The Application of Artificial Intelligence by Tour Operators in Influencing Tourist Travel Decisions: Case of Tour Operators in Arusha, Tanzania

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Declaration and Approval

Declaration

I declare that this work has not been previously submitted and approved for the award of a degree by this university or any other university. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.

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Abstract

The rapid advancement of Artificial Intelligence (AI) has transformed the tourism industry, enabling tour operators to enhance decision-making processes for travellers. This study explores the application of AI in influencing tourist travel decisions, with a focus on tour operators in Arusha, Tanzania. The research examines the current use of AI in Arusha's tourism industry, the effectiveness of AI in influencing Arusha's tourist travels decision-making process and the challenges of AI usage by tour operators in Arusha. The study is anchored on the Theory of Reasoned Action, the Theory of Planned Behavior and the Customer Experience (CX) Theory. Using a Quantitative methods approach, data was collected from tour operators through structured questionnaires to assess AI utilization, its effectiveness, and barriers to integration. The findings reveal that over 90% of tour operators in Arusha reported using AI tools in at least one stage of the tourist journey, which enhances tourist engagement and operational efficiency, limited adoption due to lack of awareness, skill gaps, financial constraints, and technological challenges remains a significant barrier. Additionally, the study highlights the role of AI in providing multilingual support, improving customer satisfaction, and optimizing business strategies. The research concludes that AI has significant potential to revolutionize Arusha's tourism sector by improving service delivery and increasing conversion rates. However, for AI to be fully leveraged, stakeholders must address the challenges of adoption, invest in AI training, and develop policies that promote AI integration. The study offers valuable insights for tour operators, policymakers, and technology developers aiming to enhance the competitiveness of Arusha's tourism industry through AI-driven innovations.

Keywords: Artificial Intelligence, Tourism, Tour Operators, Travel Decision-Making, Personalization, Arusha, Tanzania

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List of Abbreviations

AI	Artificial Intelligence
AIRS	Artificially Intelligent Recommendation Systems
BDAI	Big Data and Artificial Intelligence
CCTV	Closed-circuit television
CDMM	Consumer Decision-Making Model
CEO	Chief Executive Officer
CJM	Customer Journey Mapping
COSTEC	Commission of Science and Technology
CX Theory	Customer Experience
GDPR	General Data Protection Regulation
HAT	Hotel Association of Tanzania
IDT	Innovation Diffusion Theory
NCAA	Ngorongoro Conservation Area Authority
PMS	Property Management System
POS	Point of Sales Systems
RAISA	Robots, Artificial Intelligence, and Service Automation
SARIMA	Seasonal Autoregressive Integrated Moving Average
SAS	Scandinavian Airlines Systems
TAM	Technology Acceptance Model
TANAPA	Tanzania National Park Authority
TATO	Tanzania Association of Tour Operators
TAWA	Tanzania Wildlife Authority
TFS	Tanzania Forest Service Agency
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
TRS	Tourism Recommendation Systems
TTB	Tanzania Tourist Board
TTGA	Tanzania Tour Guide Association
US	United States

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Dedication

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Definition of Terms

Artificial intelligence (AI) is an advanced system of computers that can execute tasks that would typically require human intellect, such as learning, reasoning, problem-solving, interpreting natural language, detecting patterns, and making data-driven judgments (Bulchand-gidumal, 2022).

Generative AI is a designed system to create new content, such as text, images, videos, and music. It generates outputs based on training data, which allows for creativity and personalization. This technology utilizes machine learning models, like GPT or diffusion-based systems, to produce human-like and contextually relevant results (Dwivedi et al., 2024).

Specialized AI is a system built for specific tasks with high precision and efficiency, often tailored to solve well-defined problems in areas like recommendation systems, Dynamic pricing, predictive analytics, or data processing (Florido-Benítez & del Alcázar Martínez, 2024).

Tourist Travel Decision is a structured process involving the planning and purchasing of various travel elements such as destinations, accommodations, and activities, influenced by personal preferences, external factors, and sociocultural influences (Juvan et al., 2017).

A Tour Operator is a company or individual that offers travel packages, accommodations, transportation, and guided tours for tourists visiting a country. They act as intermediaries between tourists and service providers like hotels, lodges, transport companies, and local guides, offering safari packages, mountain climbing, beach holidays, cultural tours, and tailored itineraries (Alam et al., 2024).

Chapter One:
Introduction

1.1 Background

Artificial Intelligence (AI) refers to sophisticated computer systems designed to perform functions traditionally associated with human cognition, including learning, logical reasoning, problem-solving, natural language processing, pattern recognition, and data-informed decision-making (Kazak et al., 2020). Likewise, AI employs several tactics like deep learning, machine learning, , natural speech processing, computer vision, and automaton which rely on enormous amounts of data, significant computer power processing, and advanced systems that have progressively improved as an outcome of various trends (Antonopoulos et al., 2020; Weber et al., 2023). Additionally, Mounika (2020) acknowledged that the ongoing technological advancements have facilitated the integration of AI across various sectors such as healthcare, banking, automotive, agriculture, entertainment, and security. These implementations primarily serve functions including data analysis, data processing, virtual assistance, simulation, and the detection of fraudulent activities.

The tourism sector is increasingly exploring and implementing various AI technologies such as voice recognition, natural language processing, robotics, virtual travel assistants, personalized recommendation engines, and predictive analytics tools (Zlatanov & Popesku, 2019a). Consequently, AI outperforms the old-fashioned search engines and human capabilities, enabling service providers to analyse massive datasets and learn from experiences to enhance tourist satisfaction (Kazak et al., 2020). Besides, AI helps tourists to decide on various aspects of future safari plans including accommodations, destinations, and activities while enhancing their overall experience by offering personalised tailored preferences, timely responses, and increased engagement (Koo & Xiang, 2021).

Also, tour operators play a critical role in promoting tourism by ensuring seamless experiences for travellers and contributing to the country's economic development through job creation and foreign exchange earnings (Çetinkaya & Öter, 2016). On the other hand, tour operators utilize AI to improve travel decisions for tourists by offering personalized recommendations and optimizing interactions with customers (Florido-Benítez & del Alcázar Martínez, 2024). These AI platforms

analyze traveler preferences, past behaviors, and real-time data to create tailored itineraries, accommodations, and activities, which often results in higher booking conversion rates (Dwivedi et al., 2024). Virtual assistants enable seamless communication, provide multilingual support, and offer 24-hour customer service, making them appealing to a diverse range of clients. Additionally, predictive analytics help forecast demand trends, which enhances operational efficiency and the overall client experience, ultimately promoting growth in the tourism sector (Alam et al., 2024).

The use of AI by tour operators differs based on its applications, which can be categorized into Generative AI and specialized AI (Balushi, 2023). According to Dwivedi et al., (2024) showed that Generative AI is designed to create new content, including text, images, videos, and music. It generates outputs based on the training data it has received. This technology excels in creativity and personalization, utilizing machine learning models such as GPT or diffusion-based systems to produce human-like and contextually relevant outputs. On the other hand, Specialized AI is a system built for specific tasks with high precision and efficiency, often tailored to solve well-defined problems in areas like recommendation systems, Dynamic pricing, predictive analytics, or data processing (Florido-Benítez & del Alcázar Martínez, 2024).

Furthermore, tourist travel decision-making is a structured process involving the planning and purchasing of various travel elements such as destinations, accommodations, and activities, influenced by personal preferences, external factors, and sociocultural influences (Juvan et al., 2017; Miah et al., 2017). Besides, Putrianti et al., (2023) revealed that the tourist travel decision-making process includes five stages: identifying needs and wants, gathering information, obtaining customer assistance, making a choice, and following up on the purchase. However, in the travel industry, the Consumer Decision-Making Model (CDMM) is helping tourists make better decisions by breaking down the process into five stages. According to the model, tourist decision-making involves steps like recognising the problem, information searching, alternative evaluations, making a buying decision, and evaluating the post-purchase experience (Antunes, 2020; Stankevich, 2017).

Technology, particularly RAISA (Robots, Artificial Intelligence, and Service Automation), plays a critical role in enhancing tourist travel decision-making and operational efficiency in the

hospitality industry across all stages of the guest cycle: pre-arrival, arrival, stay, departure, and post-departure, yet AI respectively can be employed in each stage to influence tourists' travel decisions (Lukanova & Ilieva, 2019). Similarly, AI-powered travel-related websites, service robots, social media, and smartphones, such as chatbots, AI-mobile apps, interactive AI social hubs, robot luggage delivery, and check-in during the arrival phase, can influence tourist travel decisions (Chen & Wei, 2024). Additionally, they can assist in service delivery and luggage pickup during the guest stay phase, as well as help with check-in and check-out during the arrival and departure phases and also assist in pre and post-departure reviews and recommendations (Derrick et al., 2017; Stringam & Gerdes, 2021).

The adoption and application of AI in decision-making by tour operators proved to have impacts on tourist travel decisions (Chen & Wei, 2024; Juvan et al., 2017; Lukanova & Ilieva, 2019; Putrianti et al., 2023). Additionally, AI is widely employed in various countries to enhance user experience, and operational efficiency and impact tourist travel decisions including the United States (US) where AI is primarily used in search and booking engines to learn user booking habits, adjust website content, and assess consumer profiles for fraud detection which had a positive influence on the tourist travel decisions (Huang et al., 2022). Still, Vietnam developed and implemented AI chatbots that enhance human-AI interactions in the hotel industry, increasing trust and empathy, which positively influences decision-making processes (Nguyen et al., 2023).

Conversely, Serbia enhances tourist travel decision-making by employing travel AI chatbots to assist users with website navigation, bookings, and travel recommendations (Zlatanov & Popesku, 2019b). Likewise, Saudi Arabia developed AI chatbots for tourist recommendations to facilitate two-way interactions through mobile apps, simplifying the tourist's travel decision process by consolidating communication (Alotaibi et al., 2020). In addition, China impacts the tourist travel decision by employing AI-facial recognition check-in kiosks and smile-to-pay systems to expedite check-ins and transactions in hotels and food outlets (Morosan, 2020). However, India enhances tourist travel decisions by employing AI Odyssey which helps with excursion budgeting, travel planning, recommendations for restaurants and accommodations, customer support, translation, and route planning superlative practices (Subburayan, 2023). Furthermore, AI usage in tourist travel decisions in Turkey and China has significantly impacted tourist purchasing behaviour and

marketing more than traditional strategies and social media influences (Chen & Wei, 2024; Durmaz & Baser, 2023).

The effectiveness of AI in influencing tourist travel decisions has been proven through various matters including customer satisfaction, conversion rate, and predictive accuracy (Law et al., 2018; Sharma et al., 2020). Correspondingly, Customer satisfaction directly influences customer loyalty and repeat business, making it a vital indicator for assessing the effectiveness of AI in the travel industry (Xiang et al., 2015). Additionally, Law et al., (2018) demonstrates the effectiveness of AI in influencing traveller decisions, leading to conversion rates, especially in online travel platforms. Moreover, predictive accuracy is a key measure of AI effectiveness in tourism, as accurate predictions can significantly enhance the decision-making process (Ivanov & Webster, 2024). Besides, Return On Investment (ROI) is a critical metric that businesses use to evaluate the financial effectiveness of AI in the tourism sector, especially in enhancing customer experience and operational efficiency (Bulchand-Gidumal et al., 2024).

Despite the effectiveness of AI in executing various tasks, it has numerous key challenge factors that affect the adoption, integration and effective utilization of AI in the tourism industry (Duan et al., 2019; El-Mofock, 2023; Nam & Dutt, 2020). Additionally, the high implementation costs of AI are a challenge for many travel-related enterprises, which may prevent its widespread adoption(Duan et al., 2019; Jabeen et al., 2022). Not only that, Data privacy and security have been shown to hinder the application and adoption of AI by the tourism industry, hence Many companies need to invest in robust security measures to protect customer data (Amankwah-Amoah & Lu, 2022; Bulchand-Gidumal et al., 2023; El-Mofock, 2023).

Africa is regarded as the future of AI in various industries ranging from agriculture, banking, hospitality, tourism, security, and health, making AI crucial for future innovation and development, inspiring further research and technology use (Bowen & Morosan, 2018). In addition, Global AI tech companies like IBM and Google recognise Africa's potential, establishing AI research labs in Nairobi, Johannesburg, and Accra to advance AI research and development on the continent (Hao, 2019; Kopalle et al., 2022). In addition, the application of AI in decision-making in other industries in Africa revealed that AI and algorithmic decision-making systems,

commonly used in agriculture for efficiency, have broad applications, including simplifying public-sector procurement as well as helping reduce fraud, corruption, and inefficiencies in government processes (Aworka et al., 2022; Foster et al., 2023; Gwagwa et al., 2021; Olabimpe, 2024). Also, AI is employed in Ghana and Morocco to enhance decision-making in entrepreneurship and business development of various sectors based on product development acceleration, improve quality, cut production costs, and reduce errors (Amankwah-Amoah & Lu, 2022; Amoako et al., 2021).

Despite AI being regarded as new and underdeveloped in Africa's tourism sector, it significantly impacts the industry in various ways, including tourists' awareness, perception, and attitude to AI, concerns about AI replacing human jobs, and ethical issues related to societal morals and values, which generally affect tourist travel decisions (Ivanov & Webster, 2017). Additionally, A study conducted in Egypt found that large and medium-scale tour operators use more AI techniques than small and micro-scale operators, indicating significant differences in the attitudes towards AI tools among Egyptian tourism companies confirmed to impact tourist travel decisions (Gaafar, 2020). However, prior studies done specifically on the influence of AI applications on tourist travel decision-making in Africa are inadequate.

Additionally, prior studies conducted in Tanzania focused on the use and integration of AI in decision-making in other sectors revealed to have a substantial impact on improving supply chain, forecasting accuracy and efficiency (Kikwete, 2024; Sukums et al., 2023). Besides, AI such as machine learning and predictive analytics enhance inventory management and resource allocation (Kikwete, 2024). Similarly, the adoption and application of AI have impacts on the Tanzania hospitality and tourism sector; Arusha utilised AI in risk mapping to wildlife and human distribution around the major tourist destination (Yi et al., 2021). In addition, Integrating AI with web-based safari review systems proved that AI-integrated websites assist and enhance tourist travel decisions by recommending locations, events, references, and recommendations (Silaa, 2023). However, there are inadequate previous studies that major in the application of AI to influence tourist travel decisions in Arusha.

1.2 Problem Statement

The previous studies done based on AI and decision-making in other global sectors revealed that AI is revolutionising human decision-making through the use of big data, algorithms, and computer power, as a result, there is a high demand for information systems researchers to examine their impact on decision and contribute to the success of AI applications (Amankwah-Amoah & Lu, 2022; Amoako et al., 2021). Moreover, recently, AI has emerged as a transformative tool in global tourism, offering capabilities such as personalized travel recommendations, dynamic pricing, enhanced customer engagement, and efficient resource management (Aworka et al., 2022; Foster et al., 2023). Despite its potential, the adoption and application of AI by tour operators in Arusha remain limited, with most operators relying on traditional methods for marketing, itinerary planning, and customer interaction

Similarly, the rapid integration of AI within the global tourism sector has prompted significant concerns regarding the extent to which it influences tourists' decision-making processes (Stylos, 2020). Furthermore, AI automation and application in the tourism industry indicate that AI significantly enhances service provision and decision-making through automation (Ivanov & Webster, 2019). Additionally, AI applications in prediction and forecasting have been shown to improve service quality, tourist satisfaction, revenue, and marketing efforts (Adam et al., 2021; Calvano et al., 2020; Fararni et al., 2021; Huang, 2013). Moreover, the adoption of AI-powered online services by companies to offer 24/7 customer support, personalised service recommendations, improved tourist reviews and service delivery concluded the critical roles in impacting tourist travel decisions (Echavez et al., 2012; Huang et al., 2022; Nam & Dutt, 2020). However, inadequate studies have been done globally specifically on the influence of AI on tourist travel decisions from the perspective of tour operators, hence creating a knowledge and information gap between the researchers and tour operators.

