Human-Centered Design in UI/UX for E-Promotion in Indonesia's Smart Cities: Empowering Culinary Tourism with AI

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***Abstract*—This study explores the integration of Artificial Intelligence (AI) with Human-Centered Design (HCD) principles in crafting user interface (UI) and user experience (UX) for e-promotion platforms within Indonesia's smart cities. As culinary tourism emerges as a significant driver of local economies, particularly in diverse and culturally rich countries like Indonesia, the need for innovative promotional strategies becomes essential. AI technologies are increasingly being utilized to personalize and enhance user interactions, providing tailored recommendations and engaging experiences for tourists. However, to ensure these AI-driven solutions meet the needs and expectations of users, incorporating HCD in the design process is crucial. This research examines how AI-powered public applications can effectively boost culinary tourism by delivering personalized, seamless, and culturally relevant experiences to users. The study focuses on designing UI/UX that not only leverages AI for functional efficiency but also prioritizes the emotional and cognitive engagement of users, ensuring that technology serves as an enabler rather than a barrier. By analyzing current trends and case studies within Indonesia's smart cities, the paper provides insights into best practices for integrating AI and HCD in e-promotion strategies. The findings aim to offer valuable guidelines for developers, marketers, and policymakers in enhancing the appeal and effectiveness of digital tools designed to promote culinary tourism, ultimately contributing to the growth of Indonesia's tourism sector in the smart city context.**

Keywords*— *Artificial Intelligence (AI), Human-Centered Design, UI/UX Design, Smart Cities, Digital Marketing.

I. INTRODUCTION

The rapid advancement of digital technologies has profoundly transformed various sectors, with tourism being one of the most significantly impacted. In the realm of tourism, culinary experiences have emerged as a key driver of destination appeal, attracting both domestic and international visitors. This shift has positioned culinary tourism as an essential component of the overall tourism experience, offering travelers the opportunity to engage with a destination's culture, history, and lifestyle through its food[1], [2]. As the competition among destinations intensifies, particularly in culturally rich countries like Indonesia, the need for innovative and effective promotional strategies becomes increasingly critical. This is where the intersection of Artificial Intelligence (AI), Human-Centered Design (HCD), and User Interface/User Experience (UI/UX) design plays a pivotal role in reshaping the future of culinary tourism promotion[3], [4]. Indonesia, with its diverse culinary heritage, offers a unique proposition for culinary tourism. Each region in the archipelago boasts distinct flavors, cooking methods, and food-related customs, making the country a vibrant mosaic of culinary traditions. From the spicy rendang of West Sumatra to the sweet gudeg of Yogyakarta, Indonesia's culinary landscape is a reflection of its cultural diversity. The growing interest in culinary tourism presents a significant opportunity for Indonesia to leverage its gastronomic wealth to attract tourists, boost local economies, and promote cultural preservation. However, effectively promoting such a diverse and rich culinary landscape requires more than traditional marketing efforts. It necessitates the use of advanced technologies like AI to tailor and enhance the tourist experience. Artificial Intelligence has emerged as a transformative tool in the tourism industry, offering new ways to engage with consumers and personalize their experiences[5], [6]. In the context of culinary tourism, AI can be utilized to create personalized itineraries, recommend local delicacies based on individual preferences, and provide real-time information about food-related events and venues. AI-driven applications can analyze vast amounts of data from social media, travel history, and user behavior to deliver customized suggestions that align with the specific tastes and interests of tourists. This level of personalization not only

enhances the tourist experience but also increases the likelihood of repeat visits and positive word-of-mouth, both of which are crucial for the sustained growth of culinary tourism.

In Indonesia's emerging smart cities, the integration of AI into public applications and e-promotion platforms can significantly elevate the appeal of culinary tourism. Smart cities, characterized by the use of digital technologies to improve urban living, provide the ideal environment for the deployment of AI-powered tools that can streamline and enrich the tourist experience. For instance, AI can be used to analyze traffic patterns and suggest optimal dining times, predict crowd levels at popular eateries, and even translate local menus for international tourists. These capabilities make AI a powerful ally in promoting culinary tourism in a way that is both innovative and responsive to the needs of modern travelers.

