

Personalisation in tourism: The role of mobile technology and AI in enhancing visitor experience - Evidence from Hoi An Ancient Town

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Abstract:

Mobile technology and artificial intelligence (AI) have become increasingly important in tourism. Their integration allows destinations to better understand tourist needs and deliver more relevant forms of support. This study examines the role of mobile technology and AI in shaping tourist experiences in Hoi An Ancient Town, with particular attention to how personalised travel experiences in a heritage destination are formed, perceived and interpreted. To address these objectives, the research employs a primarily quantitative exploratory-descriptive design informed by a preliminary qualitative phase of expert interviews. Survey results from 144 tourists indicate strong stated interest in AI-supported travel assistance, although this interest was not matched by uniformly high levels of current digital use. The findings suggest that the value of personalisation lies not only in technological responsiveness, but also in its practical relevance, usability and sensitivity to the socio-cultural context of a living heritage destination. The preliminary qualitative phase further provides contextual insight into the cultural specificity of Hoi An and the practical conditions under which personalisation can be understood as an interpretive experiential process embedded within the destination context, thereby contributing to a more cautious and in-depth approach to technology integration in heritage tourism. These findings provide exploratory evidence from Hoi An Ancient Town for future research on AI-supported personalisation in heritage tourism.

Keywords: artificial intelligence, digital user experience, heritage tourism, mobile technology, personalisation.

Classification numbers: 2.2, 4.1, 9.3

1. Introduction

Mobile technologies and artificial intelligence (AI) increasingly support tourists in information search, planning and navigation by enabling more personalised information and recommendations [1, 2]. Existing research has examined personalisation primarily through recommender-system capabilities and technology acceptance perspectives [3, 4]. These perspectives explain how personalised support can be generated and why users may adopt it, but technical capability and acceptance alone do not determine its experiential value.

This limitation is particularly relevant in heritage destinations, where visitor experience involves questions of authenticity [5] and the social and cultural processes through which heritage meanings and values are constructed, negotiated and regulated [6]. Personalisation should not be assessed only through recommendation accuracy or convenience. Its value also depends on whether the support provided is relevant, usable and

sensitive to the socio-cultural context without displacing direct experience.

Hoi An Ancient Town provides an appropriate context for examining this issue. As a living World Heritage destination [7], its visitor experience is shaped by both practical information needs and engagement with a culturally distinctive physical and social environment. Survey data from 144 visitors are interpreted alongside preliminary expert insights.

Accordingly, this study asks: “How might mobile technology and AI support personalised visitor experiences in Hoi An Ancient Town while remaining sensitive to the destination’s socio-cultural authenticity and visitors’ experiential autonomy?”. The study examines visitors’ current digital-use patterns, interest in personalised and AI-supported assistance, desired support functions and reported barriers. In doing so, the study links technology-acceptance and experiential perspectives within a smart tourism ecosystem and considers how system-specific

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digital UX may contribute to the broader destination experience.

2. Theoretical foundations and conceptual framework

2.1. Theoretical foundations

2.1.1. Smart tourism ecosystem (STE)

The smart tourism ecosystem provides the overarching lens for this study. It conceptualises tourism as a socio-technical network in which tourists, residents, suppliers, intermediaries, destination organisations, platforms and public bodies exchange data and co-create value through smart technologies [8]. Its purpose is not technology adoption in itself, but the creation of meaningful, high-value and sustainable tourism experiences. Mobile and AI-supported services are therefore treated as digital touchpoints embedded in the wider heritage-destination ecosystem.

2.1.2. User experience (UX) and customer experience (CX)

According to ISO 9241-210:2019, UX refers to a user's perceptions and responses that result from the use or anticipated use of a system, service or product [9]. In tourism, these responses are shaped not only by interface properties but also by the situation in which technology is used. "Technology-enhanced destination experience research spans the pre, during and post-travel phases" [10]. In this study, these phases are used to organise pre-trip, on-site and post-trip digital UX.

Customer experience (CX) is related to, but broader than, system-specific UX. It is a multidimensional and cumulative response formed through multiple touchpoints across the entire journey, including cognitive, emotional, behavioural, sensorial and social dimensions [11]. Digital UX at an application or AI touchpoint may contribute to destination CX, but it does not represent the total experience, which also develops through the heritage environment, local services, residents and other visitors. Satisfaction, revisit intention and recommendation intention are therefore treated as potential downstream CX-related outcomes rather than as definitions of UX. The study focuses analytically on digital UX, particularly the pre-trip and on-site stages where planning and real-time support are most directly relevant. CX is retained as the broader conceptual frame for interpreting how those digital touchpoints may support or disrupt the destination experience.

