gaps in knowledge. The paper concludes with implications and limitations of the study.

2. Research approach

An SLR is a replicable, transparent and rigorous scientific approach to identify, analyse and synthesize available literature on a given topic (Jones and Gatrell, 2014; Paul et al., 2021). Considering the objective of this study, the systematic quantitative review method is deemed as the most suitable approach (Pickering and Byrne, 2014). This study, therefore, closely aligns with the well-established approach introduced by Yang et al. (2017), which is specifically designed for quantitative systematic reviews in social sciences. The approach has been widely cited and adopted in previous SLRs focusing on the intersection of tourism and technology (Khoo-Lattimore et al., 2019; Shafiee et al., 2021; Yung and Khoo-Lattimore, 2019). To enhance the quality of reporting and transparency, the preferred reporting items for systematic reviews and meta-analyses (PRISMA) framework is also adopted (Page et al., 2021) (see Figure 2).

The research objective of exploring AICX in the context of tourism shaped the selection of keywords, databases, quality threshold and inclusion/exclusion criteria, thus influencing the approach to conducting the SLR. Accordingly, 16 keywords from three domains retrieved from previously published SLRs or identified during scoping searches were used (AI: Artificial Intelligence, Intelligent Technology/C3, Smart, Robot/C3, Humanoid, Chatbot/C3, Automation, Augmented Reality, Virtual Reality, Mixed Reality and Virtual Assistants; CX: Tourist Experience, Customer Experience and Visitor Experience; Tourism: Touristic and Travel). Furthermore, to ensure comprehensibility, five widely used databases (EBSCOHost, Emerald, Web-of-Science, ScienceDirect and ProQuest) were selected. The search query included one keyword from each domain, where the keywords were separated by the Boolean phrase “AND”. Wherever applicable, one comprehensive search query was used for all the AI domain keywords while separated by the Boolean phrase “OR”. Database search took place in June 2021; subsequently, an update search was carried out in March 2022 to ensure that results are current and obtain any new information that may have become available.

Six criteria were chosen for the inclusion/exclusion process: English language; availability in an electronic format; inclusion of specific search keywords in title/abstract/keywords; focus on CX with a technological lens involving a customer-facing AI application; tourism or hospitality journal or clear tourism context in study; use of Association of Business Schools Academic Journal Guide (CABS AJG) as quality threshold. Through the application of these criteria, articles that were not related to technology or the tourism context, focused on non-customer facing AI-ETs or provided only brief discussions on CX and AI were excluded. As a result, a total of 98 articles remained for further analysis. The study used descriptive analysis, leveraging quantitative data to provide a structured and comprehensive overview based on the TCCM framework (Paul et al., 2021). In addition, content analysis introduced the AI-ETs Cube and valuable insights concerning the identified gaps found in the literature. The following sections present an overview of the outcomes.

3. Descriptive overview

The following sections uses the TCCM framework (Paul and Criado, 2020; Thomas and Gupta, 2022) to present the descriptive findings.

3.1 Theories

A total of 81 theories and models were identified from various fields, including information systems (IS), psychology, consumer behaviour, sociology, economics, marketing and management. This study classified the identified theories based on the aim of the study,
using the theory, which resulted in five main clusters: acceptance and adoption, evaluation, marketing and advertising, organizational perspective and consumer behaviour. Table 1 illustrates these five clusters and provides examples from retrieved literature.

### 3.2 Characteristics

The 98 articles included in this review were published in 29 different academic journals (see Table 2). Most articles were published in tourism and hospitality journals, with the remainder in services, business and management journals. Figure 3 shows that all the included articles in the SLR are published after 2011, corresponding with the introduction of AI into the sector, with the number increasing year on year.

### 3.3 Context

The intersection between tourism and technology provides two different viewpoints to look at the context of retrieved articles. From a technological standpoint, the key identified AI-ETs were service robots (Ma et al., 2021), IVAs (Loureiro et al., 2021), chatbots (Pillai and Sivathanu, 2020),
augmented reality (Tom Dieck et al., 2018), virtual reality (VR) (Lee et al., 2020) and mixed reality (MR) (Trunfio et al., 2020). Literature on VR, AR and service robots is more developed than that for IVAs, chatbots and MR, which is still in the infancy stage. Categorizing at a higher technical level or in relation to specific service tasks is beyond the scope of this review.

From a sectoral standpoint, studies commonly focus on hotels (Shin and Jeong, 2020), restaurants (Kim et al., 2021) and museums (Serravalle et al., 2019). In addition, research extends to festivals (Tom Dieck et al., 2018), events (Neuhofer et al., 2021), religious destinations (Allal-Chérif, 2022), cruises (Simoni et al., 2022), cultural heritage sites (Jung et al., 2018), art galleries (Han et al., 2019) and theme parks (Milman et al., 2020). Other studies address the sector holistically.