Earlier studies conducted in Africa on AI and decision-making in other industries revealed that AI and algorithmic decision-making systems, widely used for efficiency improvement, have broad applications, such as streamlining public-sector procurement and aiding in the reduction of fraud and corruption in Africa (Aworka et al., 2022; Kipkorir-Songol et al., 2021; Olabimpe, 2024). Additionally, AI is transforming the health sector by enhancing decision-making through

constraint reasoning and mixed-initiative frameworks, thereby enhancing patient and doctor experiences and work environments, thus contributing to healthcare development (Obasa & Palk, 2023; Olaide Babarinde et al., 2023).

Besides, several studies conducted in Botswana and South Africa tourism industries discovered that AI was used to operate activities from front to back-office operations like prediction analysis, virtual assistance, and conversational experiences (Ndoro, Johnston, & Seymou, 2020). In addition, these applications have been found to enhance not only tourist travel decisions but also customer service and interaction, improving overall tourist experiences (Mustafa et al., 2024). Not only that, a study conducted in Kenya focused on enhancing travel agency recommender systems through AI-driven social media, discovered that offering tailored suggestions based on user preferences and recommendations significantly impacts tourist travel decisions (King'ori, 2023). Yet, inadequate studies have been done on Africa precisely on the influence of AI on tourist travel decisions, which creates a knowledge and information gap among researchers and stakeholders.

Furthermore, Tanzania is among the pioneers of East African countries in integrating AI in its various sectors ranging from health, agriculture, finance, weather forecast, and mining (Amankwah-Amoah & Lu, 2022; Kipkorir-Songol et al., 2021; Omary, 2023). Additionally, the Tanzania health sector has employed AI to support clinical decision-making based on disease diagnosis, predictive disease outbreak analytics, clinical decision support system, electronic health records, drug discovery and workflow (Chikusi et al., 2022; Masanja & Mkumbo, 2020; Yi et al., 2021). Despite this, AI has been applied in the tourism industry to stimulate tourist travel decisions by integrating it into web-based safari review systems, locations and events suggestions, and recommendations (Silaa, 2023). Moreover, the lack of understanding and integration of AI technology among tour operators hinders their ability to meet evolving traveller expectations, particularly as tourists increasingly rely on AI-driven platforms for planning and decision-making (El-Mofock, 2023). This gap presents challenges in capturing the full potential of the tourism market, particularly for younger, tech-savvy travellers who demand personalized and seamless experiences.

Despite Arusha being a popular tourist region in Tanzania with numerous tourist destinations, tour companies, and a well-developed hotel sector, there is limited use of AI by tour operators. This is exclusively evident in the lack of influence AI has on tourist travel decisions, particularly from the perspective of Arusha. Therefore, gaining insights into how AI influences tourist travel decision-making is essential for stakeholders aiming to enhance service delivery and support the strategic advancement and technological development of the tourism sector in Arusha. This underscores the pressing need to investigate how AI is applied to influence tourists' travel decisions in Arusha, Tanzania from the perspective of tour operators.

1.3 General Objective

The general objective of the study was to investigate the application of Artificial Intelligence in influencing tourists' travel decisions in Arusha.

1.4 Specific Objectives

The specific objectives of the study are;

i. To identify the current use of AI by Arusha's tour operators
ii. To assess the effectiveness of AI in influencing Arusha's tourist travel decision-making process
iii. To analyse the challenges of AI usage by tour operators in Arusha

1.5 Research Questions

i. What is the current use of AI by Arusha's tour operators?
ii. How effective is AI in influencing Arusha's tourist travel decision-making process?
iii. What is the challenge of AI usage by tour operators in Arusha?

1.6 Scope and Limitation of the Study

1.6.1 Scope of the Study

Based on the Geographical scope, the research on the application of AI by tour operators to influence tourists' travel decisions was conducted in Arusha, Tanzania. Arusha is an important centre for Tanzania's tourism industry, playing a crucial role in the country's GDP through foreign currency contribution. The study intended to investigate the role of AI in shaping tourists' travel

decisions within the industry, thus enriching our understanding of AI's influence on travel choices. The study involved key stakeholders, specifically tour operators registered in Arusha. These stakeholders are crucial in providing information, planning, and facilitating interactions with tourists throughout their decision-making journey. The study was scheduled to take place from January 2025 to April 2025.

Furthermore, for thematic scope, the research mainly focused on the practical uses of AI within tourism-related roles. Particular elements of AI that were covered include: Tailored Suggestions: The application of AI to recommend personalized itineraries, packages, or experiences based on tourist preferences, behaviors, and previous travel history. Automated Customer Support: Tools like chatbots and virtual assistants that provide answers to inquiries, assist with support, and manage bookings. Forecasting Tools: Resources utilized by tour operators to predict demand, adjust pricing, and allocate resources using data-informed insights. Language Translation Services: AI-powered tools that facilitate communication between tour operators and visitors from other countries. Tourist Profiling and Categorization: The use of machine learning to classify tourists for focused marketing and enhanced service delivery. AI in Marketing Solutions: The application of AI tools for email marketing, social media campaigns, and digital advertisements aimed at impacting travel choices.

1.6.2 Limitations of Study

This study was conducted in Arusha, Tanzania, and focused on the use of AI in influencing tourists' travel decisions. Several potential limitations were considered, including the geographical scope and time constraints. The geographical scope presented challenges due to the nature of the location and the industry. These challenges included accessibility, logistics, cultural and language barriers, data availability and quality, legal and ethical constraints, industrial seasonality factors, and resource constraints. Furthermore, the study involved a large number of respondents and used various data collection techniques, which were highly time-consuming.

Mitigation of Study Limitations was as follows: To address geographical and logistical challenges in Arusha, the study used a multi-modal data collection approach, combining physical and online methods. When in-person visits to remote tour operators were impractical, online questionnaires

via Google Forms, and email correspondence were utilised. Collaboration with local tourism networks, such as the Tanzania Association of Tour Operators (TATO), broadened access to diverse respondents. Additionally, due to the time constraints of the research schedule and the seasonal nature of tourism, the study employed efficient sampling methods such as the Random sampling technique to select tour operators who were actively engaged in AI-related practices. Also, research assistants were brought on board to help distribute and collect questionnaires. This approach not only sped up data collection but also ensured comprehensive geographic and demographic representation.

Furthermore, to overcome the language barrier and cultural difference, the questionnaires were translated into Swahili, the widely spoken local language, ensuring greater comprehension among respondents. Also, to ensure data availability and quality, both open-ended and closed-ended questionnaires were used in a self-administered and assisted approach. The study addressed ethical concerns by following strict standards, including informed consent, anonymity, and secure data storage. Respondents were assured that their data would only be used for academic purposes and that sensitive information would remain confidential. Ethical clearance was obtained from relevant authorities to validate the study.

1.7 Significance of Study

This research could be useful to the corporate community, government, academia, and the general public in Tanzania who work in the tourism sector. The revealed information could be tremendously valuable to the hospitality, tourism, transportation, and national economies since it could affect the understanding and acceptance of AI in the following ways:

1.7.1 The Government

The study's results could assist the government in shaping laws and policies that promote the adoption and use of AI in line with national morals and ethics, while also enhancing public awareness of best practices for AI usage.

1.7.2 The Tourism Operators

The business owner could gain significant advantages from advancements in financial forecasting, customer support systems, and big data analysis and interpretation. These improvements could enhance business performance and maximize profits for the organization, making them a top priority.

1.7.3 Tourists

The study's conclusions could serve as a crucial benchmark for travelers to understand, embrace, and apply AI in various contexts, including decision-making, planning, and enhancing service quality.

1.7.4 The Academicians and Future Researchers

The study findings could pave the way by creating and identifying other gaps that researchers have. For researchers, the study could create an opportunity for other scholars to further study AI, not only in the travel industry but also in other industries. Moreover, for academicians, it could provide updated information and knowledge based on AI and tourist travel decisions, which could be used to enhance the skills of academicians and students.

Chapter Two:
Literature review

2.1 Overview

This chapter focuses on theoretical and empirical literature reviews. The theoretical review focused on the relevant theories. The empirical literature review aimed to explore and understand the existing knowledge by delving into the depth of the problem and identifying any gaps that would help conduct the study.

2.2 Theoretical Review

The study reviewed three theories Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB) and Customer Experience (CX Theory). The TRA, TPB and CX theories were adopted because they are most relevant to this study.

2.2.1 Theory of Reasoned Action

The theory of Reasoned Action (TRA), initially proposed by Fishbein and Ajzen in 1975, argues that an individual's behavioural intentions are influenced by their attitudes towards behaviour and subjective norms (Fishbein & Ajzen, 1975). Regarding the use of AI technology in travel decisions by tour operators, TRA argues that a tour operator's intention to use AI-driven tools is influenced by both their attitudes towards these technologies and the perceived social norms or pressures surrounding their use (Alam et al., 2024). Also, consumers' decisions to use new technology are mainly influenced by various determinants, such as the way and timing of its use. Also, a factor that influences a person's behaviour is an attitude which comprises cognitive, emotional, and behavioural components. Therefore, behavioural intention to engage in a certain activity refers to a person's feeling to use a technology, which is influenced by its ease of use and usefulness (Hasni et al., 2022).

A study on the adoption of augmented reality by Malaysian travel and tour operators found that perceived relative advantages and compatibility positively influenced their intentions to implement the technology (Alam et al., 2024). Also, Subjective norms like the social expectations from stakeholders, such as clients, industry peers, and competitors, regarding AI use, significantly influence tour operators' intentions to adopt new technologies (Ho et al., 2022). Additionally,

Topsakal & Çuhadar, (2024) study used the Unified Theory of Acceptance and Use of Technology (UTAUT2) to understand tourists' acceptance of AI technologies. They found that performance expectation, facilitating environments, and hedonic motivation significantly influenced tourists' intentions to use AI-enhanced tour guide apps, aligning with TRA's emphasis on attitudes and subjective norms.

Also, A recent study by Nguyen et al., (2023) found that trust and perceived enjoyment significantly influence tour operators' acceptance of AI chatbots. The Technology Acceptance Model (TAM), which shares foundational concepts with the Theory of Reasoned Action (TRA), revealed that perceived ease of use, trustworthiness, and enjoyment significantly impact tour operators' intentions to use AI chatbots, highlighting the role of individual attitudes and perceptions in AI technology acceptance. Furthermore, Choung et al., (2023) explored the significance of trust in adopting AI technology. Their findings revealed that trust greatly influences the intention to use AI, primarily through perceived usefulness and attitudes toward the technology. This aligns with the TRA, which highlights the impact of attitudes and subjective norms on behaviour intentions. By analyzing these factors, TRA suggests that attitudes toward technology and the influence of perceived social expectations motivate tour operators to adopt AI. Understanding these elements can simplify the development of strategies to encourage AI adoption in the tourism industry.

Despite this, TRA is foundational in understanding behavioral intentions; however, it has faced critiques regarding its application to technology adoption, including the acceptance of AI by tour operators. Firstly, according to Otieno et al., (2016) argued that the theory has limited consideration of external factors because it primarily focuses on individual attitudes and subjective standards within the TRA. As a result, it may overlook crucial outside influences such as user readiness, awareness of innovation, and the overall environment. While TRA does not adequately address these issues, factors like organizational support and technological infrastructure are essential for the successful deployment of AI by tour operators. Also, Hussain et al., (2016) revealed that TRA places a strong emphasis on rational decision-making, assuming that individuals make choices based on logical evaluations. However, this perspective may overlook habitual behaviors and decisions that require minimal cognitive effort. For tour operators, the decision to

adopt AI might be influenced more by established routines or heuristic methods than by rational analysis, which TRA does not fully consider. Furthermore, Unlike the Theory of Planned Behavior (TPB), the TRA does not consider perceived behavioural control, which refers to an individual's perception of their ability to perform a behaviour. This omission is significant in technology adoption contexts, where the perceived ease or difficulty of using AI systems can significantly influence decision-making (Paul et al., 2016).

2.2.2 Theory of Planned Behavior

The Theory of Planned Behaviour (TPB), developed by Ajzen in 1991, expands on the Theory of Reasoned Action by incorporating the concept of perceived behavioural control alongside attitude and subjective norms aiming to predict a person's intention to engage in a certain behaviour (Ho et al., 2022). Subjective norms perceived behavioural control, and attitudes toward AI adoption collectively influence the decision-making process of tour operators regarding the integration of AI technologies into their services (Alam et al., 2024). In addition, Subjective norms reflect the social pressures from stakeholders such as clients, industry peers, and regulatory bodies that affect operators' willingness to adopt AI (Habes et al., 2023).

Moreover, Perceived behavioural control pertains to operators' self-assessed ability to effectively implement and utilize AI, taking into account factors like resource availability, technical expertise, and organizational readiness (Han et al., 2020). Meanwhile, attitudes toward AI adoption encompass operators' positive or negative evaluations of integrating AI, which are shaped by perceptions of its usefulness, ease of use, and potential to enhance customer experiences (Pillai & Sivathanu, 2020). Together, these factors create a comprehensive framework for understanding AI adoption in the tourism industry.

Furthermore, TPB has been utilized in empirical research to explore how visitors embrace AI technologies. For instance, in their study on tourists' intentions regarding AI-enhanced tour guide applications, Topsakal & Çuhadar, (2024) found that hedonic motivation, enabling conditions, and performance expectancy significantly influenced acceptance. Their research highlights how tourists' perceptions of AI applications are shaped by their perceived usefulness and enjoyment. Similarly, Chi et al., (2022) examined how travelers perceive the use of AI devices in tourism

services. Their findings indicate that acceptance of the technologies is primarily influenced by cognitive reasons, such as perceived utility, as well as emotional responses, like enjoyment. Moreover, they highlighted that visitors' intentions to engage with AI technologies are significantly affected by social pressures and their sense of control over using these devices.

Despite this, TPB is an extension of the TRA, arguing that attitudes, subjective standards, and perceived behavioral control influence an individual's intention to perform a behavior. While it is frequently used to analyze AI adoption in the tourism industry, it has faced criticism. According to Shi et al., (2021) TPB's focus on individual intentions overlooks broader organizational and environmental influences, such as organizational readiness, competitive pressure, and technological infrastructure. Studies integrating the Technology-Organization-Environment (TOE) framework with the Diffusion of Innovation (DOI) theory emphasize the importance of these factors in technology adoption decisions for tour operators. Also, TPB fails to consider the alignment between a technology's perceived value and an organization's goals, a crucial factor in mediating the relationship between perceived advantages and adoption intention, suggesting a potential lack of explanatory power in such contexts (Alam et al., 2024; Ho et al., 2022). In addition, the TPB model is criticized for its static approach, failing to consider the dynamic nature of technology adoption processes, which are often iterative and influenced by feedback, learning, and evolving perceptions (Chi et al., 2022).