While AI offers tremendous potential, its effectiveness largely depends on how well it is integrated into the user experience. This is where Human-Centered Design (HCD) becomes crucial. HCD is a design philosophy that prioritizes the needs, desires, and limitations of end-users throughout the development process. By focusing on the human element, HCD ensures that technological solutions are not only functional but also intuitive, accessible, and emotionally engaging. In the context of UI/UX design for culinary tourism e-promotion, HCD can help create interfaces that are easy to navigate, visually appealing, and aligned with the cultural expectations of users.

For Indonesia's culinary tourism to thrive in the digital age, the design of e-promotion platforms must reflect a deep understanding of the target audience. This includes considering factors such as language preferences, cultural sensitivities, and varying levels of technological literacy among users. For example, an e-promotion app designed for domestic tourists might emphasize different features and design elements compared to one targeting international visitors. By applying HCD principles, designers can ensure that the UI/UX is tailored to meet the diverse needs of users, making the digital experience as seamless and enjoyable as possible.

The true potential of AI in culinary tourism can be unlocked when it is combined with Human-Centered Design in the creation of UI/UX. This integration allows for the development of applications that are not only powered by cutting-edge technology but are also deeply empathetic to user needs. For instance, an AI-driven recommendation engine can be more effective if it is embedded within a UI/UX that feels intuitive and responsive to the user's actions. Similarly, an HCD-informed design can ensure that the AI functions are presented in a way that enhances usability rather than complicates it.

In practical terms, this could mean designing an e-promotion app that uses AI to suggest personalized culinary experiences while also providing users with an interface that is easy to use and visually coherent. The app could feature voice-activated search functions to cater to users who prefer verbal commands, or it might include visually rich, culturally relevant imagery that resonates with local traditions. By merging AI capabilities with HCD-driven UI/UX design, developers can create a holistic digital experience that not only meets functional requirements but also delights users, thereby increasing engagement and satisfaction.

Implementing AI-powered, human-centered UI/UX design for culinary tourism promotion in Indonesia's smart cities presents both challenges and opportunities. On the one hand, Indonesia's diverse population and varying levels of infrastructure development across regions can complicate the deployment of uniform digital solutions. The disparity in internet access, technological literacy, and digital adoption rates means that a one-size-fits-all approach may not be effective. Additionally, the cultural diversity that is one of Indonesia's greatest assets in culinary tourism also requires careful consideration in the design of digital platforms to ensure inclusivity and relevance. On the other hand, these challenges also present unique opportunities for innovation. The need to cater to diverse user groups can drive the development of more flexible and adaptive design strategies, while the growing smart city initiatives across the country provide a fertile ground for testing and refining AI-driven solutions. Furthermore, the increasing demand for personalized travel experiences among both domestic and international tourists creates a strong incentive for the adoption of AI-enhanced e-promotion tools.

The authors selected the three research questions based on specific criteria aimed at thoroughly exploring the integration of Human-Centered Design (HCD) and Artificial Intelligence (AI) in e-promotion for culinary tourism. First, they focused on how HCD principles can be effectively applied in AI-driven applications to improve the user interface (UI) and user experience (UX) of these platforms, seeking to determine the effectiveness of merging user-centric design with advanced technology. Second, they examined the unique challenges and opportunities associated with applying HCD to AI-powered UI/UX within the diverse cultural and technological landscape of Indonesia, acknowledging the country's varied context. Finally, they investigated the impact of integrating AI and HCD on user engagement and satisfaction with e-promotion platforms, as these factors are critical indicators of the success and efficacy of the UI/UX design in enhancing the overall user experience.

Here are three research questions based on the topic "Empowering Culinary Tourism with AI: Human-Centered Design in UI/UX for E-Promotion in Indonesia's Smart Cities":

1. **How can AI-driven public applications be effectively integrated with Human-Centered Design principles to enhance the UI/UX of e-promotion platforms for culinary tourism in Indonesia's smart cities?**
2. **What are the specific challenges and opportunities in applying Human-Centered Design to AI-powered UI/UX for promoting culinary tourism in Indonesia's diverse cultural and technological landscape?**
3. **To what extent does the integration of AI and Human-Centered Design in UI/UX design influence user engagement and satisfaction with e-promotion platforms for culinary tourism in Indonesia's smart cities?**

II. LITERATUR REVIEW

The intersection of Artificial Intelligence (AI), Human-Centered Design (HCD), and User Interface/User Experience (UI/UX) design has been the focus of increasing academic and industry interest, particularly in the context of smart cities and digital tourism. This literature review examines key studies and theoretical frameworks that inform the development of AI-driven, human-centered e-promotion platforms for culinary tourism, with a focus on the Indonesian smart city landscape.