### 3.4 Methods

Both empirical work ($n = 75$) and conceptual/review papers ($n = 23$) were identified (see Figure 4). Empirical studies used a variety of quantitative ($n = 43$), qualitative ($n = 26$) and

### Table 1 Theories emerging clusters

<table>
<thead>
<tr>
<th>Emerging theory cluster</th>
<th>Examples from retrieved articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance and adoption</td>
<td>Unified Theory of Acceptance and Usage of Technology (UTAUT2; Paulo et al., 2018); Service Robot Acceptance Model (Fuentes-Moraleda et al., 2020); Diffusion of Innovations (Kim and Han, 2020); Technology Acceptance Model (Shin and Jeong, 2020); and Value-based Acceptance Model (Zhong et al., 2021)</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Stereotype Content Model (Zhu and Chang, 2020); Expectancy Disconfirmation Theory (Ducros and Euzéby, 2021); Cognitive-Affective-Conative Model (Huang et al., 2021); Social Exchange Theory (Loureiro et al., 2021); Cognitive Appraisal Theory (Zhang et al., 2021)</td>
</tr>
<tr>
<td>Marketing and advertising</td>
<td>The Hierarchy-of-Effects Theory (Lyu et al., 2021); Product Level Theory (Ma et al., 2021); Service Dominant Logic (Neuhofer et al., 2021); Five-Sense Experiences Framework (Chen et al., 2021); Value Co-creation (Jung and Tom Dieck, 2017); Experience Economy (Tung and Law, 2017)</td>
</tr>
<tr>
<td>Organizational perspectives</td>
<td>Job Design Theory (Tuomi et al., 2021); Process Theory (Wei et al., 2019); and Stakeholder Theory (Serravalle et al., 2019)</td>
</tr>
<tr>
<td>Consumer behaviour</td>
<td>Theory of Planned Behaviour (Cha, 2020); SOR Framework (Kim and Han, 2020); Variance Theory (Lacka, 2020); Theory of Reasoned Action (Aluri, 2017)</td>
</tr>
</tbody>
</table>

Source: Created by authors

### Table 2 Distribution by journal

<table>
<thead>
<tr>
<th>Journals titles</th>
<th>No. of retrieved articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Journal of Contemporary Hospitality Management, Journal of Hospitality and Tourism Technology ($n = 2$)</td>
<td>23</td>
</tr>
<tr>
<td>Journal of Service Management, Tourism Management Perspectives, Current Issues in Tourism, Tourism Review ($n = 4$)</td>
<td>5</td>
</tr>
<tr>
<td>Tourism Management ($n = 1$)</td>
<td>4</td>
</tr>
<tr>
<td>International Journal of Hospitality Management ($n = 1$)</td>
<td>3</td>
</tr>
<tr>
<td>Grand total</td>
<td>98</td>
</tr>
</tbody>
</table>

Source: Created by authors
mixed-method \((n = 6)\) designs. Surveys (quantitative) and semi-structured interviews (qualitative) were common methods used, with technology playing a role in data collection techniques. Examples include online surveys (Milman et al., 2020), technology-enabled experimental designs (Lyu et al., 2021), user-generated content on social media (Çakar and Aykol, 2021) and video-enhanced scenarios (Paulo et al., 2018).

4. Towards a typology for classifying the artificial intelligence-enabled technologies

Identification of customer-facing AI-ETs in the tourism sector allows further classification that emphasizes the experiential dimension of AI integration into the CX while taking into
account the key aspects of the AlCX (customer, technological device and AI). Inspired by Flavian et al.’s (2019) Embodiment–Presence–Interactivity Cube, a three-dimensional typology is introduced to classify AI-ETs. Visualized as a cube (see Figure 5), each point represents a specific combination of these dimensions. As understanding of AI evolves rapidly, we adopt fluid definitions for typology components, presenting them as continua rather than dichotomies.

The AI-ET Cube transcends the boundaries of conventional technical descriptions by offering a comprehensive breakdown of the identified AI-ETs. It helps managers to gain insights into how various technologies impact the holistic experience. This comprehensive understanding enables informed decision-making and strategic planning, setting the stage for a future proofed and exceptional CX. Table 3 offers more examples of AlCX. In relation to the three dimensions, we provide some additional description.