2.2.2 Customer Experience (CX) Theory

Customer Experience (CX) theory emphasizes the holistic perception customers have of their interactions with a brand, from pre-purchase to post-purchase (Chi et al., 2022). Similar to this, CX Theory emphasizes the holistic perception customers form through their interactions with a company's products, services, and touchpoints including cognitive, emotional, and sensory dimensions of customer interactions before, during and after the trip (Lemon & Verhoef, 2016). In tourism, CX is crucial for shaping travel decisions, with tourists seeking personalized experiences (Topsakal & Çuhadar, 2024). The integration of AI by tour operators has transformed CX, influencing tourist behaviour, and driving competitive advantage (Tong et al., 2022).

Moreover, Tour operators can enhance customer experience (CX) by using customer journey mapping (CJM), which is a strategic analytical tool or design model that visualizes the complete experiences of tourists (Lemon & Verhoef, 2016). This mapping technique helps identify key touchpoints and areas that may need improvement (Heuchert, 2019; Paz et al., 2018). Also, CJM provides a descriptive representation of the customer experience and serves as a prescriptive framework for organizations to improve processes (El-Mofock, 2023). By integrating AI into this process, tour operators can create a more personalized and efficient approach to influencing travelers' decisions (Sarpong, 2016).

AI tools like virtual assistants and chatbots improve the pre-travel experience by addressing queries, recommending destinations, and providing booking help by minimising friction and enhancing customer experience, leading to increased satisfaction (Bulchand-Gidumal et al., 2024). In addition, AI applications offer real-time updates, language translation, and local recommendations, ensuring a seamless travel experience. This approach aligns with customer experience theory by addressing the needs of tourists promptly and effectively (Gretzel et al., 2015). Furthermore, Post-travel engagement with AI allows tour operators to collect feedback and assess customer sentiment, promoting continuous service improvement. This engagement helps build long-term relationships and encourages repeat business (Samara et al., 2020).

The CX theory benefited this study by exploring AI integration into customer journey touchpoints to make travel decisions more flexible and easier. AI integration helps understand customers' desires, such as vacations, recreation, and special events (Rana et al., 2022). It also helps researchers understand how tourists search for information, such as destinations, accommodations, activities, and reviews, and compare options (Singh, 2023). AI can streamline the search process by providing tailored suggestions, real-time information, and personalized itineraries (Nuruzzaman & Hussain, 2018). Moreover, CX helps identify the decision-making process for booking flights, accommodations, and tours, facilitating the automated process of services (Ivanov & Webster, 2024). Similar to this, CX provides insight into post-purchase reflection, enabling researchers to explore how AI analyzes post-travel feedback through sentiment analysis of reviews and social media posts (Mussa, 2020).

However, the theory faces some criticism as follows, firstly, the emphasis on human-centric interactions is a key aspect of customer experience (CX) theory, which highlights the importance of personal touchpoints in creating memorable experiences (Khan & Iqbal, 2020). However, critics argue that this focus may limit the acceptance of AI technologies, which are often viewed as impersonal or lacking emotional intelligence (Moon et al., 2016). Tour operators, who heavily depend on personalized service, may resist adopting AI tools due to concerns that these technologies could diminish the essential human element of CX (Gursoy et al., 2019). Therefore, the theory does not sufficiently address how AI can enhance human interactions instead of replacing them.

Moreover, the current framework for integrating AI into customer journey mapping is inadequate, leading to scepticism among tour operators regarding AI's ability to enhance customer experience (CX) without disrupting existing workflows or alienating customers (Tussyadiah & Park, 2018). One major criticism is that the theory lacks clear guidelines on how AI can be effectively incorporated into the customer experience lifecycle. In addition, CX theory often neglects the ethical implications of using AI to collect and analyze customer data. Tour operators are worried about the potential misuse of tourist information, which could undermine trust and adversely affect the customer experience (Mariani et al., 2022). A significant criticism of the theory is that it does not address how AI-driven data collection aligns with ethical practices in CX. Furthermore, CX theory often faces criticism for being overly Western-centric, which can restrict its relevance in diverse cultural contexts. Tour operators in non-Western regions may have different perceptions of artificial intelligence (AI) and its role in shaping customer experiences (Shen et al., 2020). One key criticism is that the theory does not adequately consider cultural differences in AI acceptance and customer experience expectations.

2.3 Empirical Literature Review

This section discusses other related studies on AI and tourist travel decision-making conducted by various scholars. The study organises specific objectives into topics for an effective empirical literature review.

2.3.1 The History of Artificial Intelligence and Its Entry into Tourism

Artificial Intelligence (AI) has its roots in the mid-20th century, when Alan Turing proposed the concept of machines capable of thinking, which led to the creation of the Turing Test in 1950 (Gonçalves, 2023). Similarly, the origins of AI can be traced to early theoretical developments by Turing in the 1950s, with significant practical implementations emerging in the 1960s and 1970s (Warwick & Shah, 2016). The term "Artificial Intelligence" was officially introduced by John McCarthy in 1956 during the Dartmouth Conference (Bhutani & Sanaria2, 2023). However, it is in the past two decades that AI has experienced widespread commercial adoption, largely due to advancements in computational power and the availability of big data, impacting various sectors, including tourism (Duan et al., 2019). Initially, early AI applications were based on rule-based systems. However, advancements in machine learning (ML), neural networks, and deep learning in the 21st century have significantly transformed AI capabilities (Ivanov & Webster, 2019).

AI in the tourism industry has progressively improved efficiency, personalisation, and the overall customer experience (Gaafar, 2020). The evolution of AI has key milestones. In the pre-AI era (before the 2010s), the travel planning and booking process involved manual research, static pricing and limited personalisation where travellers relied on guidebooks such as Lonely Planet, word-of-mouth recommendations, and travel agents. Airlines and hotels used fixed pricing models with limited dynamic adjustments. Generic package tours dominated, with little customisation (Duan et al., 2019; Gonçalves, 2023). Furthermore, the customer service and support were human-dependent, with limited availability and slow response time (Gonçalves, 2023). Moreover, the operation efficiency was manual operation, human error in demand forecasting, and Mass advertisements such as brochures and TV ads with low targeting precision (Lemon & Verhoef, 2016).

In the early 2000s, the AI-powered recommendation systems, such as those used by Expedia and Booking.com, began to significantly influence travel decisions (Buhalis & Sinarta, 2019). Furthermore, in the early 2010s, the adoption of AI gained momentum alongside the digital transformation of the industry, driven by the rise of the internet and mobile technology. This period saw the emergence of AI-powered innovations like intelligent chatbots, predictive analytics, recommender systems, and real-time language translation tools (Gretzel et al., 2015). Moreover,

by this decade, chatbots, exemplified by KLM's AI assistant, and dynamic pricing algorithms used by airlines and hotels became commonplace (Ivanov & Webster, 2019). Furthermore, in the Post-2020, the use of AI-driven predictive analytics, facial recognition for check-ins, and AI-curated travel itineraries gained traction, further shaping the industry (Gretzel et al., 2020).

Fundamental changes brought by AI in the tourism industry have transformed the tourism sector in several significant ways, including personalisation and customer experience, where AI analyses user behaviour to provide tailored travel recommendations, such as those from TripAdvisor's AI suggestions (Santos & Gonçalves, 2021). Additionally, chatbots like Marriott's "ChatBotlr" offer 24/7 customer support (Stringam & Gerdes, 2021). Furthermore, Operational Efficiency in Hotels and Airlines where AI automates processes like check-ins through technologies such as Hilton's "Digital Key" and optimizes housekeeping schedules (Gretzel et al., 2015). In the airline industry, AI enhances dynamic pricing with tools like Hopper's price prediction and improves baggage handling (Gretzel et al., 2015). Also, Marketing and Demand Forecasting, where AI-driven sentiment analysis tracks customer reviews, enabling companies to adjust their marketing strategies accordingly (Buhalis & Sinarta, 2019). Predictive analytics also helps tour operators anticipate fluctuations in demand (Paul et al., 2016).

The adoption of AI in various tourism sectors, including hotels, airlines, tour operators, and travel agencies, has significantly increased recently (Nam & Dutt, 2020; Pillai & Sivathanu, 2020). Hotels lead the way in AI implementation, utilizing smart rooms with AI-controlled thermostats and robotic concierges, such as those found at the Henn-na Hotel in Japan (Ivanov & Webster, 2019). Airlines are also focusing on AI for pricing, fraud detection, and facial recognition during boarding (Tussyadiah & Park, 2018). Additionally, tour operators and travel agencies are leveraging AI to assist in customized itinerary planning, with examples including Utrip and Inspirock (Gretzel et al., 2020). Furthermore, virtual reality (VR) tours, such as AI-powered 360° previews of destinations, enhance pre-trip engagement (Mollah & Sebata, 2022).

The tourism sector is experiencing a transformative wave of innovation, with key areas of AI application making a significant impact as follows. Firstly, consider the realm of Online Booking Systems, where sophisticated algorithms operate like personal travel advisors, guiding customers

through the maze of flight, hotel, and experience selections based on their previous preferences and behaviors (Yeboah, 2020). This technology not only streamlines the booking process but also enhances the overall user experience, making planning a trip feel effortless (Huang et al., 2022; Mustafa et al., 2024). In addition, Multilingual Support Tools, such as Google Translate and advanced AI interpreters, act as bridges to overcome language barriers, enabling seamless communication for international travelers. This remarkable capability fosters genuine connections between tourists and local cultures, enriching their journey (Aleedy et al., 2019; Das, 2019).

AI is also revolutionizing Customer Service, with intelligent chatbots and voice assistants available around the clock. These virtual helpers provide immediate assistance in multiple languages, alleviating the reliance on human agents and ensuring that travelers receive support whenever they need it, regardless of time or place (Adam et al., 2021; Lemon & Verhoef, 2016). Moreover, the landscape of Marketing and Customer Insight is being reshaped by AI tools that analyze vast amounts of data to segment audiences and craft personalized advertising campaigns. This targeted approach enhances the relevance of promotions, drawing in potential travelers with tailored messages that resonate with their interests and desires (Bulchand-Gidumal et al., 2024; Mariani et al., 2022). Lastly, in the sphere of Destination Management, tourism boards harness the power of AI to meticulously analyze tourist patterns and behaviors. By understanding the ebb and flow of visitor traffic, they can develop focused and enticing promotional strategies that attract and engage travelers, ultimately boosting local economies and enhancing the visitor experience (Balushi, 2023; Orden-Mejía & Huertas, 2022).

The use of AI among clients, especially international tourists, is growing rapidly, where many tourists interact with AI tools without even realising it. For example, recommender systems on platforms like Google, Airbnb, and TripAdvisor are powered by AI, smart voice assistants such as Siri and Alexa are frequently used for travel inquiries and bookings as well and AI-based translation tools also help tourists navigate environments where they don't speak the native language (Adam et al., 2021; Ivanov et al., 2020; Ndoro et al., 2020). However, the awareness and understanding of AI among tourists vary significantly. According to a study by Tussyadiah and Park, (2018), while tourists value the convenience that AI offers, very few understand the technology behind it. This gap presents both challenges and opportunities for tour operators. Those

who can educate their clients and clearly communicate the benefits of their AI-enabled services can enhance trust and satisfaction.

2.3.2 Utilisation of AI in the Tourism Industry

This section describes the current uses of AI in the tourism industry, including customer service and interaction, personalisation and recommendation, revenue management and price optimisation, operation efficiency optimisation and service automation, and marketing and tourist insight.

In recent years, the tourism industry has seen an increase in the use of AI in customer care and interactions. AI-powered chatbots and virtual assistants provide round-the-clock client support, quickly managing routine questions, complex customer care tasks, reservation inquiries, and general information, according to several studies on AI in customer service and interaction (Adam et al., 2021; Nicolescu & Tudorache, 2022; Nuruzzaman & Hussain, 2018). AI is also utilized in marketing to guide travel decisions by offering reservation assistance, personalized recommendations, and general travel information through AI-powered chatbots (Cheng & Jiang, 2022).

Recent research indicates that European companies have implemented chatbots like Skyscanner, Kayak, Hello Hipmunk, the HelloGBye travel assistant, and the Sam virtual travel assistant on their websites, mobile applications, and social media platforms. These chatbots aim to enhance tourist travel decisions by offering instant responses to inquiries and enabling automated conversational interactions (Zlatanov & Popesku, 2019a). Moreover, Aleedy, Shaiba, and Bezbradica, (2019), contended that companies employ chatbots in customer service to assist with a customer's questions, complaints, and interactions via the desktop interface by automatically generating chats about a computer and a human using natural language processing developed by interactive AI to improve travel choices and experiences. To analyse tourist inquiries and enhance customer interaction, including customer profiling and contextual assistance, integrative AI in customer service employs various features. These features include voice-activated support, automated processes, interactive voice response, review and feedback systems, and emotional recognition. Additionally, it utilizes data collected from both short-term and long-term memory,

recurrent neural networks, and convolutional neural networks for emotional acknowledgement (Maher, 2020).

According to Onyango and Kesa, (2018) identified Kenya and South Africa as leading nations within the Fourth Industrial Revolution, experiencing rapid technological advancements in the hotel industry. The survey revealed that while South Africa surpasses Kenya in social media and mobile phone usage, Kenya leads in internet accessibility and mobile money transfer rates. Additionally, both countries are experiencing significant increases in web-based reservations thanks to the integration of AI into decision-making processes (Nguyen et al., 2023). A study conducted in the Western Cape region of South Africa found that businesses are using AI across various aspects of their operations, from front-office to back-office tasks. This includes applications in forecast analysis, virtual support, travel decision-making, and conversational experiences, all of which enhance interactions and services for tourists (Ndoro, Johnston, & Seymou, 2020).

AI significantly enhances the personalisation and recommendation of products, content, pricing, emails, websites, and chatbots in the tourism industry, enhancing the overall experience and efficiency (Troussas et al., 2023). Moreover, personalisation and recommendation system uses AI and machine learning to create personalised experiences by analysing tourist information, involving browsing history, social media, website searches, app interactions, and demographic information to influence tourist decisions (Goldenberg et al., 2021). Additionally, AI Chatbots-based recommendation service software helps customers manage time and budgets by providing convenient information, bookings, and learning about various tourist products and services from any location (Kim, Jung, & Ryu, 2020).

Despite the availability of nearly 450 Apple App Store applications offering personalised tourist services, Siri and Alexa have been widely adopted globally because they support various functions such as destination locations, maps, trip guides, transport, language translation, forex exchange, and service providers (Fararni et al., 2021). Similarly, Global distribution and reservation systems like Amadeus, SABRE, IBM Watson, Amazon Web Services, Intelity, and TripAdvisor are leveraging AI to analyse tourist data, provide personalised experiences, and manage travel services

(Foris et al., 2021; Patibandla et al., 2019). Furthermore, a China study reveals that Artificially Intelligent Recommendation Systems (AIRS) significantly improve travel decision-making by simplifying searches, offering personalised recommendations, managing information overload, and providing customised options based on user preferences and feedback, mitigating risks, and enhancing trust (Shi et al., 2021).

Morocco uses AI-integrated Tourism recommendation systems to enhance user experience, simplify trip planning, and boost profitability by offering personalised recommendations based on user interests and past behaviours (Badouch & Boutaounte, 2023). Likewise, Kenya's study found that machine learning-enhanced travel agency recommender systems on social media X network, specifically Twitter, effectively influence tourist travel decisions based on user destination preference and historical data (Wambaire, 2023). However, Egypt's study reveals AI recommendation system improves the Muslim tourism journey by addressing information overload and enhancing travel decisions through social media analytics and a tourism recommendation framework (Battour et al., 2022).