Although UX is often evaluated through functional attributes such as usefulness and usability, experiential responses may also involve sensory, affective, cognitive, behavioural and relational dimensions [12]. In hospitality and tourism contexts, these responses are further

shaped by the physical environment, human interactions, personal characteristics and trip-related conditions [13]. Digital UX should therefore not be reduced to interface efficiency alone, but understood as part of the broader experiential value created through engagement with a destination. Taken together, these perspectives indicate that digital UX extends beyond technical efficiency to include subjective, affective and context-dependent responses during interaction.

2.1.3. Personalisation

Personalisation can be understood as a range of technologies and application features used to tailor end-user experiences according to users' needs, behaviours and information requirements. J. Kramer, et al. (2000) [14] further emphasise that the selection and implementation of personalisation features should be grounded in the value they provide to end users rather than in technological novelty alone.

At the technical level, this understanding of personalisation is rooted in the logic of recommender systems, which are designed to generate suggestions by matching user data, preferences and behavioural patterns [3]. Within the broader development of smart tourism, such forms of personalisation are increasingly embedded in data-driven tourism environments where destinations, technologies and users interact through digital infrastructures [2].

However, subsequent studies suggest that personalisation becomes more meaningful when recommendations are perceived as relevant within the specific context of use. This distinguishes data-driven personalisation, which focuses on algorithmic efficiency, from experience-oriented personalisation, which emphasises contextual relevance and perceived meaning. In this study, personalisation is therefore understood not only as a technical output, but also as a form of support whose value depends on whether tourists perceive it as relevant and meaningful within their travel experience.

This perspective is particularly appropriate in Hoi An Ancient Town, a cultural tourism space within a living heritage environment. In this setting, experiential value does not arise only from knowing where to go or what to do, but also from tourists' active participation in co-creating experiential value [15]. Therefore, personalisation in Hoi An becomes meaningful only when technology does not replace direct experience, but instead supports visitors in reaching the cultural depth of the destination in ways that are better aligned with their motivations and needs.

While personalisation is generally viewed positively, excessive reliance on AI-driven algorithms may lead to the

homogenisation of experiences, potentially diminishing the spontaneity essential to heritage exploration. Torabi et al. highlight the contribution of smart tourism technologies to memorable experiences, tourist satisfaction and revisit intention [16]. Yet in a heritage destination such as Hoi An Ancient Town, personalisation should not be reduced to algorithmic efficiency alone, but should also support the ways in which tourists interpret and connect with local culture. This is particularly important in heritage tourism, where visitors may seek meaningful and authentic engagement with place rather than efficient recommendation alone [5].

This perspective is also consistent with foundational heritage tourism scholarship. Heritage tourism is not simply tourism that takes place at heritage sites, but involves the management, interpretation and presentation of heritage in ways that shape how visitors encounter cultural value within a destination [17]. In heritage cities, cultural meanings are not always singular or neutral, which makes context-sensitive interpretation especially important [6]. Therefore, in the case of Hoi An Ancient Town, personalisation should not merely optimise travel choices, but should help visitors access, interpret and connect with the cultural meanings that distinguish the destination as a living heritage space.

2.2. Conceptual framework

Drawing on the smart tourism ecosystem, journey-stage UX, CX and personalisation, this study proposes a conceptual framework for analysing how mobile technology and AI may support personalised digital experiences in Hoi An Ancient Town (Fig. 1).

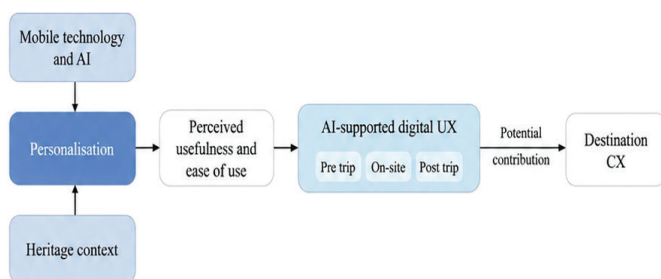


Fig. 1. Conceptual framework of the study.

Building on the STE, the conceptual framework focuses on the specific pathway through which mobile technology and AI may support personalised digital experiences in Hoi An Ancient Town. Within an STE, tourism-relevant data are collected, processed and exchanged among tourists, platforms, suppliers and destination actors, enabling personalised services and the co-creation of tourism value [8].