**AI capabilities** are defined as the varying degrees of intelligence displayed by an AI system, enabling it to effectively perform a wide range of tasks. For example, Huang and Rust (2018) identify multiple AI intelligences needed for service-related tasks, with each type (mechanical, analytical, intuitive and empathetic) demonstrating different task performance capabilities along with varying levels of difficulty that AI systems face in emulating each type. The higher the difficulty, the higher the level of AI capabilities (Huang and Rust, 2022).

In this study, **interactivity** is defined from a technological perspective; it refers to a dynamic process involving two-way communication, control and real-time environment modification (Flavian et al., 2019; Mollen and Wilson, 2010). Technological integration expands touchpoints and introduces new experiential forms (Hoyer et al., 2020), along with increased human–technology interaction (Dix, 2017; Neuhofer et al., 2014). It spans a continuum from passive to active interaction, where passive interaction requires no direct

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**Figure 5** The AI-ETs cube

![The AI-ETs cube](image)
input from the customer (Cho and Choi, 2020) and active interaction necessitates customer inputs for technology functioning.

**Technological embodiment** is defined here as the level of interaction between a technological device and human senses and is characterized by dimensions of agency, location and ownership. Embodiment is the notion that mind and body are closely connected, and physical experiences shape our cognitive processes and understanding (Longo et al., 2008). The integration of technology with embodiment is referred to as technological embodiment (Verbeek, 2008) and relates to the level of interaction between a technological device and human senses in our everyday lives and experiences (Flavian et al., 2019).

### 5. Identified gaps in literature

Advancements in technology have catalyzed significant transformations, leading to profound operational shifts that restructured the services sector and reshaped the competitive landscape within, and consequently, altered customers’ expectations, experiences and behaviour. The SLR findings indicate that this paradigm shift has increased the focus on consumer perception, adoption and behaviour, exploring the ways in which technology shapes consumer decision-making processes and behavioural outcomes. Likewise, other research seeks to conceptualize and understand evolving dynamics between business operations and customer interactions. This study, by examining the interplay between AI and the CX, provides valuable insights into the emerging construct of AICX and guides future research endeavours. The findings are anticipated to have important implications for various stakeholders in the tourism field, including service and technology providers, customers, as well as government and regulatory authorities. The involvement of numerous stakeholders amplifies the significance of these implications, particularly through inter-stakeholder collaborations, for instance, collaborations among service and technology providers with researchers and policymakers. The following sections discuss these core themes and their implications.

It is important to mention that the emerging themes in AICX literature provide valuable insights across CX, marketing and society. They shed light on sustainability, where AI can drive

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**Table 3** Examples of AI-ETs

<table>
<thead>
<tr>
<th>AI-ET Cube component</th>
<th>Definition</th>
<th>Level</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI capabilities</td>
<td>The varying degrees of intelligence displayed by an AI system, enabling it to effectively perform a wide range of tasks</td>
<td>Low</td>
<td>Robot concierge providing basic services including greeting guests, providing information about the hotel and local attractions, making restaurant reservations and assisting with check-in and check-out.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>Robot concierge that could personalize interactions using facial recognition technology.</td>
</tr>
<tr>
<td>Technological embodiment</td>
<td>The level of interaction between a technological device and human senses, and is characterized by dimensions of agency, location and ownership</td>
<td>Low</td>
<td>VR tour of heritage location using a mobile device where users are immersed in a completely virtual environment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>High</td>
<td>AR museum tour using a wearable device where virtual elements are overlayed onto the real world, blending digital content with the user’s physical surroundings.</td>
</tr>
<tr>
<td>Interactivity</td>
<td>A dynamic process involving two-way communication, control and real-time environment modification</td>
<td>Passive</td>
<td>Voice-activated virtual assistant which respond to user commands and inquiries but do not engage in proactive or dynamic interactions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Active</td>
<td>Chatbots with advanced natural language processing capabilities which can ask follow-up questions, provide proactive suggestions, and engage in back-and-forth interactions to gather information and understand user needs more comprehensively.</td>
</tr>
</tbody>
</table>

*Source: Created by authors*
environmentally responsible practices by optimizing resource allocation and reducing waste. Additionally, AI’s role in digital transformation enables businesses to deliver seamless, personalized experiences. Ethical considerations are paramount, with research examining AI algorithm ethics, data privacy, and transparency. Exploring emotional intelligence in AI enhances customer engagement and satisfaction. Lastly, studying AICX contributes to understanding and implementing omnichannel approaches for consistent, personalized experiences.

