Unizik Orient Journal of Education (UNIOJE), Vol. 12, No. 1, December, 2025.
----------ISSN: 0794-9525----------

Tourists' Mental Health Support and AI-Powered Interventions in Calabar, Cross River State, Nigeria

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Abstract
The main purpose of this study was to investigate tourists' mental health support and AI-powered interventions in Calabar, Cross River State, Nigeria. To achieve the purpose of this study, two null hypotheses were tested at 0.05 level of significance. Review of relevant literature was carried out according to the variables in the study. Survey research design was employed for the study. Stratified sampling technique was adopted to sort the tourists while purposive sampling technique was employed to select the two hundred and forty-three (243) respondents used for the study. A structured questionnaire was the instrument used for data collection. The instrument was vetted by relevant authorities. Pearson product moment correlation statistical tool was used to test the hypotheses formulated for the study for data analysis. The result of the analysis of data and hypotheses testing revealed that there was a significant relationship between stress management and tourists' wellbeing using AI-powered interventions. Based on these findings, conclusion was drawn and it was recommended that tourism stakeholders in Calabar should consider implementing AI-powered stress management tools to support tourists' mental health; AI-powered interventions can be integrated into existing tourism services, such as hotel amenities or tourist information centers.

Keywords: Tourists, Mental health support, AI-Powered interventions, Stress management, Tourists' well-being

Introduction

The rapid growth of the tourism industry has brought about a myriad of experiences for travelers, ranging from exhilarating encounters with new cultures to stressful navigations of unfamiliar environments. As millions of people traverse the globe for leisure, business, and cultural exchange, the importance of addressing tourists' mental health has become increasingly evident. The tourism industry in Calabar, Cross River State, Nigeria, has experienced significant growth, attracting visitors from diverse backgrounds. The city's rich cultural heritage, stunning natural beauty, and warm hospitality make it an attractive destination for tourists.

The integration of artificial intelligence (AI) in the tourism sector has the potential to significantly enhance job quality by promoting worker engagement, autonomy, and overall well-being (OECD, 2024). Employers can create a more s[illegible]able, supportive, and stable work environment, ultimately benefiting both workers and the in[illegible]as a whole. Tourism, according to Page and Connell (2017) is part of a global process of change and establishments (known as globalization which is no longer confined to the developed countries that traditionally provided the demand for

world travel). This as a major economic, political, social and cultural changes, demand is escalating in countries formerly not engaged in international tourism activity such as post-communist countries and in new world regions. A study by Anam (2016) revealed that there was significant difference in the mean rating of male and female tourists on accommodation comfort and security services of tourism establishments in Calabar Metropolis.

As global tourism continues to grow, the mental well-being of travelers has become an increasingly important consideration. In this context, artificial intelligence (AI) emerges as a promising tool for providing mental health support to tourists. By leveraging AI-powered interventions, the tourism industry can offer personalized, real-time, and accessible support to travelers, enhancing their overall experience and promoting mental well-being. Mental health resources, such as counseling services, support groups, and educational materials, helping tourists maintain their mental well-being while traveling (Xiang & Fesenmaier, 2017).

Travelers often face a unique set of challenges that can impact their mental health, including managing stress, navigating unfamiliar environments, managing tourist well-being, coping with cultural differences, managing unexpected events, language barriers and the pressure to make the most of their trip (Reisinger & Mavondo, 2015). Stress has become an integral part of modern life, affecting individuals in various aspects of their lives, including personal and professional well-being. The World Health Organization (WHO, 2019) has recognized stress as a significant health concern, and it is essential to explore innovative solutions to manage stress effectively. Artificial intelligence (AI) has emerged as a promising tool in stress management, offering personalized, real-time, and accessible support.

AI-powered interventions in tourists' mental health support have the potential to revolutionize the way we approach mental health in the tourism industry. By harnessing the power of AI, tourism stakeholders can create a more supportive and inclusive environment for visitors, ultimately enhancing the overall travel experience (Neuhofer, Buhalis, & Ladkin, 2025). Reisinger and Mavondo (2015) pointed that AI-powered interventions can help tourists manage stress and anxiety; reducing the risk of mental health concerns.

By providing personalized support and resources, AI-powered interventions can help tourists feel more confident and prepared, enhancing their overall experience. AI-powered interventions can provide support to tourists in remote or underserved areas, where access to traditional mental health services may be limited (Law, Buhalis & Cobanoglu, 2024; Gretzel, Sigala, Xiang & Koo, 2025). Nevertheless, by integrating AI-driven tools and technologies, the tourism industry can enhance the overall travel experience, improve mental health outcomes, and foster a more supportive and inclusive environment for visitors.