Mobile technology and AI serve as the technical foundation for personalising travel experiences by processing data on tourists' behaviours, preferences and

needs. Within this framework, the effect of AI-supported personalisation is not assumed to be automatic, but is interpreted partly through two Technology Acceptance Model (TAM) - Related evaluations: perceived usefulness and perceived ease of use [4]. These evaluations may arise at different stages of the travel journey, where digital interaction takes different forms [10]. In Hoi An Ancient Town, the heritage context therefore conditions both how personalisation should be designed and how tourists interpret the relevance of the support provided. This contextual emphasis is important because tourism experiences are also shaped by the physical environment, human interactions, personal characteristics and trip-related conditions [13].

Digital UX is interpreted across the travel journey rather than as a single isolated interaction. Pre-trip UX includes information search, comparison and planning; on-site UX concerns real-time information access, navigation and interaction at the destination; and post-trip UX includes recollection, review and sharing [10]. These stages are treated as a temporal and interpretive lens rather than as three independently tested constructs. The framework therefore retains the central sequence from mobile technology and AI to personalisation, perceived usefulness and ease of use, and digital UX, while locating that UX across the pre-trip, on-site and post-trip stages.

Journey-stage digital UX may contribute to, but does not constitute the broader destination CX. CX develops cumulatively through multiple touchpoints across the customer journey and incorporates cognitive, emotional, behavioural, sensorial and social responses [11]. In a heritage destination, these touchpoints include not only mobile applications and AI-supported services, but also the physical environment, local services, residents, other visitors and the cultural meanings associated with place. Accordingly, AI is positioned as a mediating and supportive layer within the destination ecosystem rather than as a substitute for direct engagement with the living heritage environment. The framework is used to organise and interpret the empirical indicators and to discuss their implications for the wider destination experience.

3. Research methods

3.1. Research area

The study was conducted in Hoi An Ancient Town, Da Nang City. Historically, a trading hub connecting the Sa Huynh Culture with international maritime routes, Hoi An was recognised as a UNESCO World Cultural Heritage site in 1999. The inscribed property comprises a well-preserved complex of 1,107 timber-frame buildings that reflect the interaction of indigenous and foreign cultural influences [7]. Tourism has expanded substantially since

its World Heritage inscription, with visitor arrivals surging from 202,000 in 1999 to approximately 4.43 million by the end of 2024 [18]. Together, the destination's substantial tourism growth and the sensitivity of its heritage environment make Hoi An a relevant setting for examining how AI-supported personalisation can respond to visitor needs without diminishing the authenticity of the destination.

3.2. Sampling and sample size

The study adopts a non-probability convenience sampling technique [19]. This approach was selected because the target population consists of tourists in an open-access heritage destination where visitors are highly mobile, dispersed across multiple locations and difficult to capture through a stable sampling frame.

Of 150 submitted questionnaires, six respondents selected “never been” and did not complete the substantive survey items. The final analytic sample therefore comprised 144 respondents. The original origin variable contained 76 domestic visitors, 64 international visitors and four respondents living or working in the broader Hoi An area. For the domestic-international comparison, the four Hoi An-connected respondents were retained in the domestic group because their responses indicated visits to the Ancient Town for leisure, cultural exploration, visiting friends or relatives, or short business purposes. The derived comparison variable comprised 80 domestic and 64 international visitors.

3.3. Research design and data collection

The study employed a primarily quantitative cross-sectional design informed by a preliminary qualitative phase of expert interviews. The qualitative phase was used to clarify the cultural-tourism context of Hoi An, identify key conditions affecting the meaningful application of personalisation and support the interpretation of the subsequent survey findings. Data collection was conducted from January 2025 to June 2025 through both direct (face-to-face) and indirect (Google Forms) methods.

The survey participants were domestic and international tourists who had travelled to Hoi An within the most recent six months, in order to improve recall accuracy of experiential recall and reduce recall bias.

3.4. Preliminary qualitative phase: Expert interviews

A preliminary qualitative phase was conducted through face-to-face semi-structured interviews with five experts from fields relevant to the study, including culture and heritage, tourism and services, UX and design, and software/system development. Each interview lasted 30-60 minutes and focused on personalisation in the context of cultural tourism in Hoi An Ancient Town, the potential

role of mobile technology and AI in supporting tourist experience and the conditions affecting the effectiveness of personalisation, including socio-cultural context, user behaviour, information reliability and practical conditions of use (Table 1). The interview data were summarised, coded by participant (E1-E5) and reviewed thematically in order to extract recurring insights that could support the interpretation of the quantitative findings.

Table 1. Summary of expert interview participants.