5.1 Artificial intelligence-enabled customer experience definition and dynamics

Given rapid developments of AI-ETs and the relative novelty of the domain, there is uncertainty surrounding the conceptualization of AICX (Huang et al., 2021). Very little is known about the multidimensionality of this emerging form of experience and its underlying dimensions. Limited knowledge is available concerning value creation in the context of AICX (Chen et al., 2021; Neuhofer et al., 2021). Furthermore, the dynamics between customers, technology and frontline employees have yet to be investigated (Odekerken-Schröder et al., 2022). From a more practical perspective, it is now well established that using AI-ETs (e.g. remote virtual tourism) is transforming traditional tourism and leading to significant industry changes, including hiring strategies, job reskilling and process redesign (Ivanov et al., 2019; McCartney and McCartney, 2020; Solnet et al., 2019). However, research attention remains scarce in exploring the implications and practical aspects associated with these changes (Allal-Chérif, 2022).

Addressing these gaps would provide insights to conceptualize and design AI-driven CX. This, in turn, would enable organizations to navigate the rapidly evolving domain, create unique value propositions, optimize interactions and adapt their strategies and practices to align with industry changes. Within the tourism sector, where the significance of the experience is magnified, bridging this gap becomes paramount.

5.2 Artificial intelligence-enabled customer experience implementation

The implementation of AI in the tourism sector lacks clear understanding, hindering effective utilization and management (Fuentes-Moraleda et al., 2020). Existing literature falls short in providing guidance for successful AI implementation in operations, particularly in the management of CX in tourism and hospitality (Simoni et al., 2022). Scepticism and concerns persist despite some businesses investing in AI, highlighting the need for comprehensive guidelines (Collins, 2020). Moreover, limited research has evaluated AI performance, investigated implementation strategies and understood implementation challenges (Pillai and Sivathanu, 2020).

Identifying AI applications that provide maximum value and understanding their suitability for specific roles within tourism is an important research gap (Lee et al., 2021). In addition, achieving compatibility between AI and human employees remains uncertain, despite its significance in preserving the hospitality sector’s hospitable nature (Lei et al., 2021). Research is insufficient in exploring the relevant key aspects like the concerns about technology replacing frontline employees, enhancing the acceptance of AI among employees and understanding their attitudes, behaviours and reactions (Qiu et al., 2022). Research focusing on these gaps would provide organizations with valuable knowledge and guidance to enhance their AI implementation processes and outcomes. It would enable them to achieve compatibility between AI and human employees while upholding the essential hospitality aspect of the sector. Consequently, this is expected to improve the CX and increase operational efficiency.

5.3 Artificial intelligence-enabled customer experience outcomes and measurement

The role of AI in shaping CX remains understudied. Research on the psychological implications of interacting with AI technologies, the emergence of emotions and subsequent
behavioural intentions is limited (Ivanov and Webster, 2021; Oh and Kong, 2022; Tuomi et al., 2021). Current findings rely on hypothetical scenarios, necessitating field studies to identify improvement strategies and understand how prior experiences shape the overall user experience (Fusté-Forné, 2021). Insufficient research exists at the organizational level concerning business outcomes, such as customer acquisition, loyalty, engagement and competitive advantage, as well as attachment and brand love (Loureiro et al., 2021; McCartney and McCartney, 2020).

Developing a measurement scale for AICX, including identifying variables and dimensions for evaluating the components and the overall holistic experience is identified as a key research gap (Kabadayi et al., 2019). Here, consideration of the “dark side” of AI integration, such as privacy concerns and potential psychological harmful effects on customers is viewed as important (Grundner and Neuhofer, 2021). Limited attention has been also given to the economic aspect of AICX, ranging from the costs associated with implementation and conducting cost-benefit analyses to exploring the potential economies of scale (Ivanov et al., 2019). Furthermore, there is a notable lack of emphasis on addressing the environmental, ethical, legal and security dimensions of AI deployment. This gap persists despite the changing behaviours of customer and the rising concerns expressed by the public (Celuch, 2021; Fusté-Forné, 2021; Ivanov et al., 2019).

Research on AICX outcomes and measurement equips decision-makers with actionable insights to inform AICX design and optimize AI implementation. By exploring this theme, researchers and practitioners can mitigate risks and ensure that organizational strategies are in harmony with evolving societal needs and sustainability objectives.

5.4 Consumer perspectives of artificial intelligence-enabled customer experience

While research has been carried out on customers’ intentions, perceptions and attitudes towards AI integration into the experience, there have been few empirical investigations of this in real-life context, and particularly from hedonic, experiential and social perspectives (Celuch, 2021). What is not yet clear is customers’ preferences, willingness to engage with AI and their expectations and required features for AICX (Han et al., 2019). On the other hand, investigating customers’ motivations, concerns, reluctance or preference for non-digital experiences did receive the attention it deserves (Çakar and Aykol, 2021).