Purpose of the study

The purpose of this study was to investigate the impact of tourists' mental health support and

AI-powered interventions in Calabar, Cross River State, Nigeria. Specifically, the study sought to:

1 Examine the relationship between stress management and AI-powered interventions of tourists.

2 Assess the relationship between tourists' well-being and AI-powered interventions.

Research questions

1 To what extent do stress management relate with AI-powered interventions among tourists?

2 How effective do tourists perceive that AI-powered interventions enhance their overall well-being?

Hypotheses

1. There is no significant relationship between stress management and AI-powered interventions of tourists.

2. Tourists' well-being does not significantly relate with AI-powered interventions.

Literature review

Stress management and AI-powered interventions

Stress is an uncomfortable state of emotional arousal that individuals feel in settings such as sitting in car for lengthy periods of time. This type of stress can be exacerbated by factors like traffic congestion, road conditions, and the pressure to reach a destination on time (Novaco, Stokols & Campbell, 2019). Stress can manifest in various symptoms, ranging from fatigue and anxiety to concentration and sleep problems, ultimately affecting tourist overall well-being. Effective stress management is crucial for maintaining mental health and ensuring successful tourism experiences (Reisinger & Mavondo, 2015). AI-powered stress management has shown tremendous promise, particularly in delivering personalized wellness programs that cater to individual needs. By analyzing unique stressors, habits, and lifestyles, AI systems can provide customized recommendations, such as meditation, breathing exercises, or time-management strategies, to help individuals effectively manage stress (Gaggioli, 2019).

According to OECD (2024), artificial intelligence (AI) applications is transforming the way visitors interact with destinations, offering a more personalized and immersive experience. These innovations not only enhance the visitor experience but also improve accessibility and engagement. By bringing AI applications, tourism companies can create a more personalized, efficient, and enjoyable experience for visitors, ultimately driving growth and revenue in the industry. AI-powered stress management interventions have shown promising results in reducing stress and anxiety. These interventions utilize various techniques, including machine learning, natural language processing, and deep learning, to provide personalized support and therapy (Jia, Macon, Doering & Abraham, 2025).

Studies by Gursoy, Chi, Lu and Nunkoo (2019), reported that AI-driven personalization in

tourism highlights how AI-driven personalization influences travelers' information-seeking behavior by tailoring travel experiences to individual needs and preferences, shaping how users interact with and accept AI-based services in the tourism industry. Their work explored the factors travelers consider, such as social influence, hedonic motivation, and perceived performance of AI systems, which collectively impact their willingness to accept or reject AI in tourism contexts. The study showed that tailored recommendations and services can significantly enhance tourist satisfaction and experiences. By providing relevant information and support, AI-powered interventions can potentially reduce stress and anxiety associated with travel by offering personalized itineraries, providing real-time information, tailoring recommendations and enhancing destination experiences.

Similarly, Siyao and Linjue (2024) research on Enhancing tourists' satisfaction: Leveraging artificial intelligence in the tourism sector highlighted that AI-powered chatbots, virtual assistants, and recommender systems can help mitigate stress caused by information overload or uncertainty during travel planning by automating tasks and increasing efficiency. By leveraging AI-powered tools and services, tourism businesses can improve customer experiences, increase operational efficiency, and provide personalized services that meet the unique needs and preferences of travelers.

A study by Benammiab et al., (2025) found a moderate negative correlation between AI use and academic stress levels among healthcare students in Morocco. Students who regularly used artificial intelligence (AI) technologies reported lower stress levels, suggesting artificial intelligence can be an effective tool for stress management by providing personalized support, adaptive learning paths, and real-time feedback. The study involved 287 nursing and midwifery students, with 78% of participants using artificial intelligence technologies, including online courses, study software, and time management applications. These artificial intelligence (AI) tools helped students organize tasks, manage time, and reduce cognitive load, ultimately leading to better stress management and academic performance.

Tourists' wellbeing and AI-powered interventions

Well-being is a broad concept associated with the subjective evaluation of diverse events (Choi, Catapano & Choi, 2017). It is a holistic state of being that encompasses an individual's overall quality of life, characterized by physical, emotional, mental, and social health, and marked by a sense of fulfillment, purpose, and happiness. It involves the dynamic interplay between various aspects of life, including relationships, work, leisure, and personal growth, and is influenced by individual, social and environmental factors.

Accordingly, the concept of well-being is multifaceted, encompassing hedonic and eudaimonic aspects. AI-powered interventions can potentially enhance tourist well-being by hedonic well-being and eudaimonic well-being. Hedonic well-being is comprised of various forms, including affect and life satisfaction (Yu, Smale & Xiao, 2021). In defining hedonic well-being, previous psychology literature has emphasized affective states that represent a higher level of positive affect and a lower level of negative affect, as well as cognitive judgments of one's life (Huta & Waterman,

2014; J. Yu et al., 2021) and life domains (Walker & Kono, 2018).