Code	Participant type	Expertise area	Broad professional role
E1	Expert	Culture/heritage	Museum/heritage specialist
E2	Expert	Art/design education	Academic specialist
E3	Expert	Tourism service	Tourism practitioner
E4	Expert	UX/design	Design specialist
E5	Expert	Software/system development	Technical specialist

3.5. Survey instrument and scale structure

The survey instrument was a bilingual (Vietnamese-English) questionnaire designed to capture a multi-dimensional view of the tourist experience in Hoi An Ancient Town. To improve content and contextual validity, the survey design was informed by the preliminary expert interview phase described above. A pilot test (n=15) was also conducted prior to the primary data collection. Feedback from the pilot participants led to minor linguistic adjustments to ensure the terminology was accessible to a broad range of domestic and international tourists.

The final questionnaire was structured into five primary sections: demographic information and trip characteristics; difficulties when travelling in Hoi An; mobile application usage habits and AI acceptance (DA); interest in tourism-support applications in Hoi An (APN); and inconveniences in using tourism applications (INC). Although the questionnaire was not originally designed as three separate UX scales, its items were mapped by content to their most relevant travel contexts: planning method and DA2 to pre-trip digital behaviour; travel difficulties and APN to on-site or anticipated on-site UX; DA1 and INC to digital use and friction that may occur across stages; and DA3-DA4 to stated interest in personalised and AI-supported assistance across the journey.

The four DA items captured related but conceptually distinct aspects of current digital-use behaviour and stated interest in personalisation and AI-supported assistance. DA1 and DA2 concerned current use of travel applications and virtual assistants, whereas DA3 and DA4 concerned interest in preference-based recommendations and a Hoi An-specific AI assistant. The items were therefore analysed separately at the item level rather than combined into a single scale score.

The APN section captured the practical value tourists attach to AI-supported functions such as real-time question and answer (Q&A), AI-generated destination and cultural recommendations, verified reviews and mobility support within the heritage urban structure. The INC section captured usability barriers, including irrelevant recommendations, difficult-to-use interfaces, lack of support and missing features.

Accordingly, the empirical design focuses on pre-trip and on-site digital UX, where mobile and AI-supported services are most directly involved in planning and real-time assistance. The instrument supports a stage-informed and TAM-informed interpretation of perceived usefulness, perceived ease of use and adoption-related responses [4, 20], rather than a formal test of TAM or a validated UX or CX scale. No retrospective CX composite was constructed from unrelated items; satisfaction, revisit intention and recommendation intention are used only to interpret the broader conceptual context. All participants were informed of the research objectives and data collection strictly followed protocols for respondent anonymity and voluntary participation.

3.6. Data processing and analysis methods

After data collection, the qualitative interview material and the quantitative survey data were processed separately in accordance with their respective analytical purposes. Sample characteristics and multiple-response items were summarised using frequencies and percentages.

For DA1-DA4, response distributions and median values were reported. Domestic and international visitors were compared for each DA item using two-sided Mann-Whitney U tests.

APN and INC were analysed descriptively as multiple-response questions, using the number and percentage of participants who selected each option. Given the non-probability sampling strategy, the inferential findings were interpreted as patterns within the surveyed sample rather than generalised to the wider visitor population.

4. Results

4.1. Qualitative insights from expert interviews

Drawing on five expert interviews (Table 1), the qualitative phase suggests that personalisation in Hoi An Ancient Town should not be understood merely as a technical function, but as a process shaped by context, user behaviour and the cultural specificity of the destination.

The experts emphasised three conditions for meaningful personalisation: practical value, including tourism utility, ease of use, reliable information and system

stability; the creation of destination-specific value through local cultural identity; and AI-supported assistance that can adapt to user behaviour, travel purpose, time constraints, budget and practical conditions of use. These qualitative insights provide contextual grounding for the interpretation of the quantitative findings presented in the following sections.

4.2. Sample characteristics

The analytic sample comprised 144 eligible respondents, of whom 80 were classified as domestic and 64 as international. Table 2 consolidates the key sample characteristics used to contextualise the subsequent analyses.

Table 2. Characteristics of the surveyed sample (n=144).

Characteristic	Category	n	Valid percentage (%)
Visitor market (used in comparative analyses)	Domestic (*)	80	55.6
	International	64	44.4
Age	Under 18 years old	3	2.1
	18-35 years old	112	77.8
	36-60 years old	26	18.1
	Over 60 years old	3	2.1
Occupation	Students	28	19.4
	Office employees	56	38.9
	Freelancers	25	17.4
	Tourism workers	12	8.3
	Artists, content creators	15	10.4
	Others/not disclosed	8	5.6
Visit frequency	First time	82	56.9
	More than twice	62	43.1
Length of stay	Day trip	30	20.8
	1-2 days	41	28.5
	3-4 days	51	35.4
	More than 4 days	22	15.3
Usual travel planning method	Online research	86	59.7
	Friends or family	34	23.6
	Travel advertising	16	11.1
	Travel agents	8	5.6

(*): For domestic-international comparisons, four respondents who reported living or working in the broader Hoi An area were included in the domestic group.