Another research gap pertains to customers’ reactions and resulting behaviour, such as their willingness to pay for fully automated services and their perceptions of AI-ET appropriateness and preferred forms (Ivanov and Webster, 2021). Limited scholarly attention has been directed towards investigating interactivity, immersion and emotional responses to AI integration (Chiang et al., 2022).

One area of research that has been overlooked is AICX resulting behavioural intentions, considering factors like AI technology type, tourism context, and AI-ET form (Fuentes-Moraleda et al., 2020). Another important area relates to exploring customers’ reactions and attributions of responsibility in the face of AI service failures and comparing complaint behaviour between human frontline employees and AI-ETs (Tuomi et al., 2021).

Addressing this theme and its underlying gaps would provide profound insights that not only shape AICX design but also elevate customization and personalization to new heights. It enables informed decision-making that aligns with customers’ preferences. In addition, the profound impact would extend to customer recovery strategies, empowering organizations to address challenges and bounce back from setbacks swiftly and effectively.

5.5 Contextual lenses for artificial intelligence-enabled customer experience

The contextual nature of CX is noted in core literature (Becker and Jaakkola, 2020). In the analysis of AICX in tourism, multiple key contextual lenses emerge, which deserve attention.
The identified contextual lenses highlight the importance of considering the entire customer journey, emphasizing the need to invest resources in enhancing each stage. This encourages service providers to allocate resources and invest in enhancing the different stages of the customer journey, ultimately leading to improved AICX. Furthermore, by considering cultural, personal and demographic elements, organizations can create tailored experiences that resonate with individual customers.

5.5.1 The cultural lens. There is a significant gap in cross-cultural studies on AICX. Comparative studies involving customers from different cultural backgrounds would enhance our understanding of potential variations in AICX (Trunfio and Campana, 2020). Exploring cultural differences in attitudes towards AI, adoption, acceptance preferences, engagement, satisfaction, memorable experiences and perceived service quality within the tourism sector can provide valuable insights (Jung et al., 2018).

5.5.2 Tourism Sub-contexts. The receptivity of different tourism sectors to AI has not been closely examined, particularly in understudied sub-contexts, such as international events, entertainment destinations, fairs and festivals and religious monuments (Allal-Chérif, 2022). While previous studies provided some theoretical projections of AI integration, there is still very little understanding of this in real-world tourism contexts. A systematic comparison highlighting the differences between the various tourism contexts is also still lacking (Ducros and Euzéby, 2021).

5.5.3 Beyond the encounter stage. Existing research on AICX has primarily concentrated on the encounter stage, thus offering a limited understanding of the broader customer journey that includes the pre- and post-encounter stages. Current literature falls short in examining anticipatory (e.g. AI in promoting tourist attractions) and reflective phases (e.g. leveraging post-travel experiences to further promote the overall experience) of the experience (Tung and Law, 2017).

5.5.4 Moderating variables. Insufficient attention has been given to the moderating variables of AICX, which indicates a research gap. Variables such as personal and demographic factors, including generations, age groups, regions and genders, have not been thoroughly examined (McCartney and McCartney, 2020). Furthermore, behavioural and value-based segmentation, such as customers’ technological skills, innovation readiness and prior technology experience, have not received the necessary research attention (Zhu and Chang, 2020).

6. Conclusion

The integration of AI into various service encounters across the customer journey has reshaped the CX. This study introduces the AICX as a novel construct that has emerged from the continuous integration of AI-ETs. Following a SLR approach, this study examined and analysed 98 articles on AICX in the tourism industry. By using the TCCM framework, this review provides bibliometric information and analysis. It also introduces a novel framework for understanding AI-ETs. Five key themes that highlight gaps in the existing literature serve as a roadmap for future research.