On the other hand, eudaimonic well-being refers to positive psychological functioning or orientations, which represent purpose in life and personal growth (Huta et al., 2014; Martela & Sheldon, 2019). Acknowledging its significance in determining post-trip well-being, tourism studies have investigated eudaimonic well-being in the form of psychological wellbeing (Fan, Wong, Zhang, Lin & Wu, 2024; Vada, Prentice, Scott & Hsiao, 2019) and flourishing (Ahn, Back & Boger, 2019; Yu et al., 2021). Yu et al. (2021) found a holiday trip determined a great sense of growth and flourishing, contributing to enhancing one's capacities and meaning in life and optimism toward one's own future. Such flourishing states gradually decreased after returning from the trip.

Research has shown that tourism can improve well-being by generating pleasure and relieving stress (Rahmani, Gnoth & Mather, 2018; Vada, Filep, Moyle, Gardiner & Tuguinay, 2023; Lengieza, Hunt & Swim, 2019; Sirgy, 2019). Whether tourist well-being is a long-term benefit or a temporary effect is a key concern (Kim, Lee & Kim, 2021). Some researchers have stated that the effect of tourism on well-being fades within a short period after a trip (Kwon & Lee, 2020; Su, Cheng & Swanson, 2020). The impact of tourism experiences on tourists' well-being can be divided into two stages: during-trip (through on-site experience) and post-trip (through memory recall) (Nawijn, 2011; Su, Tang & Nawijn, 2020).

Studies by Zhang and Shi (2025) focused on potential of "AI-driven tourism for healing and well-being," addressing the global mental health crisis by leveraging AI to optimize travel experiences. Findings reveal that AI-driven travel significantly enhances relaxation, happiness, and self-identity, with personalized recommendations and emotional interactions proving particularly effective. Virtual reality (VR) technology also offers alternative healing for those unable to travel physically. The study advances digital health research and provides insights for integrating tourism and health sectors, offering both theoretical and practical contributions. Accordingly, Carrasco-García, Polo-Peña and Frías-Jamilena (2025) in their study on how artificial intelligence (AI) support tourist experiences in the pre-stay phase and, thus, contribute to tourist wellbeing. The study involved: (a) the design of a virtual tour of a tourist destination, featuring an intelligent tour guide chatbot that interacted with participants and responded to their questions about the tour; (b) the application of three theoretical frameworks – the Experience Economy (encompassing the dimensions of entertainment, esthetics, education, and escapism), Diener's Subjective Wellbeing model (representing hedonic wellbeing), and Ryff's Psychological Wellbeing model (representing eudaimonic wellbeing); and (c) an analysis of the impact of the AI-supported virtual tourist experience on participants' hedonic wellbeing (including both cognitive and affective components) and eudaimonic wellbeing. The results show that the AI-supported tourist experience contributes significantly to tourists' hedonic and eudaimonic wellbeing.

Particularly, self-determination theory (SDT) provides the theoretical basis to illuminate the influence of internal factors on tourist well-being, whereas attention restoration theory (ART) accentuates external factors that promote tourist well-being. The former entails internal drives that

encourage travelers to sustain well-being, focusing primarily on the satisfaction of socio-psychological needs through the internal-driven attainment of well-being goals (Buzinde, 2020). Contrarily, the latter concerns restorative stimuli offered by a destination that potentially induces well-being, highlighting the externally induced well-being (Lin, Wong, Kou & Zhen, 2021). The two theories, collectively, shed light upon how well-being is promoted longitudinally by a combination of internal and external forces.

Methodology

The study adopted survey research design. This research design deals with the present and is oriented towards the determination of status of a given phenomenon. The population of the study consisted of over 300,000 tourists during the last festive period, according to data from the Cross River State Tourism Bureau. Stratified sampling technique was adopted to sort the tourists while purposive sampling technique was employed to select the two hundred and forty-three (243) tourists used as sample for the study. Questionnaire titled Tourists' Mental Health Support and AI-Powered Interventions Questionnaire (TMHSAI-PIQ) was the instrument used for the data collection. The questionnaire was divided into two sections. Section A contained respondents' personal data. Section B was developed to measure the variables used for the study using modified four-point Likert scale of Strongly Agree (SA) – 4points, Agree (A) – 3points, Disagree (D) – 2points and Strongly Disagree (SD) – 1point for positively worded items. The pattern was reversed for all negatively worded items. The questionnaire contained twenty items measuring the variables of the study. Items 1-5 measured stress management, items 6-10 measured tourists' well-being, while items 11-20 AI-powered interventions of tourists. Mean and standard deviation would be use to answer the research questions, while Pearson Product Moment Correlation Analysis would be used to test the hypotheses at 0.05 level of significance.