The sample was concentrated in the 18-35 age group (77.8%), and office employees formed the largest occupational category (38.9%). First-time visitors accounted for 56.9% of respondents, while 35.4% reported stays of 3-4 days.

Length-of-stay patterns differed descriptively between the two visitor markets. Day trips or stays of 1-2 days accounted for 70.0% of domestic visitors, whereas stays

of 3 days or more accounted for 76.6% of international visitors.

4.3. Digital-use and AI-related interest indicators

Online research was the leading travel-planning method among both domestic visitors (61.3%) and international visitors (57.8%), indicating that pre-trip information seeking was predominantly digital across the two visitor markets. The journey-stage framework was therefore used as an interpretive lens for organising the subsequent digital-use findings. The four DA indicators were examined separately rather than treated as a single scale. DA1 captured general travel-application use that may extend across different stages of the journey, while DA2 captured current virtual-assistant use for trip planning. DA3 and DA4 reflected respondents' stated interest in preference-based recommendations and Hoi An-specific AI-supported assistance. Their response distributions are presented in Table 3.

Table 3. Distribution of digital-use and AI-related interest indicators (n=144).

Code	Indicator	Median	Levels 1-2, n (%)	Level 3, n (%)	Levels 4-5, n (%)
DA1	Frequent use of general travel applications	3	59 (41.0)	29 (20.1)	56 (38.9)
DA2	Frequent use of virtual assistants for trip planning	4	35 (24.3)	19 (13.2)	90 (62.5)
DA3	Desire for travel recommendations based on preferences	5	6 (4.2)	10 (6.9)	128 (88.9)
DA4	Desire for an AI virtual assistant specifically for Hoi An	4.5	9 (6.3)	11 (7.6)	124 (86.1)

Values are presented as n (%) unless otherwise stated. Responses were measured on a five-point agreement scale (1=strongly disagree; 5=strongly agree).

DA1 showed a polarised response pattern: 41.0% selected levels 1-2, 20.1% selected level 3 and 38.9% selected levels 4-5 (median=3). For DA2, 62.5% selected levels 4-5 (median=4).

Responses to DA3 and DA4 were concentrated at levels 4-5, selected by 88.9% and 86.1% of respondents, respectively; the corresponding medians were 5 and 4.5. These patterns indicate strong stated interest in personalised support at planning and anticipated-use touchpoints, rather than actual experience outcomes.

4.4. Domestic and international visitor comparison

Two-sided Mann-Whitney U tests were used to compare the DA response distributions of domestic (n=80) and international (n=64) visitors. Table 4 reports

the group medians, percentages selecting levels 4-5, U statistics and two-sided p-values.

Table 4. Domestic and international visitor comparison of DA indicators.

Code	Domestic median	Domestic levels 4-5 (%)	International median	International levels 4-5 (%)	Mann-Whitney U	p
DA1	3	43.8	2.5	32.8	2939.5	0.116
DA2	4	51.3	4	76.6	1939.0	0.010
DA3	5	86.3	4.5	92.2	2566.0	0.980
DA4	4	83.8	5	89.1	2433.0	0.576

DA2 was the only item for which the response distribution differed significantly between domestic and international visitors (U=1939.0, p=0.010). A larger proportion of international visitors selected levels 4-5 than domestic visitors (76.6% vs 51.3%), indicating stronger agreement with the statement concerning the use of virtual assistants for trip planning. No statistically significant between-group differences were observed for DA1, DA3 or DA4.

4.5. Desired tourism-support functions and reported usage barriers

On-site support needs were first reflected in the difficulties reported during travel: insufficient time to explore (54.9%), difficulty finding information about attractions, shops or food (52.8%), mobility within the Ancient Town (47.2%), lack of event or festival information (31.9%) and difficulty communicating with local residents (25.7%). The APN and INC multiple-response items were then summarised using frequencies and percentages; because respondents could select more than one option, percentages within each question may exceed 100% (Tables 5 and 6).

Table 5. Desired tourism-support functions (APN) (n=144).

Function	n	(%)
Food and cultural experience suggestions	114	79.2
Virtual-assistant support	102	70.8
Attraction suggestions	102	70.8
Reviews from other travellers	67	46.5
Event/festival suggestions	58	40.3
Mobility support in the Hoi An Ancient Town	22	15.3

Table 6. Reported barriers to using tourism applications (INC) (n=144).