6.1 Limitations

The increasing importance of the research area of AICX and the substantial scholarly attention it received in recent years pose certain limitations for this study. Despite adopting a comprehensive search strategy, there is still a possibility that papers were excluded due to a lack of clear relationships with CX research, a lack of clear relationships with tourism research, the use of a contextual label for the CX (e.g. museum experience) or not being included in one of the five selected databases for identifying relevant literature on the AICX. Furthermore, given the challenges scholars face in distinguishing AI and occasional mislabelling of non-AI applications, coupled with the impracticality of verifying technical
<table>
<thead>
<tr>
<th>Identified theme</th>
<th>Study area</th>
<th>Key research questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>AICX definition &amp; dynamics</td>
<td>Multidimensionality and dimensions of the AICX</td>
<td>What are the key dimensions that comprise AICX? How does the integration of AI-ETs contribute to the overall multidimensional nature of the experience? How are the key characteristics of AICX that contribute to value creation for customers? What are the differences in value creation between human-led and AI-enabled encounters? How do AI-enabled encounters differ from human-led encounters in terms of value creation?</td>
</tr>
<tr>
<td>AICX characteristics that create value in the AICX</td>
<td></td>
<td>How does AI integration impact the overall dynamics within the service environment? What is the influence on the overall CX, employee performance, and service outcomes? How does this impact the interactions between customers, front-line employees, and other customers and employees?</td>
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<tr>
<td>AICX characteristics that create value in the AICX</td>
<td></td>
<td>How do the integration of AI in product offerings and promotional elements contribute to the overall CX? What are the underlying mechanisms and dynamics involved in the utilization of AI-enabled product offerings and promotional elements within the experience?</td>
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<tr>
<td>Dynamics within the service environment</td>
<td></td>
<td>What are the emerging business models that have the potential to reshape the landscape of services? How do these emerging business models impact the roles and interactions of customers, front-line employees, and AI-ETs? What are the managerial and practical implications derived by these emerging models?</td>
</tr>
<tr>
<td>AICX implementation</td>
<td>AI utilization</td>
<td>What is the current degree of AI utilization in the sector, and how does it vary across different sub-sectors and organizational sizes? What are the factors that influence the degree of AI utilization in the sector, such as organizational readiness, technological infrastructure, regulatory environment and competitive pressures?</td>
</tr>
<tr>
<td>AICX implementation</td>
<td>Performance of businesses that have implemented AI</td>
<td>What are the critical success factors that drive positive performance outcomes for businesses that have implemented AI? How does successful AI implementation impact business performance metrics such as revenue growth, cost reduction, operational efficiency, customer satisfaction and employee productivity? What are the KPIs that businesses can use to evaluate the performance outcomes of successful AI implementation?</td>
</tr>
<tr>
<td>AICX implementation</td>
<td>Steps and strategies to implement AI</td>
<td>What are the essential steps and strategies for successful AI implementation? How do different implementation approaches, such as phased adoption or full-scale deployment, impact the effectiveness and efficiency of AI implementation in organizations?</td>
</tr>
<tr>
<td>AICX implementation</td>
<td>Challenges of implementing AI</td>
<td>What are the key challenges and strategies to overcome them during AI implementation, ensuring a smooth and effective integration of AI-ETs into existing systems and processes? What steps were undertaken to overcome people's concerns about AI and enhancing acceptance rate?</td>
</tr>
<tr>
<td>AICX implementation</td>
<td>Balancing AI and the human-touch</td>
<td>How can organizations strike the right balance between AI integration and human touch in customer interactions to optimize CXs and outcomes? What are the strategies and best practices for effectively integrating AI while maintaining the human touch?</td>
</tr>
<tr>
<td>AICX implementation</td>
<td>Maximizing business value and market alignment through AI integration</td>
<td>Which specific AI applications bring the most value to businesses across different industries? How do different AI-ETs impact key business outcomes? Which tourism sectors that would benefit the most from implementing AI-ETs? Which market segments exhibit the highest potential for successful integration of AI-ETs and offer significant growth opportunities for businesses? What are the most promising and impactful applications of AI across various industries and sectors that can revolutionize business processes and drive innovation?</td>
</tr>
<tr>
<td>AICX implementation</td>
<td>AICX management</td>
<td>How can businesses effectively manage and optimize AICX through the strategic implementation of AI-ETs? What are the key ethical considerations and guidelines that organizations should follow when managing AICX to ensure transparency, fairness and trustworthiness? What are the most effective strategies and tools for monitoring, measuring and optimizing AICX?</td>
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<thead>
<tr>
<th>Identified theme</th>
<th>Study area</th>
<th>Key research questions</th>
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<tbody>
<tr>
<td><strong>AI integration into the CX from the perspective of FLEs</strong></td>
<td>How can FLEs actively participate in the integration of AI-ETs into the CX? What are the primary challenges and concerns faced by frontline employees; how can organizations address these concerns to ensure a smooth transition and collaboration? What training, support and resources should be provided to frontline employees to effectively leverage AI-ETs, enabling them to deliver exceptional CXs while embracing the benefits of AI integration?</td>
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<tr>
<td><strong>AICX outcomes and measurement</strong></td>
<td>How does the integration of AI-ETs into CXs impact customers’ emerging emotions? What are the potential positive and negative emotional effects of AI integration on customers? In what ways can businesses effectively measure and assess the impact of AI integration on customers’ emerging emotions, and how can these insights be leveraged to tailor AI-driven interactions and experiences to better align with customers’ emotional needs and preferences? How does the integration of AI-ETs into CXs influence customers’ behavioural intentions, such as their likelihood to make repeat purchases, recommend the business to others or engage in positive word-of-mouth marketing?</td>
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<tr>
<td><strong>Outcomes of AI integration on the business-level</strong></td>
<td>What are the key business-level outcomes and benefits that can be achieved through the successful integration of AI-ETs? How can businesses effectively measure and evaluate the impact of AI integration? What are the tangible and intangible benefits that organizations can expect to achieve through successful AICX implementation? Can businesses leverage AI-driven insights and analytics to enhance AICX outcomes?</td>
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<tr>
<td><strong>Variables to measure the AICX</strong></td>
<td>What are the key variables that can be used to effectively measure and quantify the quality and effectiveness of AICX across different touchpoints and stages of the customer journey? What methods or tools can be used to collect, analyse and interpret the data associated with the identified variables to gain actionable insights and optimize the AICX? Are there any specific variables or elements that hold greater importance to customers in their evaluation of the CX?</td>