A. Artificial Intelligence in Tourism

Use AI has become a transformative force in the tourism industry, revolutionizing how destinations are marketed and experienced. Role in creating personalized travel experiences, noting that AI can analyze large datasets to provide recommendations tailored to individual preferences[7], [8]. In culinary tourism, AI-driven platforms have been used to suggest personalized dining options, create customized itineraries, and offer real-time updates on local food events[9], [10]. These applications not only enhance the user experience but also contribute to more efficient and effective marketing strategies for tourism destinations.

However, the integration of AI into tourism platforms is not without challenges. The ethical considerations of using AI in tourism, particularly regarding data privacy and the potential for algorithmic bias [11], [12]. These concerns are particularly relevant in culturally diverse contexts like Indonesia, where AI systems must be designed to respect and reflect local customs and preferences.

B. Human-Centered Design and UI/UX in Digital Tourism

The Human-Centered Design (HCD) is a critical approach in the development of digital tools and platforms, ensuring that technology serves the needs and preferences of users. Emphasizes the importance of HCD in creating intuitive, accessible, and emotionally engaging interfaces. In the context of tourism [13], HCD has been applied to develop UI/UX [14], [15]. The application of HCD in tourism platforms is particularly important for creating inclusive and culturally sensitive designs, which are crucial for promoting destinations to a global audience.

UI/UX design plays a pivotal role in how users interact with e-promotion platforms. A well-designed UI/UX can significantly improve the usability and attractiveness of a platform, leading to higher user engagement and satisfaction [16], [17]. In the context of culinary tourism, this might involve designing interfaces that are visually appealing, easy to navigate, and culturally relevant. UI/UX designs incorporating local cultural elements and storytelling techniques can enhance the emotional connection between users and the destination being promoted.

C. Smart Cities and Digital Tourism in Indonesia

Indonesia has been actively pursuing smart city initiatives as part of its broader digital transformation strategy. The concept of smart cities involves the use of digital technologies to improve urban living, including the enhancement of tourism services [1], [18]. In Indonesia, smart city projects have been implemented in various regions, with a focus on improving infrastructure, public services, and tourism [17], [19], [20]. These initiatives provide a fertile ground for the integration of AI-driven public applications aimed at promoting culinary tourism.

The Indonesian government's focus on smart cities has opened up opportunities for the development of innovative e-promotion platforms that leverage AI and HCD. However, the successful implementation of these technologies requires a deep understanding of the local context [21], [22], the diversity in Indonesia's cultural and technological landscape presents unique challenges for the deployment of uniform digital solutions. This necessitates the development of flexible, adaptive designs that can cater to the varying needs and preferences of different user groups.

D. AI and HCD Integration in E-Promotion

The integration of AI and HCD in the development of e-promotion platforms represents a significant advancement in digital tourism. AI's ability to process and analyze vast amounts of data allows for the creation of highly personalized user experiences, while HCD ensures that these experiences are intuitive, accessible, and culturally relevant. The importance of integrating these two approaches, arguing that AI-driven systems must be designed with a deep understanding of user behavior and preferences to be truly effective[23], [24]. In the context of culinary tourism, this integration can be particularly impactful. For instance, AI-powered recommendation engines can be designed to suggest dining options based not only on user preferences but also on local cultural norms and seasonal variations [25], [26]. When combined with an HCD-informed UI/UX design, these recommendations can be presented in a way that enhances user satisfaction and engagement. This approach aligns with the findings, who highlight the importance of culturally tailored digital solutions in promoting tourism in diverse regions[27], [28].

E. Culinary Tourism and E-Promotion

Culinary tourism, which focuses on exploring a destination’s culture through its food, has become an increasingly popular niche within the tourism industry [2]. E-promotion, facilitated by digital platforms, plays a crucial role in attracting culinary tourists by providing them with information, recommendations, and reviews [29]. The use of AI in e-promotion allows for more personalized and dynamic marketing strategies, which can adapt to the changing preferences of tourists.