Barrier	n	%
Irrelevant recommendations	89	61.8
Difficult interface or information search	87	60.4
No support when problems occur	39	27.1
Missing needed features	23	16.0

Food and cultural experience suggestions were selected most frequently (79.2%), followed by virtual-assistant support and attraction suggestions (70.8% each). The most frequently reported barriers were irrelevant recommendations (61.8%) and difficult interfaces or information search (60.4%). These patterns identify desired on-site digital touchpoints and cross-stage friction that may shape UX during use.

5. Discussion

The survey shows strong stated interest in personalised and AI-supported travel assistance. Levels 4-5 were selected by 88.9% of respondents for preference-based recommendations (DA3; median=5) and by 86.1% for a Hoi An-specific AI assistant (DA4; median=4.5). From a TAM-informed perspective, these patterns indicate receptiveness to services expected to be useful and relevant to practical travel needs within the heritage destination [4]. From an experience-economy perspective, the value of such support lies not only in functional efficiency but also in its potential contribution to memorable and personally engaging experiences [21]. In Hoi An, this experiential value further depends on whether digital support facilitates meaningful engagement with the culturally distinctive heritage setting. The preliminary expert interviews similarly emphasised practical utility, cultural specificity and sensitivity to actual conditions of use.

Responses concerning current digital use were more differentiated. DA1 was polarised, with 41.0% selecting levels 1-2 and 38.9% selecting levels 4-5 (median=3), whereas 62.5% selected levels 4-5 for DA2 (median=4). DA2 was also the only item for which the response distribution differed significantly between domestic and international visitors: 76.6% of international visitors and 51.3% of domestic visitors selected levels 4-5 ($U=1939.0$, $p=0.010$). These results indicate an interest-use gap within the surveyed sample: strong stated interest in personalised support did not translate uniformly into agreement with current-use statements.

International visitors in the surveyed sample reported longer stays than domestic visitors. Although the present study did not directly measure cultural distance, prior cultural knowledge or the reasons underlying this difference, cross-cultural heritage research provides a useful interpretive perspective. M.M. Su, et al. (2019) [22] suggest that greater cultural distance may be associated with lower prior familiarity

with the host culture but stronger interest in experiencing local ways of life. Their findings also indicate that deeper exploration and interaction with residents can be associated with longer engagement, particularly among international visitors [22]. Research at built heritage sites in Beijing likewise shows that visitors' cultural backgrounds, prior knowledge, motives and interpretive preferences influence how they understand heritage and what forms of information they require [23]. These findings do not establish why international visitors in the present sample stayed longer, but they indicate that visitor market alone is an insufficient basis for personalisation. An AI-supported assistant should therefore consider visitor background and prior knowledge [23], alongside contextual variables such as time available, travel goals and knowledge of the surroundings [24]. In the present study, language, cultural interests and length of stay represent additional design variables suggested by the Hoi An findings. These variables could support concise, prioritised routes for day visitors and short-stay tourists, while enabling deeper cultural interpretation and flexible itinerary adjustment for longer-stay visitors. The higher DA2 responses among international visitors, who also tended to stay longer in this sample, reinforce the relevance of adaptable planning support without establishing a causal relationship between length of stay and AI use. Length of stay should therefore inform the depth, pace and sequencing of recommendations rather than whether AI support is provided.

More broadly, the survey did not directly examine the mechanisms underlying the difference between stated interest and reported current use. Prior research conceptualises mobile tourism support as context-aware, providing timely and relevant information across the planning, booking, on-site and post-trip stages of travel [25]. Perceived personalisation and privacy concerns may influence tourists' willingness to adopt mobile travel advice [26], while performance efficacy, intrinsic motivation, facilitating conditions and emotional responses may also shape acceptance of AI-supported service encounters [27].

The APN and INC findings provide more direct context for this pattern. Respondents most frequently selected food and cultural experience suggestions (79.2%), virtual-assistant support (70.8%) and attraction suggestions (70.8%) as desired functions. At the same time, irrelevant recommendations (61.8%) and difficult interfaces or information search (60.4%) were the most frequently reported barriers.

Taken together, these descriptive patterns are consistent with the interpretation that receptiveness to AI-supported personalisation may depend on the relevance, usability and destination specificity of the support provided.

Accordingly, AI-supported personalisation is more appropriately understood as selective, context-aware assistance than as continuous mediation throughout a trip. From a psychological perspective, tourist experiences are shaped by expectations, experienced events and the ways in which these events are subsequently constructed in memory [28]. From this perspective, personalisation should be understood as an interpretive and co-created experiential process, in which value is determined not only by the system's recommendation capacity, but by how digital support is received in relation to the specific cultural context of the destination.