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<tr>
<td><strong>The dark side of AI integration in the CX</strong></td>
<td>What are the potential ethical concerns and risks associated with AI integration in CXs? How might the overreliance on AI-ETs in customer interactions lead to potential customer frustration, disengagement or a decline in trust? In what ways can biases in AI algorithms impact the fairness and inclusivity?</td>
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<tr>
<td><strong>Consumer perspectives of AICX</strong></td>
<td>How do consumers perceive the hedonic aspects of AICX, such as the enjoyment, pleasure and emotional fulfillment they derive from interacting with AI-ETs? From a social standpoint, how do consumers perceive the role of AI in CXs, particularly in terms of social interactions, social influence and social connectedness? What are the experiential dimensions that consumers associate with AI integration in CXs?</td>
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<tr>
<td><strong>Hedonic, experiential and social standpoints</strong></td>
<td>How do consumers perceive and define engagement in the context of AICX and what are the key factors that contribute to their sense of engagement with AI-ETs? What are the indicators or behaviours exhibited by consumers that signify a high level of engagement during the AICX?</td>
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<tr>
<td><strong>Engagement in the AICX</strong></td>
<td>What are the key expectations and requirements that customers have regarding AICX and how do these expectations vary across different industries and customer segments? How do customers perceive the value of AI integration and what factors contribute to their perception of whether AI-ETs meet or exceed their expectations? What are the potential gaps between customers’ expectations, requirements and their perceived value of AICX? What are the key elements or features that they associate with the ideal AICX?</td>
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</tr>
<tr>
<td><strong>Expectations, requirements and value perceptions</strong></td>
<td>What are the key factors that influence customers’ decisions to opt for a digital-free experience instead of engaging with AI-ETs? What are the underlying motivations or preferences behind this choice? How do customers weigh the benefits and drawbacks of AICX versus digital-free experiences?</td>
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| **Motivation to choose the AICX or the digital free experience** | (continued)
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<tr>
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<tr>
<td>Concerns and reluctant behaviour towards AICX</td>
<td>What are the primary concerns and apprehensions that customers have towards AICX? What factors contribute to customers’ reluctant behaviour towards AICX? How do customers perceive the potential risks, such as privacy, security or loss of human touch, associated with AI integration in CXs? How do customers’ reactions to AICX influence their trust and confidence in the business?</td>
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<tr>
<td>Customers’ reactions and resulting behaviour Preferred towards specific AI forms and types</td>
<td>How do customers perceive the effectiveness, reliability and user-friendliness of different AI forms or types in meeting their specific needs and preferences? What are the key considerations that customers consider when expressing a preference for certain AI forms or types in CXs?</td>
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<tr>
<td>Level of interactivity and immersion in the optimal experience</td>
<td>How do customers define and conceptualize the “optimal experience” in the context of AICX in terms of interactivity and immersion? How does the level of interactivity and immersion in AICX impact customers’ sense of engagement, enjoyment and satisfaction with the overall experience?</td>
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<tr>
<td>Customers’ emotional responses for interacting with AI</td>
<td>What are the predominant emotional responses that customers experience when interacting with AI-ETs in CXs?</td>
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<tr>
<td>Service failure and the resulting customer’s complaint behaviour</td>
<td>How do customers perceive service failures within AICX, and what are the key factors that influence their decision to voice their complaints or express dissatisfaction? What are the specific channels or platforms that customers prefer to use when lodging complaints related to AICX, and how do their complaint behaviours differ compared to traditional non-AI service failures?</td>
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<tr>
<td>Contextual lenses for AI</td>
<td>Variations amongst different AI-ETs and AI application forms</td>
<td>How do customers perceive and differentiate among various AI-ETs in terms of their effectiveness, reliability and overall performance in delivering enhanced CXs? What are the specific features or capabilities of different AI-ETs that customers find most valuable and influential in shaping their preferences and satisfaction? Do customers perceive any differences in their experience and satisfaction based on the form of AI integration, such as whether it is accessible through a mobile app or another external device?</td>
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<tr>
<td>Influence of cultural background on AICX</td>
<td>How does customers’ cultural background influence their perceptions, expectations and preferences regarding AICX and are there any specific cultural factors that impact their engagement and satisfaction? In what ways does cultural background shape customers’ attitudes and behaviours and how can businesses adapt their strategies to cater to diverse cultural perspectives and preferences? Are there any cultural nuances or sensitivities that businesses need to consider when designing and implementing AICX to ensure they are culturally appropriate and resonate with customers from different cultural backgrounds?</td>
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<tr>
<td>Tourism sector-wide receptivity of AI</td>
<td>What is the level of receptivity within the tourism sector towards the integration of AI-ETs? What are the key factors influencing the tourism sector’s willingness to embrace AI-ETs, such as cost-effectiveness, operational efficiency, personalization capabilities or competitive advantages? How do tourism industry professionals envision the future role of AI in transforming CX across the various tourism sector?</td>
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<tr>
<td>Anticipatory (pre-encounter) and reflective (post-encounter) phases of the experience</td>
<td>How do customers’ anticipatory (pre-encounter) expectations shape their overall perception and satisfaction with AICX? What are the key elements that customers reflect upon (post-encounter) after engaging in AICX? How do these reflections influence their future behaviours and decisions? How can businesses effectively manage and leverage the anticipatory and reflective phases of the CX to enhance the AICX?</td>
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<tr>
<td>Moderating variables (demographics, personal variables, ecological variables, aesthetic variables and functional variables)</td>
<td>In studying the AICX, it is important to consider the impact of moderating variables such as demographics, personal variables, ecological variables, aesthetic variables and functional variables. These factors influence how different customer segments perceive and engage with AI-ETs, considering individual characteristics and contextual factors</td>
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Notes: KPI = Key performance indicator; FLEs = Front-line employees
Source: Created by authors
details for every mentioned application in articles, there is a possibility that certain articles in our research have been inaccurately categorized under the AI domain.