A previous study conducted in Tanzania examined web-based safari review systems and found that AI influenced elements within reviews, such as references to specific locations and events. This interference affected the dataset used to train machine learning models, thereby impacting the accuracy and effectiveness of AI-driven travel recommendations. Ultimately, this influence played a role in shaping tourists' travel decision-making (Silaa, 2023). However, other studies suggest that AI-driven recommendations were highly used in Tanzania's healthcare, finance and agriculture sectors compared to the hospitality and tourism sectors (Cossy-Gantner et al., 2018; Kipkorir-Songol et al., 2021; Mushi et al., 2022; Mustafa et al., 2024).

AI plays a crucial role in revenue management and pricing optimization by enabling dynamic pricing, enhancing revenue generation, increasing tourist satisfaction, supporting predictive analytics, and facilitating real-time adjustments to pricing strategies (Calvano et al., 2020). Likewise, effective revenue management is crucial for the success of hospitality and tourism businesses due to intense competition where companies gain competitive advantages by employing AI capable of processing enormous amounts of data to enhance revenue and pricing optimisation

(Huang, 2013). Furthermore, the employment of Predictive analytics and AI have revolutionised return management by estimating demand using historical data, market patterns, consumer behaviour, and other variables like climate, events, and economic indicators (Pillai, 2023).

Furthermore, AI continuously improves tourism industry projections through machine learning algorithms, enabling organisations to make well-informed decisions instantly. By taking a proactive approach, businesses may optimise income potential by dynamically altering prices (Yu & Chen, 2022). Additionally, a study conducted in Jordan on the effects of AI on revenue management and product pricing optimisation revealed a notable 30% increase in revenue collection following the initial phase of implementing state-of-the-art AI algorithm pricing strategies (Chintasi et al., 2024). Similarly, based on a study conducted in India, AI-powered pricing strategies have proven effective in price optimisation and improving tourist acquisition by responding to real-time market conditions and market segments, thus enhancing tourist decision-making (Sharma, 2023).

AI is increasingly utilized to boost operational efficiency across the travel industry. For instance, AI-driven navigation systems can dynamically respond to traffic conditions, construction zones, and road incidents, thereby ensuring a more seamless travel experience for tourists (Mounika, 2020). Also, In the realm of hotel booking, AI platforms analyze historical travel data, market dynamics, and individual user preferences to recommend suitable accommodations, optimal travel routes, and cost-effective alternatives. These systems also incorporate real-time variables such as weather conditions, seasonal pricing, and local events to help travelers make informed decisions that save both time and money (Chaplot et al., 2021). AI is revolutionizing hotel operations by improving service automation, forecasting guest arrivals, and enabling efficient resource allocation. Technologies like robotic housekeeping and AI-assisted meal customization enhance operational precision. AI supports functions like guest experiences, energy usage optimization, inventory management, and financial planning. In marketing, AI personalizes services to align with visitor preferences, enhancing customer engagement and satisfaction.(Bulchand-gidumal, 2022).

Automating various types of data using AI-driven marketing can enhance businesses' understanding and prediction of visitor behaviour. Moreover, companies like Netflix utilize machine learning algorithms to offer content tailored to local preferences (Babatunde et al., 2024; Duan et al., 2019; Rana et al., 2022). On the other hand, Facebook uses AI-based advertising placement techniques to enhance segmentation and targeting, while Amazon gathers specific information to provide a comprehensive overview of consumer purchasing behaviour (Kopalle et al., 2022). Likewise, AI-powered hospitality and tourism marketing allows companies to create tailored strategies based on consumer preferences, including personalised emails, advertisements, and recommendations. This is achieved through predictive analytics, integrated interactions, chatbots, and virtual assistance systems, which enhance travel decision-making by predicting trends and anticipating tourist needs (Bulchand-Gidumal et al., 2023). Besides, AI-powered marketing solutions can help businesses reach marginalised market communities, potentially reducing economic inequality (Kopalle et al., 2022).

However, Ghana's study showed that AI integration for tourist insight through enhancing natural language algorithms significantly impacts the resources, earnings, and expansion of small and medium enterprises in sub-Saharan Africa. This was achieved by Google AI lab in Accra Ghana which integrated audio and transcript from more than 2000 African languages (Yeboah, 2020). Additionally, Babatunde et al., (2024) discovered that AI's potential in personalised marketing is significant, but strategic planning is crucial, including investing in robust data infrastructure and analytics capabilities to effectively leverage AI-powered personalisation in their marketing efforts. Despite AI's significant impact on hospitality and tourism marketing strategies, AI applications found to have a complicated and multifaceted influence on the tourism market labour both with opportunities and challenges in Algeria (Kerboua, 2024).

2.3.3 AI and Tourist Travel Decision-Making

This section describes how effective AI is in enhancing tourist travel decision-making at different stages, such as pre-purchase, purchase, and post-purchase decisions. It covers personalised, accurate information, real-time information and precise recommendations, predictive analytics for accurate pricing and availability, and chatbots for instant assistance. Further, it discusses the

effectiveness of AI language translation for improved customer satisfaction, inquiry-to-booking conversion rate, operational efficiency, and tourist travel options accuracy.

AI enables the customization of tourism experiences by analyzing users' browsing history, preferences, and behavioral patterns to generate tailored suggestions for destinations, lodging, activities, and travel plans (Bulchand-Gidumal et al., 2023). Moreover, these AI-driven systems have demonstrated greater efficiency in presenting relevant travel choices and enriching the overall tourist experience, thereby significantly shaping travel-related decisions (Shi et al., 2021). Likewise, Pillai and Sivathanu, (2020) contended that AI-generated personalized recommendations play a crucial role in influencing travellers by offering compelling and contextually appropriate options.

Travellers feel more connected to the suggestions generated by AI-driven customization. These suggestions can include options based on past travel experiences or activities that match personal interests. This personalized approach enhances the decision-making process, making it more enjoyable by offering a curated selection that feels tailored to the individual (Alotaibi et al., 2020; Shi et al., 2021; Troussas et al., 2023). Furthermore, Khan and Iqbal, (2020) revealed that beyond pre-travel, AI-powered customer service improves customisation by offering real-time guidance and recommendations during the trip, boosting visitor experiences by increasing engagement and enjoyment through customised itineraries and on-the-go recommendations for activities, meals, and sights based on current interests and surroundings.

Real-time Information and Recommendation accuracy have been shown to have an impact on tourist travel decisions in various stages of the customer journey (Heuchert, 2019; Paz et al., 2018). Today's tourists are significantly influenced by AI's ability to process large databases quickly and analyze data in real-time (Babatunde et al., 2024; Chen & Wei, 2024). Also, AI-based systems utilize various data sources to provide relevant and timely recommendations throughout the trip planning process and during the trip itself. These sources include historical trends, visitor preferences, climate conditions, local events, and real-time location tracking (El Archi & Benbba, 2023; Kazak et al., 2020).

Furthermore, the key to this efficacy is AI's ability to quickly adapt and respond to changing conditions, allowing travellers to make informed decisions on the spot due to real-time updates from AI tools (Singh, 2023). Likewise, AI-driven recommendations help clients quickly find last-minute hotel deals, suggest local activities tailored to their interests, and provide alternative routes to avoid traffic congestion (Bulchand-gidumal, 2022). Additionally, AI's real-time data and suggestions significantly influence tourists' judgment, fostering a sense of dependability and trust by providing precise, current information, boosting their confidence in their decisions and improving their overall trip experience (Stankevich, 2017).

According to an Algerian study on digital transformation and AI in tourism, several nations have made significant strides in utilising real-time information to digitise their cities. This has given Algeria a competitive advantage and a prominent position in the global market, which has attracted a sizable number of tourists from all over the world (El-Moffock, 2023). Correspondingly, implementing chatbot tour guides in some African destinations has embraced AI where these chatbots enhance visitor experience and information accessibility by providing real-time support, travel advice, and personalized recommendations to users (Orden-Mejía & Huertas, 2022). In addition, South Africa's study revealed that AI integrated into real-time communication platforms impacts website applications by improving the recommendation rate compared to other non-AI-integrated platforms (Duarte et al., 2020). However, the done in Egypt revealed the deficiency of the usage of AI in enhancing real-time communication with customers, providing tailored recommendations, and utilizing technology to assess tourist feedback and reviews (Gaafar, 2020).

Predictive analytics for pricing and availability accuracy improves tourists' travel decision-making by providing information such as weather, road traffic, climate conditions, and prices of accommodations, transportation, and destinations (Calvano et al., 2020; Lopakov et al., 2022). Additionally, previous studies conducted by (Basiri et al., 2018; Calvano et al., 2020; Lopakov et al., 2022; Yu & Chen, 2022) discussed how AI has created a new era of forecasting in the complex and ever-evolving travel industry, altering the influence of cost and availability on travel decisions. In addition, nowadays tourists have access to crucial information about pricing and availability patterns due to the presence of AI with predicting and forecasting capabilities, significantly

altering their decision-making processes (Al Shehhi & Karathanasopoulos, 2020; Yu & Chen, 2022).

Furthermore, AI's predictive capabilities extend beyond pricing and availability forecasting; nonetheless, by utilising demand-predicting algorithms and historical data, these systems allow clients to reserve their desired accommodations or services before they become constrained (Ndoro et al., 2020). Additionally, AI forecasting and projections assist travellers in making reservations on time, ensuring their desired options and avoiding disappointment due to limited availability (Ndoro et al., 2020; Patibandla et al., 2019; Yu & Chen, 2022). Similarly, the influence of AI-powered predictive analytics on travel decision-making extends beyond financial savings; these solutions enhance the entire planning process by fostering trust and reducing uncertainty because travellers depend on AI-provided predictive insights to make reservations and plan their itineraries, which gives them a sense of control and assurance in their choices (Adam et al., 2021). Moreover, Al Shehhi and Karathanasopoulos, (2020) in Riyadh, Saudi Arabia, found that hotels using sophisticated forecasting algorithms, like machine learning and artificial intelligence (AI), performed better in the hotel operation arena than those using more conventional forecasting tools, like Seasonal Autoregressive Integrated Moving Average (SARIMA).

The efficiency of AI chatbots for quick assistance in tour planning, guest reservations, and support, giving 24-hour assistance to tourist organisations, improves and enhances tourist travel decisions (Alotaibi et al., 2020; Nguyen et al., 2023; Singh, 2023). Likewise, Chatbots improve communication, generate leads, reduce administrative costs, and give businesses an edge over competitors. However, its effectiveness can differ depending on the specific situation and application, as well as how easy, trustworthy, intelligent, and valuable people believe it to be (Pillai & Sivathanu, 2020). Furthermore, visitor confidence in chatbots is indirectly impacted by empathy replies and anonymity, where the empathy reply enhances trust, but anonymity promotes engagement, and trust in AI chatbots for hospitality operations stays unaffected (Shi et al., 2021). Besides, While the empathetic nature of AI chatbots maintains user interactions, building trust and encouraging continued use, attitudes towards anonymity are crucial in the hotel industry because IT-related behaviour can lead to identity fraud; therefore, client decisions and opinions of AI chatbots are indirectly influenced by privacy and empathic responses (Nguyen et al., 2023).

AI Language Translation and Communication accurateness were very crucial in prompting non-native speaker tourist travel decisions in numerous steps of the decision process (Law et al., 2018). Also, Bulchand-gidumal, (2022) suggests that AI can revolutionise travel by creating automated translators and systems that aid in location navigation, event participation, and cultural learning, enabling real-time conversations with customers, thereby overcoming communication barriers and enhancing the overall travel experience. Likewise, AI advancements enhance travel experiences by providing real-time language translation, facilitating seamless communication in foreign environments, and boosting confidence and independence in decision-making through advanced machine learning algorithms (Das, 2019). Furthermore, by retaining linguistic context competency to impact travel decisions and promote deeper relationships and comprehension of local customs, AI uses natural speech algorithms to deliver accurate translations and cultural nuances, improving cross-cultural interactions between visitors and locals (Getchell et al., 2022).

2.3.4 Challenges of AI Usage by Tour Operators

This section focuses on the description of challenges of AI usage by tourism operators such as limited adoption of advanced AI, privacy and ethical concerns, AI integration challenges, data quality and accessibility, and skill gap and training needs.

According to El-Moffock, (2023), the difference between people who have access to AI technology and those who do not is what causes the adoption gap of sophisticated AI. Also, the study continues to reveal that AI skills and knowledge gaps among tourism professionals deter its effective implementation, and the high cost of digital and AI to small and medium tourism enterprises poses an adoption challenge. Similarly, Feng, (2021) revealed that the costs of implementing AI were quite high, these costs included employing specialists, retraining staff to use the new technology, and expenses related to buying, installing, maintaining, and updating software.

Additionally, data privacy and security have proven to hinder the adoption of AI in the tourism sector due to the contradiction of AI laws and regulations across various countries (Duan et al., 2019; Nam & Dutt, 2020). Additionally, Ivanov and Webster, (2017) study based on the adoption of Robots, Artificial Intelligence, and Service Automation (RAISA) by tourism businesses showed

that some employees and customers fear the adoption of AI believing AI might replace human labourers and lead to the spread of companies negative publicity. Therefore, Bulchand-Gidumal et al., (2023) the study recommends that for the successful adoption of AI, Companies must create marketing efforts to inform clients, suppliers, and stakeholders about technological developments. AI poses significant privacy and ethical concerns due to its ability to extract patterns from vast amounts of data. This raises concerns about potential societal takeover, potential biases in AI algorithms, particularly in gender and race, and the potential for the tourism industry to lose its welcoming atmosphere hence these concerns highlight the need for careful consideration and regulation in the AI industry (Bulchand-gidumal, 2022). Additionally, client data may be used by AI algorithms to customize prices; however, this might result in unfair pricing practices (Gerlick & Liozu, 2020).

Furthermore, the use of AI technologies in systems such as closed-circuit television (CCTV) and facial recognition has raised apprehensions about possible infringements on individual privacy (Ivanov & Webster, 2019). In a related context, Kopalle et al., (2022) highlighted growing ethical concerns regarding customer reliance on algorithmic decision-making, particularly its potential to cause social isolation and negatively impact psychological well-being issues that have. The potential of AI to collect and manage personal data raises privacy concerns, which could lead to discrimination and racism. There is also a conflict between the efforts of the US and EU to implement GDPR. At the same time, Africa and China lack sufficient data protection measures, highlighting ethical and privacy concerns related to the use of AI (Filieri et al., 2021; Gerlick & Liozu, 2020; Getchell et al., 2022).

The integration and utilization of AI in the tourism sector face several challenges, particularly related to the varying attitudes and perceptions of travellers. Visitors can be classified as innovators, pioneers, early adopters, late adopters, and laggards, with further segmentation into realists, connoisseurs, and sceptics. Individuals with no prior experience using AI are generally more inclined to hold negative perceptions toward its use in tourism (Bulchand-gidumal, 2022). Additionally, the implementation of AI is complicated by the tourism industry's diverse and complex data landscape, which includes reservation records, customer preferences, feedback, and other critical variables (Samara et al., 2020). Furthermore, A significant challenge lies in the

integration of AI across different systems, where ensuring data quality and maintaining functional system interoperability is essential for effective AI application (Nam & Dutt, 2020).

The hospitality and tourism industry faces issues with the fragmentation of hotel systems, with guest information coming from the Property Management System (PMS) used by restaurant guests for booking, and Point of Sales systems (POS) used by spa guests for accessing different systems, consequently, a client might easily uphold four or five distinct profiles (Lukanova & Ilieva, 2019; Stringam & Gerdes, 2021). Additionally, data mining may not be feasible due to system disconnections and connectivity issues, which affect data quality and, consequently, AI learning and performance (Nam & Dutt, 2020). In addition, the implementation of Big Data and Artificial Intelligence (BDAI) in the hospitality and tourism industry faces technical challenges due to concerns about data reliability and accessibility as a result of data variations, disruptions, and complexities in data compartmentalisation hindering access and interpretation, posing challenges in managing volume, diversity, velocity, and validity (Samara et al., 2020).