From a critical perspective, treating AI as a complete solution to complex tourism problems would risk reducing socio-cultural and experiential issues to matters of technological efficiency—a form of technological solutionism [29]. In the present study, AI is therefore understood as a supportive tool rather than as a substitute for the experiential process as a whole. Drawing on tourism-authenticity scholarship [5, 30], the present study argues that digital support should preserve opportunities for direct, place-based and culturally meaningful engagement with the heritage setting. Personalisation should therefore provide verified information and adaptable planning assistance while preserving space for spontaneous discovery, interaction with local residents and place-based heritage experiences tied to the real environment. Research on group-trip recommender systems shows that personalisation can balance individual preferences with shared group experience by allowing flexible periods of “time apart” and “time together” during the journey [31]. In the present study, this perspective suggests that AI-supported personalisation should accommodate individual needs without eliminating the collective and social dimensions of heritage travel.

A balanced interpretation should also acknowledge that AI-driven personalisation does not always generate positive outcomes. If recommendation systems repeatedly reproduce popularity rankings, they may direct tourists toward familiar hotspots and intensify pressure on the heritage core, particularly in the central Ancient Town—an implication consistent with broader research on overtourism [32]. From this perspective, this narrowing may also be understood

as a socially shaped mode of seeing: repeated algorithmic emphasis on particular sites, images and routes could influence which aspects of the destination visitors learn to notice and value [33]. When designed carefully, AI may also broaden the range of meaningful options available to visitors by suggesting less congested spaces, activities and routes that still match their needs, time constraints and travel purposes. In this sense, personalisation should function as a way of balancing individual relevance with a more even distribution of experience across the destination.

In the surveyed sample, 49.3% of respondents were day visitors or stayed for only 1-2 days. For visitors with limited time, context-relevant digital support may help them prioritise information and identify culturally meaningful options. If AI-supported personalisation is driven primarily by popularity, convenience and algorithmic efficiency, it may reinforce a superficial consumption of heritage, in which visitors engage with familiar routes and photogenic surfaces rather than with the deeper historical, architectural and socio-cultural meanings of the destination. By contrast, meaningful personalisation in Hoi An should create differentiated pathways into the destination's cultural depth according to visitors' motivations. For example, visitors interested in architecture may be guided toward the layered Vietnamese, Chinese and Japanese influences reflected in Hoi An's architectural heritage, while visitors seeking a deeper understanding of local life may be connected more directly to craft traditions, community life or local cultural rhythms. In this sense, personalisation becomes valuable not when it simply predicts what tourists are likely to consume, but when it helps them access and interpret the cultural meanings that distinguish Hoi An as a living heritage space. Neuhofer et al. conceptualise technology as a means of enabling tourists to participate actively in the co-creation of destination experiences across the pre-travel, on-site and post-travel stages [10]. In the present study, this supports the view that digital assistance should complement, rather than substitute for, tourists' direct engagement with and interpretation of Hoi An's heritage environment.

Beyond tourist participation, this issue also has implications for local stakeholders and heritage governance. AI-supported personalisation in a heritage destination may affect not only tourists' individual experiences, but also the ways in which local culture is selected, framed and made visible through digital mediation. Likewise, heritage interpretation is shaped by institutional and professional discourses that

privilege particular forms of knowledge and value, while alternative community meanings may be marginalised or contested [6]. In the context of Hoi An, this implies that if AI-supported recommendation systems repeatedly prioritise particular sites, stories or routes, they may influence not only visitor concentration but also which dimensions of local culture receive greater visibility and are more frequently reproduced, while other spaces, practices or community-linked meanings remain more peripheral. As a design implication of the present study, aggregated and anonymised preference patterns may also help local stakeholders identify recurring visitor needs and develop more context-relevant services [25]. However, the use of such data should remain accountable to inclusive heritage-governance processes and community interests.

These findings reinforce a context-dependent understanding of digital UX in heritage tourism. Visitor experiences at heritage sites are personal, subjective and multidimensional, encompassing cognitive, emotional, sensory, relational and other forms of response. Such experiences emerge through the interaction between external activities, settings and events and what visitors bring to the encounter, including their prior experiences, interests, expectations and motivations [34]. Digital UX should therefore not be reduced to interface performance alone. In Hoi An Ancient Town, technology can function as an intermediary layer that supports access to information and the interpretation of place-based cultural meanings, while the experience itself remains shaped by visitors' engagement with the destination's physical and social environment. This interpretation is consistent with experiential perspectives that distinguish experiences from service provision and emphasise memorable and personally engaging encounters [35].

Within the broader CX framework, these digital touchpoints contribute to rather than constitute the destination experience. Relevant, usable and culturally appropriate support may reduce planning and on-site friction, whereas generic or intrusive recommendations may weaken engagement with place. Destination CX develops cumulatively through digital, physical, social and cultural touchpoints across the smart tourism ecosystem [8, 11]. The study therefore examines the contribution and limits of digital UX without claiming direct effects on overall satisfaction, revisit intention or recommendation intention.