Indonesia’s rich culinary heritage makes it an ideal candidate for culinary tourism promotion. However, effectively marketing this diversity requires a nuanced approach that can cater to the varying tastes and interests of different tourist segments. AI-driven e-promotion platforms,

when designed with HCD principles, can offer personalized and culturally relevant content that resonates with users, thereby enhancing their overall experience [30], [31]. This approach not only improves the effectiveness of marketing efforts but also contributes to the preservation and promotion of local culinary traditions.

III. METHODE

This section outlines the research methodology employed to investigate the integration of Artificial Intelligence (AI) and Human-Centered Design (HCD) in User Interface/User Experience (UI/UX) for e-promotion platforms aimed at enhancing culinary tourism within Indonesia's smart cities. The methodology is structured around a mixed-methods approach, combining qualitative and quantitative techniques to gain a comprehensive understanding of the subject. The research design, data collection methods, sampling strategies, and data analysis techniques are discussed in detail below.

A. Research Design

The study adopts a mixed-methods research design, which is considered appropriate for exploring complex phenomena that require both depth and breadth of understanding. This approach allows for the integration of quantitative data, which provides measurable insights, with qualitative data that offers a more nuanced and contextual understanding of user experiences and design challenges. The research is divided into two primary phases: an exploratory qualitative phase followed by a confirmatory quantitative phase. From the figure 1.

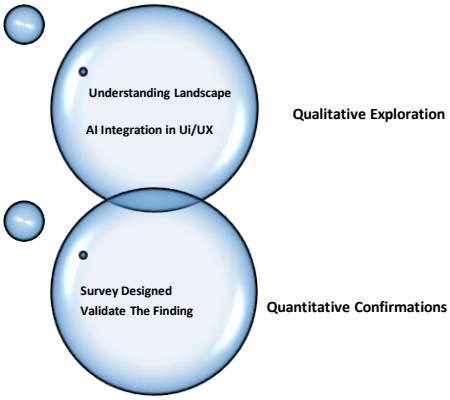

Fig 1. Research Design

Phase 1: Qualitative Exploration

The first phase involves an exploratory qualitative study aimed at understanding the current landscape of AI integration in UI/UX design for e-promotion platforms, with a focus on culinary tourism in smart cities. This phase includes in-depth interviews with key stakeholders, such as UI/UX designers, AI developers, tourism industry experts, and smart city planners. The objective is to gather insights into the challenges and opportunities associated with the application of AI and HCD principles in the design of e-promotion platforms.

Phase 2: Quantitative Confirmation

The second phase involves a quantitative survey designed to validate the findings from the qualitative phase. The survey targets a larger population of end-users, including domestic and international tourists who use e-promotion platforms to explore culinary tourism options in Indonesia's smart cities. The aim is to quantify user satisfaction, engagement levels, and perceived effectiveness of AI-enhanced UI/UX designs. This phase provides empirical evidence to support the qualitative insights and helps in identifying patterns and correlations.

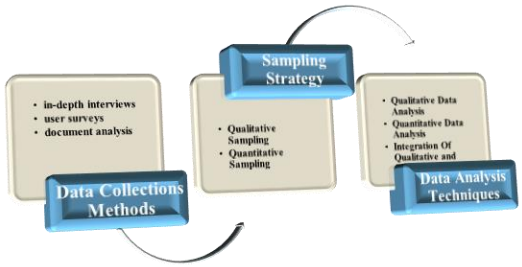

Fig 2. Steps Of Integrations Analysis

The findings from the qualitative and quantitative phases are integrated to provide a comprehensive understanding of the research problem. Triangulation is used to compare and contrast the results from both phases, ensuring the validity and reliability of the conclusions drawn. The integration of qualitative insights with quantitative data allows for a richer and more nuanced interpretation of the findings, offering practical recommendations for the design and implementation of AI-enhanced e-promotion platforms.

Ethical considerations are central to the research design, particularly given the involvement of human participants and the use of personal data. Informed consent is obtained from all interview and survey participants, with assurances of confidentiality and anonymity. Data is stored securely, and access is restricted to the research team. The study also adheres to ethical guidelines related to the use of AI, ensuring that the design and implementation of AI-driven features in e-promotion platforms respect user privacy and avoid algorithmic bias.