Integrating AI into the tourist travel decision-making process is hindered due to skill shortages and training requirements among tourists and employees and raises obstacles to accepting and utilizing AI (Ivanov et al., 2020). Similarly, one of the most difficult issues is the lack of specialists with knowledge of AI like machine learning, data analysis, and algorithms (Ho et al., 2022). Additionally, the need for continuous training and professional development for existing professionals is a significant challenge since AIs' are constantly evolving, and many professionals may lack the necessary skills and training to fully use AI products (Nam & Dutt, 2020; Troussas et al., 2023). Moreover, to bridge this gap, it is essential to develop comprehensive training initiatives and projects that equip professionals with the necessary expertise to effectively harness the capabilities of AI in enhancing travel decision-making (Jabeen et al., 2022). Furthermore, the successful implementation and integration of AI within tourism systems demand a workforce that is proficient in the operation and management of these sophisticated technologies (Weber et al., 2023).

2.4 Gaps in the Literature

The extant literature on AI in the tourism industry has mainly focused on applications, adoption, impacts, and challenges regarding AI-powered chatbots, robots, services automation and machine learning in developed countries (Bowen & Morosan, 2018; Bulchand-gidumal, 2022; Singh & Micah, 2014; Zlatanov & Popesku, 2019b, 2019a). Other studies focused on the pros and cons, and prediction of the future of AI in various sectors including travel, tourism and hospitality, and other related sectors (Grundner & Neuhofer, 2021; Huang et al., 2022; Sharma, 2017). Additionally, other studies have focused on the AI-powered algorithm in impacting decision-making in sectors like agriculture, finance, supply chain and healthcare (Amoako et al., 2021; Aworka et al., 2022; Chikusi et al., 2022; Kipkorir-Songol et al., 2021; Obasa & Palk, 2023). Lastly, the studies have focused on the AI-powered algorithm in impacting decision-making related to the hospitality and tourism industry (Chen & Wei, 2024; Gerlick & Liozu, 2020; Nguyen et al., 2023; Singh, 2023; Stylos, 2020).

The previous literature has provided sufficient evidence that more research is needed in the area of AI application and decision-making. This suggests a gap left by researchers, as there are insufficient studies conducted on the application of AI to influence tourist travel decisions in Arusha's tourism and hospitality industry.

2.5 Summary of Literature Review and Research Gaps

Table 2.1: Research Gaps

Author	Title	Objectives	Key Findings	Research Gap	Focus of the current study
Chen Chen and Zhao Wei (2024)	Role of Artificial Intelligence in travel decision making and tourism product selling	To understand the factors that exert influence on travel decision-making and tourism product selling with the adoption of AI	• AI-driven informativeness and AI-based recommendations significantly influence travel decision-making. • Social media does not significantly impact travel decision-making. • Customer purchase behaviour and online tourism marketing have a significant impact, whereas learning new strategies does not affect tourism product selling.	• The study did not consider the raised concerns about data privacy and the potential for bias in algorithmic decision-making. • The study did not consider the developments of AI technology in shaping the future of the tourism industry. • The study did not consider how AI technology revolutionized the way travellers plan and book their trips, allowing for personalized recommendations based on their preferences and past behaviours.	• The current study focuses exclusively on investigating and comprehensively examining the impact of AI in travel decision-making and tourism product selling.
Mona Hamed Mussa (2020)	The Impact of AI on Consumer Behaviours, An Applied Study on the Online Retailing Sector in Egypt	• To investigate the relationship between Artificial intelligence and consumers' purchase behaviour. • To find out the differences between customers' purchase behaviour based on their demographics (gender, age, educational level, and annual income).	• There is a significant relationship between Artificial Intelligence and consumer behaviour. • The model has a high ability to predict and explain consumer purchase behaviour through Artificial Intelligence.	• The research did not investigate the mediating role of trust and attitude towards AI in the relationship between AI and consumer purchase behaviour. • The moderating role of price, where price can affect future purchasing decisions.	• The current research focuses on the benefits that AI presents to both customers and brands, while the obstacles of AI could be a suggestion for future research.
Mohamed Battour, Khalid Mady, Mohamed	Artificial Intelligence Applications in Halal Tourism to	• To explore how AI can be used to ameliorate the Muslim tourism	• The results indicated that AI offers powerful solutions for Muslim travellers, such as social media analytics and a	• The research, however, did not focus on developing a theoretical framework	• The current study focuses on exploration of the role of AI in every stage of the tourism journey: planning

Elsotouhy, Mohamed Salaheldeen, Israa Elbendary, Mohamed Marie, and Idris Elhabony (2022)	Assist Muslim Tourist Journey	experience during the tourism journey.	tourism recommendation framework for information overload.	relevant to AI in the Halal tourism industry.	phase, staying phase, and evaluation phase which could be utilized to improve the Muslim tourism experience.
Nikolaos Stylos (2020)	Technological evolution and Tourist Decision-making	• To demonstrate the importance of technological advancements in shaping tourist decision-making.	• The results showed that technological advancements play a structural role in tourist decision-making processes, with digital technologies and cyber-physical systems becoming extensions of a tourist's self.	• The study offers only the basis for a new theoretical framework in the area of tourism decision-making, considering the future of cyber-physical-human systems	• The current study focuses on the demonstration of the importance of technological advancements in shaping tourist decision-making.
Rana et al., (2022)	Reinforcing customer journey through artificial intelligence: a review and research agenda	• To identify a research plan based on investigating the customer journey trends in today's changing times with AI incorporation. • To provide a novel model framework of the customer journey by directing customers into different stages and providing different touchpoints in each stage, all supported with AI and ML	• The results indicated that Using AI tools like Chatbots, Recommenders, Virtual Assistance and Interactive Voice Recognition (IVR) helps create improved brand awareness, better customer relationship marketing and personalized product modification.	• The study did not consider the emergence of AI primarily benefiting customers, highlighting AI's role in reshaping the customer journey and creating a memorable customer experience that leads to repeated purchases. • The study did not focus on the impact of AI and ML algorithms in retail, particularly focusing on the role of ethics in adopting these technologies and understanding how AI tools can influence marketing outcomes and customer purchase intent	• This study defines a three-angled research plan to intensify the knowledge and development undergoing in the retail sector. • It proposes a theoretical framework of the customer journey to explain the customers' intent to adopt artificial intelligence (AI) and machine learning (ML) as a protective measure for interaction between the customer and the brand

2.6 Conceptual Framework

The conceptual framework (Figure 2.3) illustrates how the AI variables are interconnected and how they influence tourist travel decision-making. The application of AI and tools in tourism operations is the independent variable on which its acceptance and adoption by tour companies and tourists' travel decision-making relies. Therefore, the integration of AI in tourism is the independent variable, while tourist travel decision is the dependent variable relying on touchpoint information such as destination image and reputation, personalised recommendation, cost and pricing strategies, convenience and accessibility, cultural and social influences and review and feedback. The touchpoints include social media ads, travel blogs, online reviews, airline websites, travel agency websites, online booking platforms, tour operators' websites, destination websites, and guidebooks.

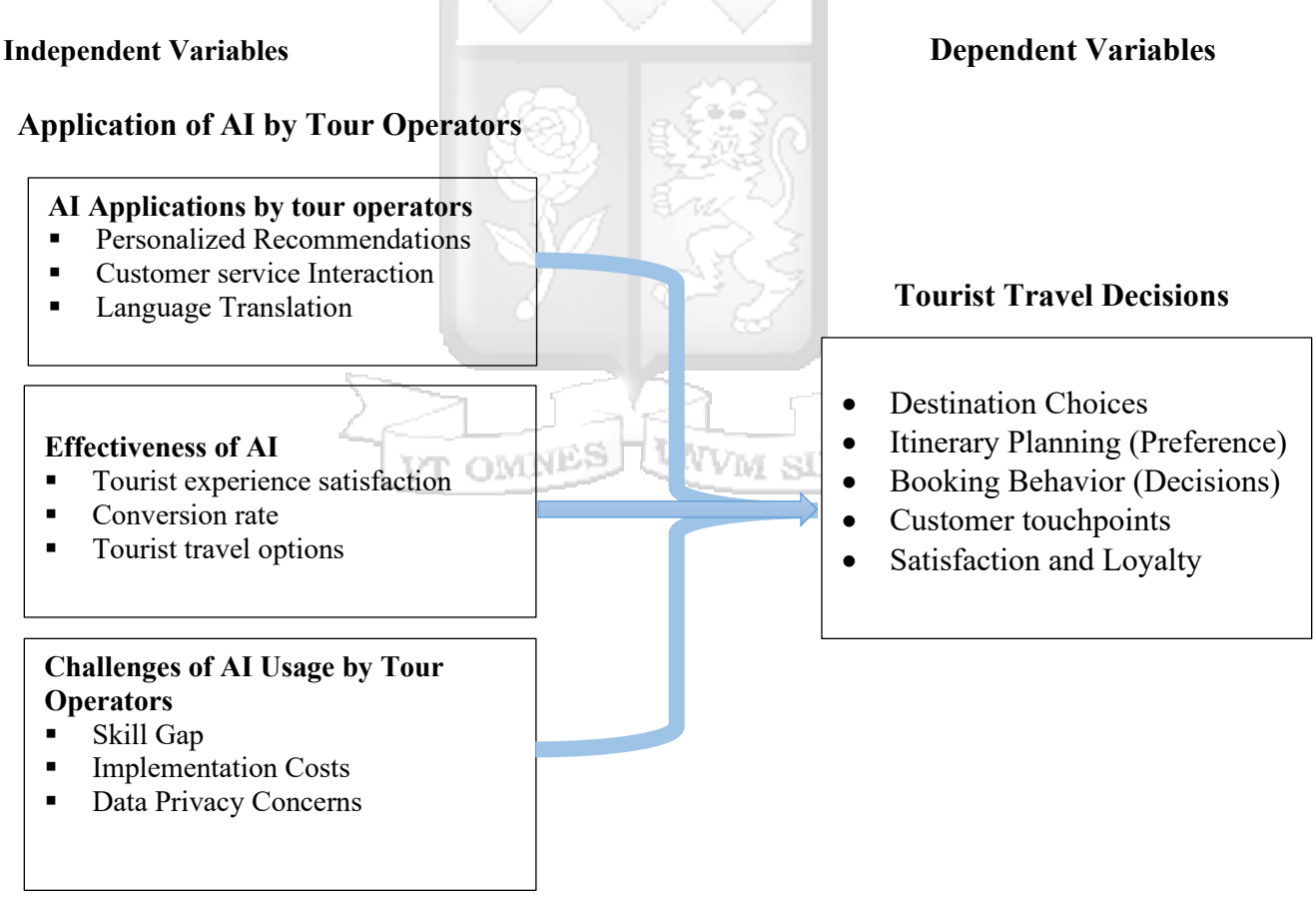

Figure 2.1: Conceptual Framework

Source: Researcher, 2024

2.7 Operationalization of Variables

Table 2.2: Operationalization of Variables

Variables	Indicators
Personalized Recommendations	• Use of AI algorithms to offer tailored travel packages. • Conversion rates from personalized suggestions to bookings.
Customer service/ Interaction	• Customer touchpoints • Response time, to tourist inquiries before and after AI implementation
Language Translation	• Number of businesses using AI for language translation. • Accuracy and fluency of translations. • Increase in bookings or inquiries from non-native speakers
Conversion rate	• Percentage of inquiries converted into bookings. • Lead generation from AI-driven marketing • Impact of AI recommendations on bookings
Tourist travel options	• Number of travel options provided • Diversity of recommendations: • Customization of travel options • Flexibility of AI suggestions
Skill Gap	• Number of employees with AI-related skills • Perceived skill gap • Investment in training • Tour operator perception of AI complexity
Implementation Costs	• Initial setup and installation costs • Cost-benefit analysis of AI adoption • Financial barriers to adoption
Data Privacy Concerns	• Tour operators' awareness of data privacy regulations (e.g., GDPR) • Tour operators' concerns over data collection and usage • Transparency in AI algorithms • Ethical considerations in AI recommendations

2.8 Conclusion

This chapter consists of two main parts: theoretical literature review and empirical literature review. The theoretical review covers the Model of customer Journey mapping, while the empirical review focuses on specific objectives related to the current use of AI in the tourism industry, AI's impact on tourist travelling decisions, and the challenges associated with AI usage among tourism and hospitality operators. Additionally, this section addresses the gaps in the literature review, conceptual framework, and operationalization of variables.

Chapter Three:
Research Methodology

3.1 Introduction

This chapter presents the procedures and methodological framework adopted for the study. It is structured into nine key sections, beginning with the research philosophy. It then discusses the research design, the geographical scope of the study, the target population, the sampling strategy and sample size, the tools used for data collection, the procedures for data gathering, the measures taken to ensure research quality, the techniques for data analysis and presentation, and finally, the ethical considerations observed throughout the research process.

3.2 Research Philosophy

The study adopted a positivism research philosophy (Tong et al., 2022). This philosophy emphasized objective observation and aimed to establish cause-and-effect relationships through empirical evidence. The positivist approach was suitable for this study because it often relied on quantitative methods, such as experiments, surveys, and statistical analysis, which were effective for measuring and analyzing causal relationships. Additionally, positivism promoted deductive reasoning, allowing researchers to start with a hypothesis and then collect data to test it. This made it ideal for causal research, as it facilitated the formulation and testing of specific causal claims. Therefore, a positivist approach involved a quantitative strategy to understand the cause-and-effect relationships of AI applications by tour operators on tourists' decision-making, while also considering the contextual nuances of Arusha's tourism industry.

3.3 Research Design

A research design refers to the structured approach a researcher employs to ensure the collection of valid, unbiased, precise, and economically feasible data to address research questions (Asenahabi, 2019). to meet the objectives of this study, a causal research design was implemented, allowing for the investigation of the cause-and-effect relationship among the variables under study (Mariani & Baggio, 2020). The causal research design used regression parameters to explore the cause-effect relationship between the AI application by tour operators and tourist travel decision-making.

3.4 Area of Study

The study was conducted in the Arusha region, which in the north was bordered by Narok and Kajiado counties of Kenya, eastward by the Kilimanjaro region, southward by the Manyara and Singida regions, and westward by the Simiyu and Mara regions. The economy of the Tanzanian region of Arusha was heavily reliant on the tourism industry. Its close proximity to several national parks and tourist destinations, including the Serengeti, Ngorongoro Conservation Area, Tarangire, Lake Manyara, and Mount Kilimanjaro, made Arusha a major centre for tourism in the region. Due to the presence of numerous hotels, lodges, tour companies, cultural enterprises, convention centres, and other businesses that served tourists, the region's economy depended largely on tourism. Tourist arrivals were also facilitated by the presence of international airports such as Kilimanjaro International Airport and Arusha Airport. These facilities and natural attractions drew many tourists to the area (Mato & Mosoma, 2022; NBS, 2022; Sirima & Mgonja, 2014).

3.5 Target Population

The population target of this study was the tour operators registered in Arusha.