6. Conclusions

Using survey data and preliminary expert interviews, this study examines pre-trip and on-site digital UX associated with mobile technology and AI-supported personalisation in Hoi An Ancient Town. The analysis interprets these digital touchpoints in relation to practical utility, contextual fit and cultural sensitivity, and considers how they may contribute to - but do not constitute - the broader destination CX.

Taken together, the findings show a clear contrast between strong stated interest in personalised and AI-supported assistance and more uneven patterns of current digital use. Respondents expressed strong stated interest in preference-based recommendations and a Hoi An-specific AI assistant, whereas reported current use of general travel applications was markedly polarised. This contrast suggests that interest in personalised support does not automatically translate into consistent use across visitors. The preliminary expert interviews provide contextual interpretation of this variation by identifying practical utility, relevance, usability and cultural sensitivity as important conditions shaping the perceived value of digital support. Within these limits, AI is more appropriately positioned as a selective and supportive layer that can assist visitors at relevant moments without replacing direct engagement with the living heritage environment. These findings should be regarded as exploratory and context-specific, requiring further validation through larger and more diverse samples and direct measures of actual system use and visitor experience.

Unlike studies that approach personalisation primarily from a technical standpoint, this research positions personalisation in heritage tourism as a context-dependent and interpretive process. In this view, technology does not replace the destination experience. Rather, it functions as a bridge between individual tourist needs and the socio-cultural environment of the heritage site. In the case of Hoi An Ancient Town, the value of AI lies not only in improving convenience, but also in supporting access, interpretation and trip planning in ways that remain sensitive to the cultural depth, direct experience and experiential rhythm of a living heritage space.

6.1. Theoretical and practical contributions

From a theoretical perspective, this study contributes to discussions of UX personalisation and the heritage-destination context by linking a technology-acceptance perspective with experiential

approaches to tourism. Perceived usefulness and ease of use help explain tourists' receptiveness to digital support [4], while experiential perspectives clarify why the value of such support also depends on personal interpretation, engagement and the cultural context in which the interaction occurs [34, 35].

The study further extends this relationship by locating digital UX across the pre-trip, on-site and post-trip journey, while distinguishing system-specific digital UX from the broader and cumulative destination CX [10, 11]. In this framework, AI-supported personalisation is understood not simply as an algorithmic output or an isolated technical intervention, but as a context-sensitive experiential process through which tourists access, interpret and engage with place. The preliminary expert interviews strengthen this interpretation by showing how practical utility, cultural specificity and actual conditions of use can enrich the explanation of the quantitative patterns.

From a practical perspective, the findings suggest that in Hoi An Ancient Town and similar heritage destinations, the integration of AI and mobile technology should focus on context-relevant support rather than on the accumulation of technological features alone. Transparent data practices and the involvement of local stakeholders are also important when deciding which places, narratives and services are made visible through digital recommendations. Digital support is likely to be more valuable when it is trustworthy, unobtrusive and sufficiently responsive to tourists' changing needs, while still preserving direct cultural experience at the destination. In this way, AI-assisted tools may contribute to more meaningful visitor experiences and more balanced destination management.

6.2. Limitations and future research

This study has several limitations. The convenience sample was non-probabilistic, concentrated in the 18-35 age group and collected through a cross-sectional design. As an exploratory descriptive study based on a non-probability sample, the findings should be interpreted within the surveyed context of Hoi An Ancient Town rather than as statistically representative of the broader tourist population. Further validation in broader or more diverse destination contexts is needed before wider generalisation can be made. The domestic-international comparison is exploratory, and the polarised DA1 distribution does not reveal the mechanisms underlying current use.

The questionnaire was not designed as a validated UX, CX or formal TAM scale. DA3 and DA4 measure stated interest rather than actual experience, while APN and INC are multiple-response indicators. The study also did not directly measure post-trip UX, overall satisfaction, revisit intention or recommendation intention. Future research should use purpose-designed stage-specific measures, behavioural data and longitudinal designs to assess how digital UX develops and whether it contributes to broader CX outcomes.

The preliminary qualitative phase was limited to five experts and reflects expert perspectives more directly than tourists' lived experiences or community viewpoints. Future research should adopt broader mixed-method designs, including in-depth tourist interviews, observation or journey diaries, and participation from residents and heritage stakeholders. Such work could examine how personalisation is experienced, negotiated and adjusted in real time, extend the framework to post-trip UX and evaluate governance implications across different heritage destinations.

COMPETING INTERESTS

The author declares that there is no conflict of interest regarding the publication of this article.

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