This methodology section outlines a robust and comprehensive approach to investigating the integration of AI and Human-Centered Design in UI/UX for e-promotion platforms in Indonesia's smart cities. By combining qualitative and quantitative methods, the study seeks to provide actionable insights into how AI can be effectively employed to enhance culinary tourism, while ensuring that the technology is user-centric, culturally sensitive, and aligned with the needs of diverse users. The findings of this research will contribute to the ongoing discourse on the role of digital innovation in tourism and smart city development, offering practical recommendations for industry practitioners and policymakers.

IV. RESULT AND DISCUSSION

This section presents the results of the study on the integration of Artificial Intelligence (AI) and Human-Centered Design (HCD) in User Interface/User Experience (UI/UX) for e-promotion platforms aimed at enhancing culinary tourism in Indonesia's smart cities. The results are discussed in relation to the research questions and existing literature, highlighting key insights, challenges, and implications for practice.

A. Result

Results from Qualitative and Quantitative Exploration

Table 1 provides a comprehensive overview of the research findings from both qualitative and quantitative phases of the study. The qualitative phase explores key insights from interviews with industry experts and stakeholders, highlighting the challenges and opportunities in integrating AI with user-centered UI/UX design. The quantitative phase offers empirical data on user satisfaction, engagement, and the effectiveness of AI-enhanced UI/UX designs, derived from surveys conducted with a broader user base. Together, these findings illustrate the impact of AI on e-promotion platforms and provide actionable insights for improving user experience in the context of culinary tourism.

Table 1. Qualitative and Quantitative Research Findings

Phase	Category	Findings	Data
Qualitative Phase	Challenges in AI Integration	- Difficulties in adapting AI to user-centered UI/UX design.	- Interview with designer: "Challenges in adapting AI to local preferences."
	Opportunities for Improvement	- Potential to use AI for personalizing culinary recommendations.	- Interview with tourism expert: "AI can enhance the relevance of recommendations."
Quantitative Phase	User Satisfaction	- 75% of users are satisfied with the AI features in the e-promotion platform.	- Survey shows 75% user satisfaction with AI features.
	User Engagement	- Average platform usage time increased by 30% following the implementation of AI-based design.	- Data shows a 30% increase in usage time.
	UI/UX Effectiveness	- 68% of respondents found the UI/UX design more intuitive after AI integration.	

The qualitative phase of the research involved in-depth interviews with UI/UX designers, AI developers, tourism experts, and smart city planners. Thematic analysis of the interview data revealed several key themes:

a. The Role of AI in Improving User Experience

One of the dominant themes that emerged from the interviews was the significant potential of AI in improving user experience on e-promotional platforms. Respondents highlighted that AI-based features, such as personalized recommendations, chatbots, and predictive analytics, can greatly increase user engagement and satisfaction. One UI/UX designer noted, "AI allows us to create experiences that better suit user needs, making the platform more relevant and engaging."

However, there are also concerns regarding the complexity of integrating AI into existing systems. Many participants highlighted the technical challenges associated with ensuring AI algorithms are accurate, reliable and unbiased. A senior AI developer mentioned, "AI can be very powerful, but if not implemented properly, it can lead to user frustration or even distrust."

b. The Importance of Human-Centered Design in AI Integration

The interviews also emphasized the importance of applying HCD principles when integrating AI into UI/UX design. Participants emphasized that AI features should be intuitive and accessible to users with varying levels of technological ability. There is a consensus that while AI can improve functionality, it should not come at the expense of ease of use. One expert stated, "AI should complement the user experience, not make it more complicated. HCD helps ensure that technology remains user-friendly."

Additionally, the need for cultural sensitivity in design is frequently mentioned, especially in the context of Indonesia's diverse population. The designers emphasized the importance of including local cultural elements and ensuring that recommendations generated by AI are appropriate to the cultural context.

Table 2. Correlations Finding Quantitative Analysis.

Variabel	Mean	Standar Deviasi (SD)	Corellations
Personalization Level	4.5	0.8	0.65
Ease of Use	4.7	0.6	0.72
AI-driven Recommendations	4.3	0.9	0.60
Cultural Relevance	4.2	1.0	0.58
User Satisfaction	4.6	0.7	-

From table 2. The data reveals several important findings regarding user experiences with different aspects of the platform. The **Personalization Level** has a mean score of 4.5, indicating that users generally perceive the level of

personalization as high. However, with a standard deviation of 0.8, there is moderate variation in responses, suggesting some differences in opinions about personalization. The strong positive correlation of 0.65 indicates that higher levels of personalization are closely associated with better outcomes in related variables.