3.6 Sampling Design and Sample Size

3.6.1 Sampling Design

The study utilised a simple random sampling design to obtain the desired research sample size. This sampling technique was a probability method in which each member of the population had an equal chance of being selected (Mohsin, 2021). Additionally, it ensured that the sample was representative of the entire population, minimising bias and enhancing the validity of the research findings (Sharma, 2017; Singh & Micah, 2014). The selection process was entirely random, employing random number generators or lottery methods. This simple random sampling design was specifically used to select tour operators.

3.6.1 Sample Size

The sample size for this study consisted of 291 respondents, who are licensed tour operators registered in Arusha. A tour operator representative, such as Owners (Directors), Chief Executive Officers (CEO), General Managers, Sales Managers or Tour consultants, Marketing Managers, Operation Managers, Human Resource and Reservation Managers, was engaged and purposively

randomly selected to answer the questionnaires. Based on the available statistics, the population was unknown. The sample size was chosen to represent the targeted population using the following formula:

$$\text{Sample Size (n)} = \frac{Z2 \cdot p \cdot (1-p)}{(e2)},$$

Where:

n = Required sample size

Z = Z-value (Z-score) for the desired confidence level

1.96 for 95% confidence

p = Estimated proportion of the population (0.5, for maximum variability)

e = Margin of error (in decimal, e.g., 0.058 for ±5.8%)

Table 3.1: Sample Size and Sampling Design

Target population	Unknown	Arusha Tour Operators
Sample size	291	Respondents

Source: Researcher, 2025

3.7 Data Collection Instruments

This study used both primary and secondary data.

3.7.1 Primary Data

Primary data are the first-hand information originated and collected from the field by the researcher for the research problem (Taherdoost, 2021). In this study, the primary data was collected directly from the field through the Questionnaires.

3.7.2 Secondary Data

In this study, secondary data were collected from published Journal articles, Books, Statistical reports, and a thesis related to AI and tourist travel decisions. Secondary data are the published information obtained from other researchers related to this study, but they were collected for other purposes apart from the research problem at hand (Roh et al., 2021).

3.8 Data Collection Procedures

The data collection techniques involved the collection of quantitative data where the questionnaire technique was used.

3.8.1 Questionnaire Technique

For this study, the questionnaires comprised both open-ended and closed-ended questions to better understand the respondents' regarding the problem. The 291 respondents were supplied with questionnaires written in English or Kiswahili to make everyone understand and effectively answer the questionnaires. The questionnaires were administered either by the respondents themselves or by the researcher, depending on the occasion and the interests of the respondents. This process was carried out both physically and online using a Google Form questionnaire.

3.9 Data Analysis

This study used descriptive statistics analysis followed by inferential analysis. Descriptive statistics analysis was used to analyse quantitative data and provided a summary of general data trending ideas, including mean, mode, median, and ratio scales, with the aid of MINITAB 14. The results were presented in graphs, charts, or figures.

The study employed inferential statistical analysis to make decisions and draw logical conclusions about the application of AI in influencing tourist travel decisions from tour operators' perspectives. Regression analysis was used to test the cause-effect relationship of AI application by tour operators (independent variable) towards tourist travel decisions (dependent variable). Based on the study objectives, types of data, data distribution, and hypothesis assumptions, parametric tests were conducted. These tests included the normality test, variance test, and interval or ratio scale test. The study then conducted hypothesis testing procedures to determine the acceptance or rejection of a reasonable or unreasonable hypothesis.

3.10 Research Quality

3.10.1 Validity

The study's validity was ensured through well-designed questionnaires and interview guidelines to obtain accurate information and truthful responses.

3.10.2 Reliability

The reliability of the study was maintained through well-formed questionnaires and interview guidelines that ensured the results' consistency by checking and correcting errors in completed questionnaires.

3.11 Ethical Considerations

The study ensured that ethical considerations were given the highest priority by ensuring that the researcher adhered to all mandatory ethical procedures and requirements set out by the regulations of the United Republic of Tanzania, the Republic of Kenya, and the Strathmore University Code of Practice. This involved obtaining the necessary ethical clearance from the Strathmore University Institutional Scientific and Ethical Review Committee, as well as acquiring a data collection permit from the Tanzania Commission of Science and Technology (COSTEC) and the Arusha Municipality Authority.

Chapter Four:
Presentation of Research Findings

4.1 Introduction

This chapter presents the findings of a study on the application of artificial intelligence (AI) by tour operators in influencing tourist travel decisions, focusing on tour operators in Arusha, Tanzania. The results are based on data collected from representatives of these tour operators, which were analyzed to determine how AI impacts tourist decision-making. The chapter is organized into key sections, including the response rate, descriptive statistics, reliability analysis, and regression analysis, offering insights into the role of AI in shaping tourist travel choices.

4.2 Response Rate

A critical indicator of survey validity is the response rate. As shown in Table 4.1, out of the 291 surveys distributed, 248 were returned, resulting in a response rate of 85.22%. This high response rate was achieved through a multi-modal data collection approach. The study utilized both physical and online questionnaires, leveraging platforms such as Google Forms, WhatsApp, phone calls, and email correspondence. Additionally, the study collaborated with local tourism networks, including the Tanzania Association of Tour Operators (TATO). To further improve the efforts, the study engaged two research assistants to help distribute and collect the questionnaires both physically and online.

Moreover, this high response rate indicates that the survey respondents were highly engaged, which enhances the representativeness and reliability of the data. It suggests that a significant portion of the target population participated, ensuring that the findings accurately reflect the overall sample. Furthermore, the high return rate supports the use of the collected data for analysis and reporting in this study.

Table 4.1: Response Rate

Description	Frequency	Percentage (%)
Distributed	291	100
Returned	248	85.22

4.3 Demographics Analysis

The demographic characteristics of the study sample are essential for understanding the distribution and characteristics of participants. The following subsections offer detailed insights into respondents' gender, age, education level, position, years of experience, size of the company, type of company ownership and period of company operation.

The results on gender distribution show that a majority of respondents (55.4%) identify as male, while 44.6% identify as female. This gender distribution reflects the sample's composition and may influence how AI is employed by tour operators, affecting tourists' travel decision-making.

The data on age distribution indicates that the largest group of respondents, making up 45.0%, consists of individuals aged 30 to 39, closely followed by 42.9% in the 18 to 29 age group. This suggests that a significant portion of tour operators in Arusha are relatively young, which may indicate a preference for using AI to influence the travel decisions of tourists among younger individuals.

The education level distribution shows that 50.2% of participants hold a Bachelor's degree, while 38.9% have completed a diploma or vocational training program. Notably, 6.0% of the participants possess a Master's degree or higher. This indicates that a substantial proportion of tour operators have received formal education, which could affect their engagement with AI in shaping tourist travel decisions.

Additionally, the findings reveal that a significant majority, 89.4%, of participants have an educational background related to tourism, while 10.6% have backgrounds unrelated to the field. This high percentage suggests that many tour operators are educated in tourism, which may influence how they utilize AI to impact travelers' decisions.

Furthermore, concerning the respondents' positions within their companies, the findings indicate that the majority of participants work as Sales Managers (44.6%), followed by Reservation Managers (31.2%). This distribution is significant as it provides insights into the roles most

engaged with AI usage, which may impact or influence the travel decisions associated with these positions.

In terms of respondents' experience in the tourism industry, the data shows that 43.3% have 4 to 7 years of experience, while 35.9% have 1 to 3 years of experience. This distribution is noteworthy as it illustrates that tour operators with at least one year of experience are the most engaged with AI usage, potentially affecting or influencing tourist travel decisions.

The findings regarding the years of operation of companies in Arusha reveal that a majority of participants, 67.1%, have been in business for 1 to 5 years, while 30.7% have over 5 years of experience. This distribution is significant as it indicates that tour companies with at least one year of operational experience in Arusha are the most likely to engage with AI, potentially affecting tourists' travel decisions.

In terms of company ownership, 80.5% of the participants reported that their companies are owned by local Tanzanians, while 13.8% are owned by foreign investors. This distribution highlights that most tour companies in Arusha, operated by local Tanzanians, are actively engaging with AI, which could influence the travel decisions of tourists.

Regarding company size, the data shows that 68.4% of participants represent small companies employing between 1 to 10 people, while 19.0% are medium-sized companies with 11 to 50 employees. This information suggests that a significant number of small tour companies in Arusha are actively using AI, which has the potential to impact tourists' travel choices.

Lastly, when examining the familiarity of tour operators with AI, it was found that 51.5% are somewhat familiar with AI technology, and 45.8% are very familiar with it. This distribution indicates that most tour operators have a good understanding of AI, suggesting that they are likely using this technology to influence the travel decisions of tourists.

Table 4.2: Demographics Analysis

Category	Key Findings	Implications
Gender	55.4% Male, 44.6% Female	Slight male dominance may influence AI adoption trends.
Age	45.0% (30-39 yrs), 42.9% (18-29 yrs)	Younger operators may drive AI integration in tourism.
Education Level	50.2% Bachelor's, 38.9% Diploma/Vocational, 6.0% Master's+	High formal education supports AI engagement.
Education Background	89.4% Tourism-related, 10.6% non-tourism	Strong tourism expertise may shape AI use cases.
Position	44.6% Sales Managers, 31.2% Reservation Managers	Key roles (sales/reservations) are AI adopters.
Industry Experience	43.3% (4-7 yrs), 35.9% (1-3 yrs)	Moderate experience aligns with AI experimentation.
Company Operation	67.1% (1-5 yrs), 30.7% (5+ yrs)	Newer companies are more AI-engaged.
Company Ownership	80.5% Local Tanzanians, 13.8% Foreign investors	Local ownership dominates AI adoption.
Company Size	68.4% Small (1-10 employees), 19.0% Medium (11-50)	Small firms lead in AI utilization.
AI Familiarity	51.5% Somewhat familiar, 45.8% Very familiar	High AI awareness suggests readiness for AI-driven decisions.

4.4 Reliability and Validity Testing

The reliability of the instruments used in this research was assessed using Cronbach's Alpha. The overall Cronbach's Alpha for the 23 items was 0.846, suggesting good internal consistency across the constructs. Table 4.3 breaks down the reliability for individual subscales: current use of AI in Arusha's tourism industry (0.790), the effectiveness of AI in enhancing tourist travel decision-making (0.750), and challenges of AI usage by tourism operators (0.800). These values indicate that each construct is measured reliably, supporting the validity of the findings and conclusions drawn from this data.

Table 4.3: Reliability Test

Construct	Number of Items	Cronbach's Alpha
Overall	38	0.846
Current use of AI in Arusha's tourism industry	23	0.790
Effectiveness of AI in enhancing tourist travel decision-making	9	0.830
Challenges of AI usage by tour operators	6	0.800

4.5 Frequency Distribution

Frequency distribution refers to the organization of survey responses that shows how often each response occurs within a specific scale. It offers an overview of how tour operators in Arusha utilize AI to influence tourists' travel decisions. This distribution is significant because it helps identify trends, participation levels, and the general sentiment of Arusha tour operators towards the use of AI in shaping tourist decisions. Understanding these factors can guide future interventions and improvements. The subsequent subsections provide the frequency distribution of tour operators regarding the use of AI to influence tourist travel decisions, categorized by current AI utilization, the effectiveness of AI in enhancing tourist travel decisions, and the challenges associated with AI usage.

4.5.1 Current Use of AI by Arusha's Tour Operators

4.5.1.1 Specialised AI integrated brand currently used by tour operators

The main objective was to identify platforms that use specialized AI currently employed by tour operators. The results showed that 93.9% of respondents reported using TripAdvisor, while 41.3% used SafariGo, 29.1% used SafariBooking, 27.5% used Travelport, and 13% used Google Travel. Additionally, 3.6% reported using Skyscanner, 2.4% used GetYourGuide, and 2% used Amadeus and IBM Watson. This indicates a high level of engagement with specialized AI-integrated platforms among the respondents.

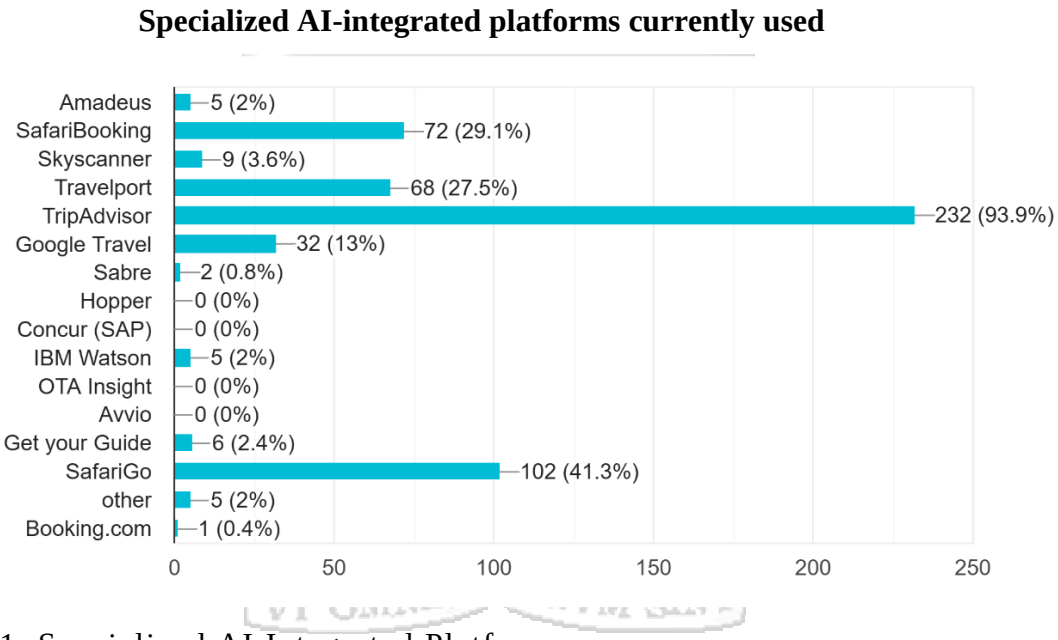

Figure 4.1: Specialized AI Integrated Platform

4.5.1.2 Generative AI (chatbot brand) currently used by tour operators

The results indicated that 71.3% of respondents reported using ChatGPT, while 41.7% used Gemini. Other tools included Copilot at 13.7%, Quilbot at 9.3%, and CopyAI at 7.3%. Additionally, 6.9% of respondents indicated they used the Expedia Chatbot, 6.5% used Watson Assistant, 6.1% used Google Bard, and 4% used the Bing AI chatbot. This data reflects a high level of engagement with generative AI among the respondents.

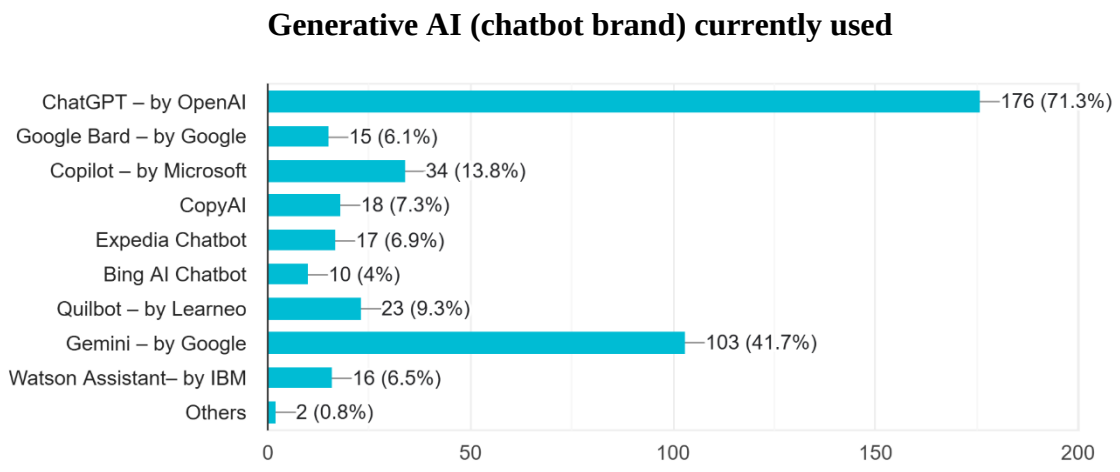

Figure 4.2: Generative AI (chatbot brand) currently used by tour operators

4.5.1.3 Uses of AI to raise awareness among potential tourists

The results revealed that 96.36% of respondents reported using AI to raise awareness among potential tourists, while 2% plan to implement it in the future, and 1% have never used AI for this purpose. These findings indicate a high level of AI usage for raising awareness among potential tourists, with a significant portion of respondents engaging with it regularly.