6.2 Theoretical implications

While building upon the prior research conducted by Hoyer et al. (2020) on CX transformation through technologies, and Buhais et al. (2019) identification of disruptive areas in service experience, this study breaks new ground by introducing AICX as a standalone holistic construct. It is one of the pioneering studies that introduces the term “AI-ETs” to encompass all AI-based and AI-empowered technologies implemented throughout the customer journey. By adopting the comprehensive concept of AICX to capture customers’ responses to the integration of AI-ETs into service encounters, this study expands the current theoretical understanding of CX.

In addition, the study presents a novel framework, known as the AI-ETs Cube, for classifying AI-ETs. This framework provides a structured and comprehensive approach to categorize the diverse range of customer-facing AI-based and AI-empowered technologies implemented across the customer journey in the tourism sector. It extends previous literature on the classification of AI in services (Huang and Rust, 2018; Huang and Rust, 2022; Puntoni et al., 2021) and offers guidance for future research on exploring the interplay between AI, technology and CX.

6.3 Implications for future research

The study offers insights into existing research on AICX and provides directions for future investigations. The findings emphasize the growing significance of this research area and highlight the need for further scholarly attention. The research agenda based on content analysis of relevant literature on AICX and the identified gaps in literature are shown in detail in Table 4.

Future studies should explore the multidimensionality of AICX and examine the factors that contribute to its value. A comparison between AI-enabled and human-led service encounters is essential, as well as examining the dynamics between key agents in AICX and re-evaluating marketing fundamentals through the lens of AI. In addition, future work should address questions about AI utilization across industries and the performance of businesses that have successfully implemented AI. Strategies for implementing AI while maintaining a balance with human touch should be investigated. Understanding the positive/negative impact of AI integration on customers’ emotions and behavioural intentions, evaluating business-level outcomes and identifying metrics to assess AICX are important research areas. Furthermore, studying customer perspectives on AICX should go beyond attitudes and perceptions to encompass expectations, value perception, motivation, engagement, service failure and complaint behaviour. It is also crucial to adopt various contextual lenses to examine and understand AICX, considering factors such as technology, culture and personal variables.

References


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