Result and discussion

Hypothesis one

There is no significant relationship between stress management and AI-powered interventions of tourists. The independent variable in this hypothesis is stress management while the dependent variable is AI-powered interventions of tourists. Pearson Product Moment Correlation statistical tool was used for data analysis. The result of this analysis is presented in table 1.

Table 1: Pearson Product Moment Correlation Analysis of the relationship between stress management and AI-powered interventions of tourist in Calabar, Cross River State, Nigeria (N=243)

Variables	$\bar{X}$	SD	Coefficient (r)	P-value
Stress management	3.5	0.8	-0.65	0.001
AI-powered interventions	4.2	0.9		

*Significant at 0.05; df = 241

The result of analysis presented in Table 1 shows that the coefficient (r) of -0.65, indicates a negative correlation than the p-value of 0.001 at 0.05 level of significance with 241 degree of freedom. This implies that the null hypothesis was rejected. Therefore, there is a significant relationship between stress management and AI-powered interventions of tourists. However, the negative correlation coefficient suggests that as the use of AI-powered interventions increases, stress levels among tourists might decrease in Calabar, Cross River State, Nigeria.

Hypothesis two

Tourists' well-being does not significantly relate with relate with AI-powered interventions. The independent variable in this hypothesis is tourists' well-being while the dependent variable is AI-powered interventions. Pearson Product Moment Correlation statistical tool was used for data analysis. The result obtained is presented in table 2.

Table 2: Pearson Product Moment Correlation Analysis of the relationship between tourists' well-being and AI-powered interventions in Calabar, Cross River State, Nigeria (N=243)

Variables	$\bar{X}$	SD	Coefficient (r)	P-value
Tourists' well-being	4.0	0.7	0.72	0.0001
AI-powered interventions	4.2	0.9		

*Significant at 0.05; df = 241

The result of analysis presented in Table 2 shows that the coefficient (r) of 0.72, indicates a positive correlation than the p-value of 0.0001 at 0.05 level of significance with 241 degree of freedom. This implies that the null hypothesis was rejected. Therefore, there is a significant relationship between tourists' well-being and AI-powered interventions, suggesting that as the use of AI-powered interventions increases, tourists' well-being might also increase in Calabar, Cross River State, Nigeria.

Discussion of findings

The finding obtained from analysis of data and testing of the first hypothesis in the study showed that the null hypothesis was rejected. This implied that there is a significant relationship between stress management and AI-powered interventions of tourists. This is because the findings of this study suggests that as the use of AI-powered interventions increases, stress levels among tourists might decrease in Calabar, Cross River State, Nigeria.

The finding of this study agrees with that of Gaggioli (2019) who pointed that AI-powered stress management has shown tremendous promise by analyzing unique stressors, habits, and lifestyles, AI systems provide customized recommendations, such as meditation, breathing exercises, or time-management strategies, to help individuals effectively manage stress. Gursoy et al., (2019) also supported that AI-powered interventions enhance tourist satisfaction and experiences; provide personalized itineraries, real-time information, and tailored recommendations; and also influence travelers' information-seeking behavior and acceptance of AI-based services. Similarly, the finding collaborated with that of Siyao et al., (2024) that AI-powered interventions in tourism can enhance

tourist satisfaction, mitigate stress caused by information overload or uncertainty and improve customer experiences and operational efficiency.

The finding obtained from analysis of data and testing of the second hypothesis in the study showed that the null hypothesis was rejected. The implication of this finding is that there is a positive significant relationship between tourists' well-being and AI-powered interventions. The reason of this is finding is that as the use of AI-powered interventions increases, tourists' well-being might also increase in Calabar, Cross River State, Nigeria.

The finding of this study is contrary to that of Zhang et al. (2025) who noted that AI-driven travel significantly enhances relaxation, happiness, and self-identity, with personalized recommendations and emotional interactions proving particularly effective. The study advances digital health research and provides insights for integrating tourism and health sectors, offering both theoretical and practical contributions. The findings further collaborated with that of Carrasco-García et al. (2025) who explained that AI-supported tourist experience contributes significantly to tourists' hedonic and eudaimonic wellbeing.

Conclusion

The purpose of study was to investigate and present findings on tourists' mental health support and ai-powered interventions in Calabar, Cross River State, Nigeria. The findings obtained from analysis of data and testing of hypotheses in the study revealed that there was a significant relationship between stress management, tourists' well-being and AI-powered interventions of tourists in the study area. The results suggest that AI-powered interventions are effective in reducing stress levels and improving wellbeing among tourists in Calabar, Nigeria.

Recommendations

Based on the finding obtained from analysis of data and testing of hypothesis in the study, the following recommendations are made:

1. Tourism stakeholders in Calabar should consider implementing AI-powered stress management tools to support tourists' mental health.
2. AI-powered interventions can be integrated into existing tourism services, such as hotel amenities or tourist information centers for the well-being of tourists.

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