4.5.1.4 AI-powered tools used to increase brand awareness

The results showed that 64.2% of respondents reported using AI for personalized social media campaigns, while 45.8% utilized AI-based content creation. Other tools employed included search engine optimization (SEO) at 37.5% and AI predictive advertising at 35.4%. This data reflects a significant level of engagement with various AI-powered tools for creating brand awareness among the respondents.

4.5.1.5 Using AI to assist tourists in evaluating and comparing travel options, packages, or destinations.

The results indicated that 95.5% of respondents reported using AI to assist tourists in evaluating and comparing travel options, packages, or destinations. Additionally, 3% of respondents plan to implement AI for this purpose in the future, while 1.2% have never utilized AI in this context.

These findings highlight a high level of AI usage among respondents to assist tourists in evaluating and comparing travel options, with a significant portion of respondents engaging with it regularly.

4.5.1.6 AI-powered tools are used at this stage (evaluating and comparing travel options, packages, or destinations).

The results indicated that 56.7% of respondents reported using AI chatbots to answer tourist questions. Additionally, 55% utilized AI recommendation engines, while 17.9% explored virtual or augmented reality tours. This finding reflects a significant level of engagement among respondents who are using various AI-powered tools to assist tourists in evaluating and comparing travel options, packages, and destinations.

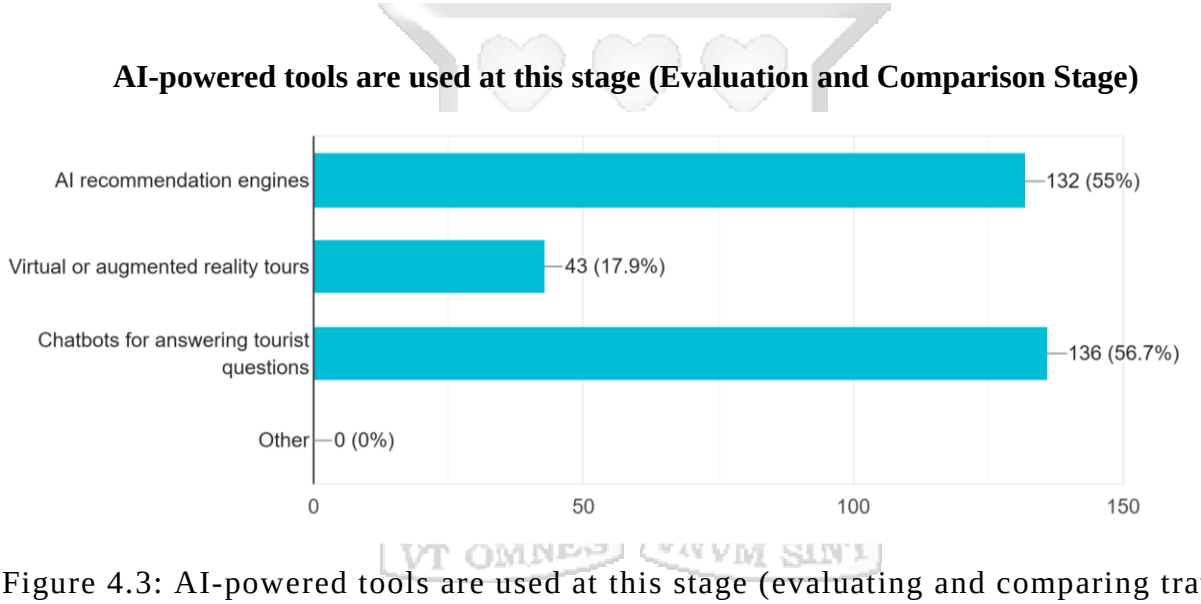

Figure 4.3: AI-powered tools are used at this stage (evaluating and comparing travel options, packages, or destinations

4.5.1.7 Positive AI influences tourists' travel decisions in considering and comparing travel options, packages, or destinations

The results showed that 70% of respondents reported that the use of AI significantly helped positively influence tourists' travel decisions when considering and comparing travel options, packages, or destinations. Additionally, 28.75% indicated that AI somewhat helped in this regard. This finding reflects a substantial proportion of respondents who are using AI and have observed a positive impact of AI in assisting tourists with their travel decision-making processes.

4.5.1.8 AI usage in streamlining the booking process for tourists

The results indicated that 92.7% of respondents felt that AI significantly improved the booking process for tourists. In contrast, 4.5% stated that AI does not assist in streamlining this process, while 2.8% believed that AI provides some help. Overall, these findings demonstrate that a large majority of respondents are utilizing AI to enhance the booking experience for tourists.

4.5.1.9 AI technologies used to assist tourists during the booking process

The results revealed that 62.1% of respondents reported using AI-powered booking systems to help tourists during the booking process. Additionally, 42.1% utilized chatbots for booking assistance, 16.6% employed predictive pricing models, and 13.2% made use of AI-driven payment systems. These findings highlight a significant level of engagement among respondents in utilizing various AI tools to support tourists during the booking process.

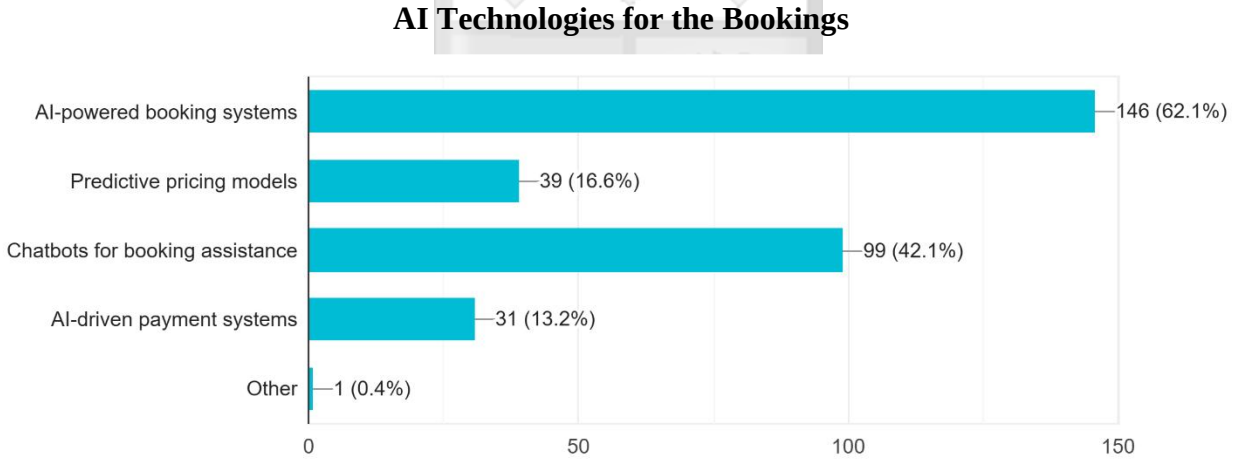

Figure 4.4: AI technologies used to assist tourists during the booking process

4.5.1.10 Use of AI to enhance tourists' experiences during their stay in Arusha

The results revealed that 92.3% of respondents believe that AI significantly enhances tourists' experiences during their stay in Arusha. In contrast, 4.9% indicated that AI does not help improve tourists' experiences, while 2.8% felt that AI offers some assistance. Overall, these findings show that a substantial majority of respondents are using AI to enhance the experiences of tourists in Arusha.

4.5.1.11 Contribution of AI to the on-the-ground experience

The results revealed that 41.7% of respondents reported using real-time updates (e.g., traffic, weather) to enhance the on-the-ground experience for tourists. This was followed by 37.8% who utilized AI-powered tour guides or apps, and another 37.8% who employed AI-based language translation tools. Additionally, 34.4% indicated the use of personalized itineraries based on real-time data. These findings highlight a significant level of engagement among respondents in leveraging AI technologies to support tourists during their in-destination experiences in Arusha.

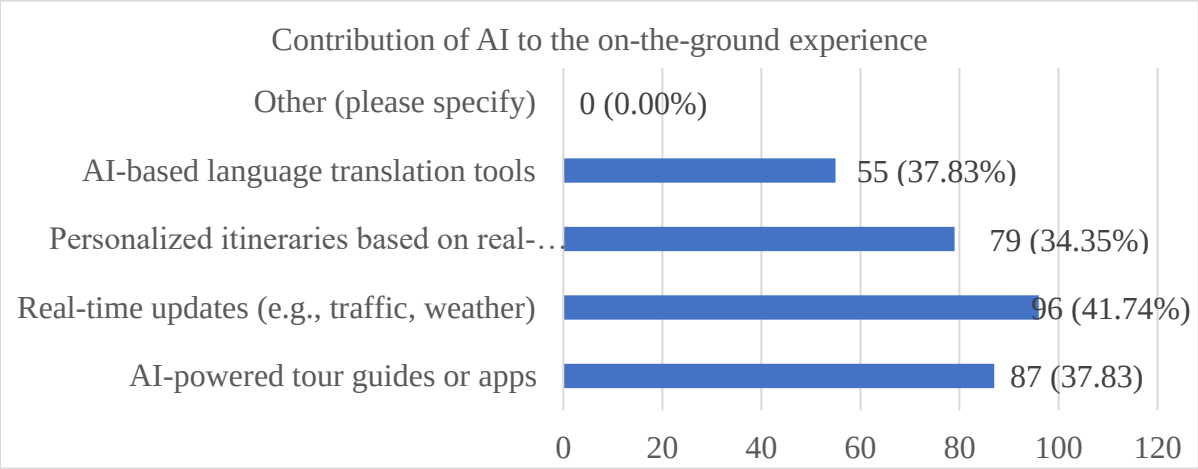

Figure 4.5: Contribution of AI to the on-the-ground experience

4.5.1.12 Use of AI to Gather Feedback and Engage Tourists After the Trip

The results revealed that 92.24% of respondents use AI to gather feedback and engage tourists after their trip. In contrast, 3.7% indicated that their company do not use AI for this purpose, while 4.1% (n = 10) stated they were planning to implement such technologies. These findings demonstrate that most tourism operators are actively adopting AI tools to maintain post-trip engagement and strengthen customer relationships beyond the point of travel.

4.5.1.12 AI applied in the post-experience stage to enhance customer engagement

The findings revealed that 65.4% of respondents reported using sentiment analysis of reviews as a key AI tool for gathering feedback and engaging tourists after their trip. Additionally, 44.4% indicated the use of automated follow-up surveys, while 18.8% employed personalized offers or incentives. A smaller proportion (15.0%) reported applying AI-based customer support in the post-

experience stage. No respondents selected the “Other” category. These results suggest that sentiment analysis and follow-up automation are the most widely adopted AI strategies for maintaining tourist engagement after travel.

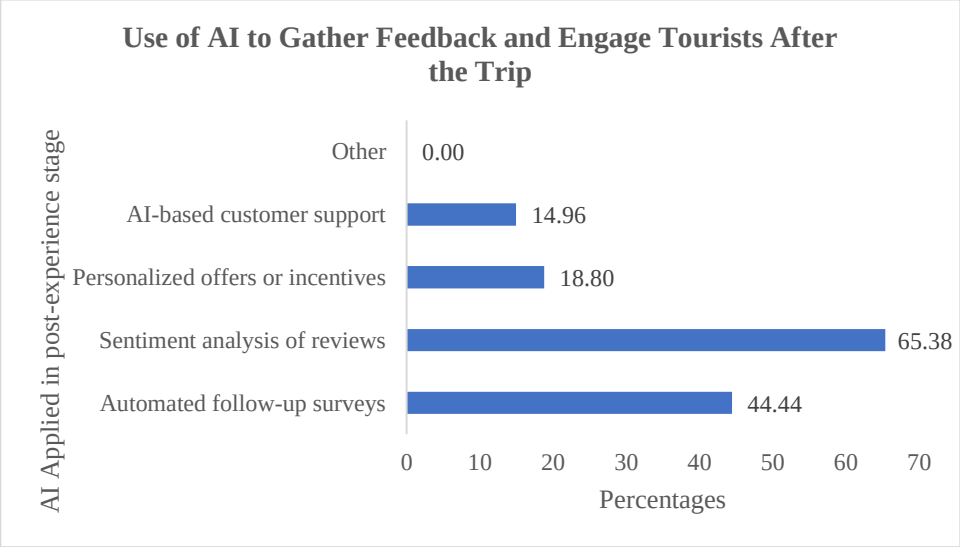

Figure 4.6: AI applied in the post-experience stage to enhance customer engagement

4.5.1.12 Factors Influencing the Decision to Use AI in the Company

The results indicated that competitive advantage was most prominently associated with the decision to implement AI, as reported by 69.1% of respondents. This was followed by technological capabilities, selected by 63.4%, suggesting that many companies consider their internal readiness when deciding to adopt AI tools. Cost considerations were also cited by 31.7% of respondents as a factor influencing their decision-making. In addition, customer demand was mentioned by 26.4%, while regulatory requirements were taken into account by only 8.9%. Notably, none of the respondents selected the “Other” category. These findings suggest that strategic positioning and technological infrastructure play a more significant role than external pressures in shaping decisions around AI adoption in the tourism sector.

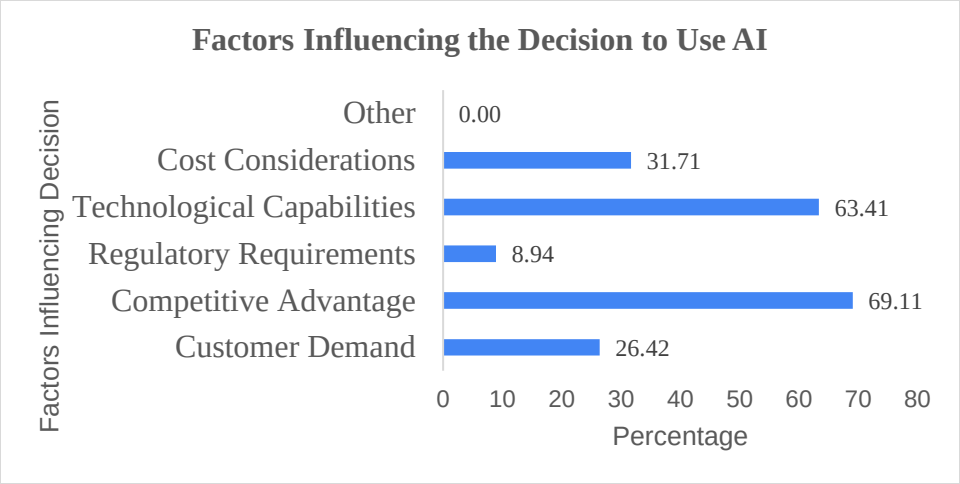

Figure 4.7: Factors Influencing the Decision to Use AI in the Company

4.5.1.13 Marketing Channels (Touchpoints) Currently in Use to Influence Tourist Travel Decisions through AI

The results show that Social Media Ads are the most commonly used marketing channel for influencing tourist travel decisions, with 74.69% of respondents reporting their use of AI in this area. This is followed by Tour operators' websites at 61.22%, and Email Marketing, which was cited by 43.67% of respondents. Online booking platforms also play a significant role, with 42.04% of respondents using AI to influence decisions through this channel. Travel agency websites were mentioned by 41.63% of respondents. Other notable channels include Search Engine Optimization (SEO), selected by 24.08%, and Online reviews, which were used by 20.41% of respondents. Content Marketing and Travel blogs influenced 12.65% of responses, while Paid Advertising was mentioned by 13.47%. Interestingly, Airline websites were the least used channel for AI influence, with only 3.27% of respondents selecting this option. Finally, no respondents selected the “Other” category, indicating a clear preference for the main touchpoints listed.