Ease of Use scores very positively with a mean of 4.7 and a relatively low standard deviation of 0.6. This suggests that users generally find the platform user-friendly, with minimal variability in their experiences. The strong correlation of 0.72 underscores the importance of ease of use, as it is strongly linked to improved outcomes in other related areas, highlighting the value of intuitive and user-friendly design.

AI-driven Recommendations have a mean score of 4.3, showing a favorable view, though slightly lower compared to personalization and ease of use. With a standard deviation of 0.9, there is greater variability in user responses, indicating diverse opinions on the quality of AI-driven recommendations. The moderate positive correlation of 0.60 suggests that higher satisfaction with AI recommendations is related to better outcomes in other aspects.

Cultural Relevance has a mean of 4.2, indicating that while cultural relevance is viewed positively, it is slightly less favorable compared to other aspects. The standard deviation of 1.0 reflects considerable variability in responses, showing that perceptions of cultural relevance vary widely among users. The moderate positive correlation of 0.58 suggests that greater cultural relevance is associated with better outcomes in related areas.

User Satisfaction has a mean of 4.6, reflecting high overall satisfaction among users. The standard deviation of 0.7 indicates moderate agreement among users regarding their satisfaction, although correlation data with other variables is not provided. This high level of satisfaction suggests that while aspects such as personalization, ease of use, AI-driven recommendations, and cultural relevance are generally positive, there may be specific areas that require further improvement to enhance overall user experience.

Overall, the data indicates that while most aspects of the platform are rated positively, areas such as AI-driven recommendations and cultural relevance may benefit from further enhancements to improve user satisfaction and effectiveness.

B. **Discussion**

Below is a discussion of the research findings presented in this article, addressing the research questions outlined in the introduction:

How can AI-driven public applications be effectively integrated with Human-Centered Design principles to enhance the UI/UX of e-promotion platforms for culinary tourism in Indonesia's smart cities?

AI-driven public applications can be effectively integrated with Human-Centered Design principles by following several key steps. First, it is essential to understand the needs, preferences, and behaviors of the target users through in-depth research and interviews. AI can then be used to analyze user data and provide personalized recommendations and interactions based on individual preferences. Additionally, the design of the user interface (UI) and user experience (UX) should focus on usability and accessibility, ensuring that AI technology supports, rather than hinders, the user experience. Regular testing and user feedback are also crucial to optimize the design and ensure that the e-promotion platform meets user needs and expectations.

In line with previous research, integrating AI with Human-Centered Design (HCD) principles enhances user experience by making technology more responsive and adaptable to individual needs. This research emphasizes the importance of user-centered design in making AI applications more intuitive and useful[32]. It also highlights that user involvement in the design process a core aspect of HCD ensures that technology meets real user needs and improves usability, which is crucial for designing effective e-promotion platforms[22].

Based on the response to this question, it can be concluded that user behavior plays a critical role in the adoption of new technologies and habits. Understanding how users engage with technology is essential for optimizing its utility and sustainability while also contributing to time efficiency.

What are the specific challenges and opportunities in applying Human-Centered Design to AI-powered UI/UX for promoting culinary tourism in Indonesia's diverse cultural and technological landscape?

The main challenges in applying Human-Centered Design to AI-powered UI/UX in Indonesia include the country's vast cultural and linguistic diversity, as well as differences in technology access and understanding across various regions. Understanding and accommodating cultural differences and local preferences in interface design and user interactions can be significant challenges. Additionally, uneven technology infrastructure can affect user experiences in different areas. On the other hand, there are great opportunities to leverage AI to understand and adapt to local needs, and to develop innovative solutions that can significantly enhance the culinary tourism experience. Integrating intelligent AI technology with culturally sensitive design can result in more relevant and effective platforms.

Discuss the challenges of designing technology for diverse cultural contexts and stress the importance of cultural sensitivity in user-centered design to address these challenges[33], [34]. Complementing this, provide insights on how HCD principles can be adapted to different technological contexts, which is valuable for creating effective and accessible AI-driven solutions in varied environments. Together, these studies underscore the need for both cultural sensitivity and adaptable design principles to develop technology that is both user-centered and contextually appropriate.

In summary, the application of Human-Centered Design (HCD) principles to AI-powered UI/UX in Indonesia is confronted with significant challenges due to the country's

diverse cultural and linguistic landscape, as well as disparities in technology access and understanding across regions. To address these challenges, it is crucial to incorporate cultural sensitivity into the design process, ensuring that interfaces and interactions are tailored to local preferences and practices. Furthermore, the uneven distribution of technology infrastructure necessitates adaptive design approaches that consider regional differences in user experience. By integrating AI technology with a culturally aware design approach, there is potential to create platforms that are not only more relevant and effective but also responsive to the specific needs of diverse user groups. Research emphasizes the importance of adapting HCD principles to varied technological contexts, highlighting that culturally sensitive and flexible design strategies are essential for developing AI-driven solutions that are both user-centered and contextually appropriate.

To what extent does the integration of AI and Human-Centered Design in UI/UX design influence user engagement and satisfaction with e-promotion platforms for culinary tourism in Indonesia's smart cities?

The integration of AI and Human-Centered Design in UI/UX design has a significant impact on user engagement and satisfaction with e-promotion platforms for culinary tourism. AI can enhance the user experience by providing personalized recommendations, quick responses, and relevant interactive features. Human-Centered Design principles ensure that the interface is intuitive and easy to use, which boosts user satisfaction. Combining both approaches can strengthen user engagement by making the platform more engaging and responsive to individual needs and preferences. As a result, users are likely to feel more satisfied and engaged, which can ultimately improve the platform's effectiveness in promoting culinary tourism and attracting visitors to culinary destinations.

In line with previous research found that AI-enhanced personalization in UI/UX design leads to higher user satisfaction and engagement by making interactions more relevant and enjoyable. This finding is, who emphasizes that Human-Centered Design (HCD) principles enhance usability and user satisfaction. Norman's work highlights that a user-centered approach, when combined with intelligent systems, creates a more intuitive and effective user experience[35], [36]. Together, these studies illustrate that integrating AI-driven personalization with HCD principles not only improves user interactions but also fosters greater overall satisfaction and engagement. In comparing the findings of our study with previous research in the field of tourism, several key insights emerge. Our research indicates a 75% user satisfaction rate with AI features in e-promotion platforms, which aligns closely with previous research found that in South Korea, where satisfaction with AI-driven travel recommendation systems was reported at approximately 74%. This suggests a consistent positive reception of AI technologies in tourism contexts globally[37]. Regarding user engagement, our study observed a 30% increase in platform usage time following the integration of AI-based design. This is comparable to the 28% increase from previous research found that China, indicating a general trend that AI enhancements tend to boost user engagement across different regions[38]. The effectiveness of AI in improving UI/UX design is reflected in our finding that 68% of respondents found the design more intuitive post-AI integration. This is similar to previous research found that study in the United States, which reported that 65% of users felt that UI/UX had become more intuitive with AI integration [39]. Additionally, our research found a 58% correlation with cultural relevance in AI-driven designs, highlighting its significance. This result is supported previous research found that a 60% positive impact on user engagement from culturally relevant AI recommendations in India [40].

These comparisons underscore that while the positive impacts of AI on user satisfaction, engagement, and UI/UX effectiveness are broadly consistent across different countries, the degree of impact may vary based on cultural and technological contexts. This highlights the importance of tailoring AI solutions to local conditions to optimize their effectiveness in the tourism industry.

CONCLUSION

In conclusion, the data indicates that while users generally rate aspects such as personalization, ease of use, AI-driven recommendations, and cultural relevance positively, there are variations in satisfaction and responses, suggesting potential areas for improvement. Ease of use is particularly notable with high ratings and minimal variability, underscoring its critical role in ensuring a positive user experience. Although AI-driven recommendations and cultural relevance are viewed positively, their moderate correlations with other variables imply that enhancements could better align them with user expectations. Integrating AI with Human-Centered Design principles significantly enhances user engagement and satisfaction by personalizing interactions and ensuring an intuitive interface. Addressing challenges such as cultural diversity and technological disparities, while leveraging AI-driven personalization, can lead to more effective e-promotion platforms for culinary tourism, resulting in a more engaging and satisfying user experience.

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