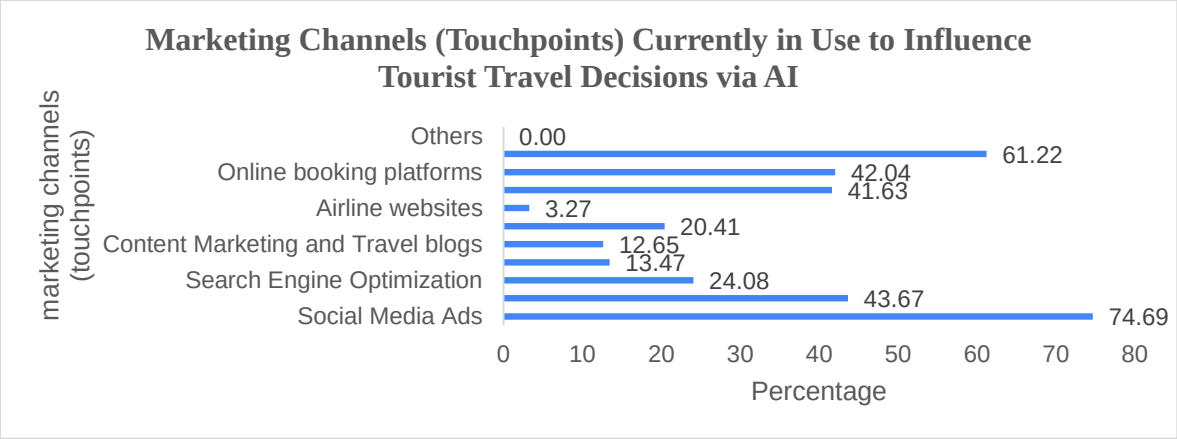

Figure 4.8: Marketing Channels (Touchpoints) Currently in Use to Influence Tourist Travel Decisions via AI

4.5.2 Effectiveness of AI in Enhancing Tourist Travel Decision-Making

4.5.2.1 Effectiveness of AI in Raising Awareness about Services Provided

The data indicated that the majority of respondents, 61.13%, considered AI to be very effective in raising awareness about the services provided. 36.03% of respondents rated AI as effective, suggesting that a significant portion of respondents acknowledged its positive impact, albeit to a lesser extent. A smaller proportion, 2.43%, viewed AI as somewhat effective, while only 0.40% of respondents considered AI to be not effective in this regard. These findings showed a clear trend towards the effectiveness of AI, with most respondents recognizing its role in raising awareness about services.

4.5.2.2 Effectiveness of AI in Helping Tourists Make Informed Decisions about Travel Options

The data showed that 58.54% of respondents considered AI to be very effective in helping tourists make informed decisions about travel options. A further 38.21% rated AI as effective, while 2.85% believed AI to be somewhat effective. Only 0.41% of respondents deemed AI to be not effective in this regard.

4.5.2.3 Impact of AI-Driven Personalization on Customer Satisfaction and Conversion Rates in Considering and Comparing Travel Options, Packages, or Destinations

The data showed that 53.47% of respondents believed AI-driven personalization had a significant impact on customer satisfaction and conversion rates when considering and comparing travel options, packages, or destinations. Additionally, 45.71% of respondents rated the impact as somewhat noticeable and only 0.82% of respondents felt that AI-driven personalization had no noticeable impact.

4.5.2.4 Effectiveness of AI in Optimizing the Booking Process (e.g., Ease of Booking, Pricing Accuracy)

The data showed that 51.02% of respondents rated AI as very effective in optimizing the booking process, particularly in terms of ease of booking and pricing accuracy. Additionally, 43.27% of respondents considered AI to be effective, indicating a strong positive perception of its role in improving the booking experience. A smaller proportion, 4.90%, viewed AI as somewhat effective, suggesting a moderate influence, while only 0.82% of respondents felt that AI was not effective in optimizing the booking process. These findings highlight that a significant majority of respondents recognized AI as an important tool in enhancing the efficiency and accuracy of the booking process.

4.5.2.5 Use of AI in Booking Systems has Increased Booking Rates for the Business

The data showed that 47.76% of respondents reported that the use of AI in booking systems significantly increased their booking rates. Additionally, 51.02% of respondents indicated that AI somewhat increased booking rates. Only 1.22% of respondents felt that AI had no noticeable impact on booking rates, while 0% reported a decrease in bookings.

4.5.2.6 Effectiveness of AI in Enhancing the Tourist Experience in Arusha

The data reveals that the majority of respondents (52.65%) considered AI to be "Very Effective" in enhancing the tourist experience in Arusha, followed by 41.22% who found it "Effective." A smaller percentage (5.31%) reported that the use of AI was "Somewhat Effective," while a minimal 0.82% of respondents deemed it "Not Effective."

4.5.2.7 AI Improved Tourist Satisfaction during their Stay in Arusha

The findings reveal that the majority of respondents, 56.38%, reported that AI significantly improved tourist satisfaction during their stay in Arusha. A smaller portion, 42.80%, indicated that AI contributed somewhat to enhancing satisfaction. Only a very small percentage, 0.82%, stated that AI had no noticeable impact on tourist satisfaction.

4.5.2.8 Effectiveness of AI in Retaining Tourists or Encouraging Repeat Visits

The findings indicated that a significant majority of respondents believed AI was effective in retaining tourists or encouraging repeat visits. Specifically, 54.29% of respondents rated AI as "Very Effective," while 41.63% considered it "Effective." Only 4.08% felt that AI was "Somewhat Effective," and none of the respondents found it "Not Effective." This suggests that AI plays a substantial role in encouraging repeat visits and enhancing customer retention.

4.5.3 Challenges of AI Usage by Tourism Operators

4.5.3.1 Challenges Faced in Implementing AI in the Tourism Business

The findings show that lack of technical skills or expertise was the most commonly reported challenge in implementing AI in tourism businesses, cited by 65.9% of respondents. This was closely followed by high implementation costs and integration challenges with existing systems, both reported by 60.6% of respondents. Limited availability of AI tools suited for tourism was noted by 30.5% of respondents, while 9.8% mentioned a lack of customer trust in AI services. A small proportion (1.2%) identified other challenges. These results highlight that skill gaps, financial barriers, and system compatibility are the most significant hurdles to AI adoption in the tourism sector.

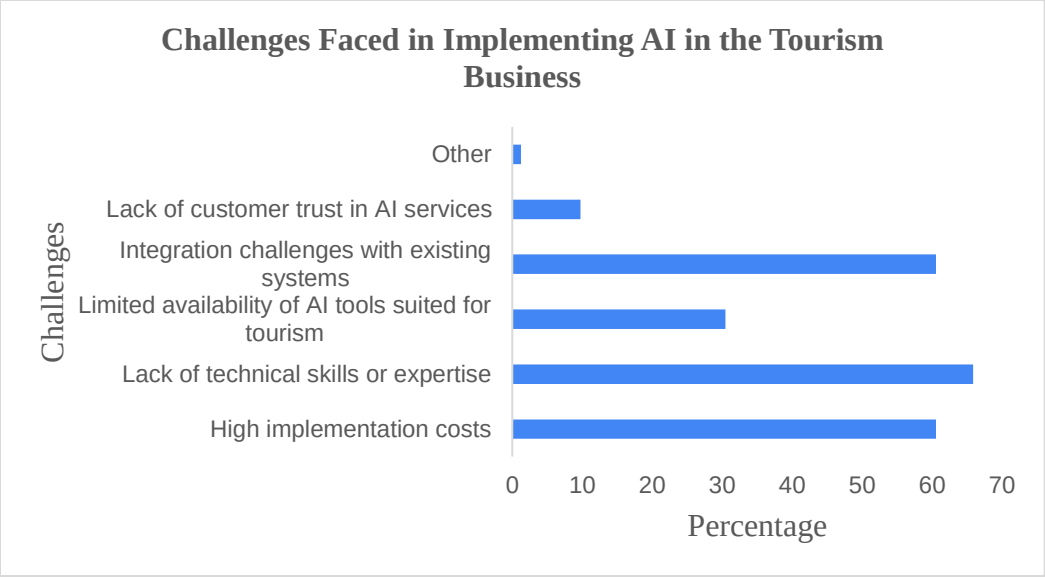

Figure 4.9: Challenges Faced in Implementing AI in the Tourism Business

4.5.3.2 Addressing Challenges Faced in the Implementation of AI in Tourism Business

The responses provided indicated that businesses are primarily addressing the challenges of implementing AI in tourism by focusing on training and hiring expertise. Many responses emphasized the need for increased training, whether it is for employees, technical staff, or managers, to better understand and use AI tools in the tourism industry. Respondents also highlighted the need for investment in AI tools suited for tourism, with several references to raising capital and funding as essential components for tackling the financial barriers to AI implementation.

Additionally, respondents mentioned collaborations with AI experts and external partnerships to bring in the right expertise. There were mentions of budget allocation for AI and efforts to reduce costs by selecting free or cost-effective AI tools. Many respondents expressed the importance of continuous learning and adaptation through frequent training and attending workshops related to AI.

4.5.3.3 Key Barriers to AI Adoption in Arusha's Tourism Industry

The findings indicate several key barriers to AI adoption in Arusha's tourism industry, with respondents identifying awareness issues, technical challenges, and financial limitations as the primary hurdles. One of the most frequently cited barriers was the lack of awareness about AI among both business operators and tourists. Many respondents reported that the lack of understanding regarding how AI works, combined with trust and security concerns, was hindering AI adoption. To address this, several participants emphasized the need for awareness campaigns to educate both the public and business owners about AI's potential and its functionality.

Another significant barrier identified was the lack of technical skills and the shortage of AI experts in the region. Respondents noted that many businesses struggle to implement AI solutions effectively because their staff does not possess the necessary technical skills. Training programs were seen as essential for upskilling employees and enabling business owners to take full advantage of AI technologies. As per the responses, there is also a clear need for more qualified AI professionals within the tourism sector.

High implementation costs were also identified as a major obstacle. Respondents expressed concern over the financial investment required for both the adoption and maintenance of AI systems. Many smaller businesses, in particular, felt that they could not afford the upfront costs, which deterred them from integrating AI technologies. Budget allocations for AI and external funding sources were suggested as potential solutions to overcome this financial challenge.

The limited availability of AI tools tailored to the tourism sector was another key barrier mentioned. Many respondents stated that suitable AI tools for tourism-related operations such as managing bookings, optimizing customer experiences, or analyzing tourism data were difficult to find. This lack of specialized AI tools was seen as a hindrance to AI adoption in the sector.

Furthermore, insufficient technological infrastructure was highlighted as a challenge. It was noted that many small tourism businesses, particularly in rural areas, lack reliable internet access and modern IT infrastructure, which are essential for AI integration. Without these foundational

technological resources, the use of AI becomes impractical for many businesses in Arusha's tourism industry.

Concerns about customer trust in AI systems also emerged. Some respondents pointed out that tourists may feel uneasy about sharing personal data with AI systems, fearing privacy breaches. This lack of trust is seen as a significant barrier to the wider adoption of AI, and respondents suggested that addressing privacy concerns through transparency and education could help to build trust in AI.

Finally, several respondents noted that the cost of AI tools was another barrier, especially when it comes to selecting tools that are compatible with their existing systems. Many respondents expressed difficulty in affording AI software that integrates well with their current operational setup.

4.5.3.4 Benefits of Using AI across the Customer Journey Decision Making Process

The benefits of AI across the customer journey decision-making process, as identified by the respondents, primarily focus on efficiency, customer experience, decision-making, and sales growth. A significant number of respondents emphasized the ability of AI to save time and reduce operational costs. AI simplifies tasks, streamlines processes, and enhances overall operational efficiency. This ability to automate repetitive tasks, such as responding to customer inquiries, managing bookings, and providing personalized content, saves both time and resources. By handling large volumes of data quickly and accurately, AI helps businesses act on customer insights promptly, enabling quicker and more efficient service delivery.

Moreover, AI was widely recognized for its ability to improve customer experience. Respondents highlighted how AI-driven systems, such as chatbots and recommendation engines, allow businesses to offer tailored services based on customers' preferences. This personalization increases customer satisfaction by providing relevant content and recommendations in real time, enhancing overall engagement. Furthermore, the availability of 24/7 support helps ensure that customers can receive assistance whenever needed, which increases the convenience and quality of the customer experience.

AI's role in improving decision-making was another key benefit mentioned. The system's ability to process large datasets and provide actionable insights was highlighted as a means of making data-driven decisions that enhance pricing strategies, demand forecasting, and customer segmentation. AI allows businesses to predict customer behavior, identify market trends, and adjust their strategies swiftly, thus ensuring they stay competitive. By utilizing historical customer data, AI aids in making more accurate decisions that align with the needs and behaviors of the target audience, reducing human error and enabling businesses to adapt to changing demands.

Respondents also noted that AI helps increase sales and foster customer retention. The ability of AI to drive more targeted marketing campaigns, personalize interactions, and employ dynamic pricing strategies contributes to improved conversion rates. With the right AI tools, businesses can engage customers in a more meaningful way, leading to stronger customer loyalty and an increase in repeat visits. By continuously adapting to customers' preferences and offering relevant products or services, AI encourages repeat business and helps to maintain a consistent stream of revenue.

Lastly, AI was seen as an essential tool for gaining a competitive advantage in the tourism industry. Its ability to optimize services and enhance customer interactions was identified as key to setting businesses apart from competitors. Tourism companies that embrace AI gain the ability to offer better services, improve operational processes, and make quicker decisions based on real-time data. As a result, businesses that utilize AI can offer a more innovative, responsive, and personalized experience, which makes them more appealing to customers in a competitive market.

4.5.3.5 Future Improvements or Innovations in AI in the Tourism Industry

Respondents suggested innovations like AI-powered multilingual virtual assistants, personalized travel recommendations, real-time travel updates, and AI-driven virtual tour guides to create more seamless and customized tourist experiences. Another significant theme was increasing operational efficiency through innovations such as automated booking assistance, smart itinerary planning, and AI-driven dynamic pricing for hotels. These ideas aim to optimize resource allocation, reduce operational costs, and improve decision-making accuracy.

Additionally, respondents expressed interest in integrating AI with emerging technologies, like virtual reality (VR) destination previews and augmented reality (AR) experiences, to enhance engagement and interactivity. Additionally, sustainability emerged as a priority, with suggestions for AI-powered eco-friendly travel recommendations and sustainable tourism solutions. Several respondents also mentioned reducing the cost of AI tools and improving technological infrastructure to make AI more accessible, especially for smaller businesses. Training and knowledge development in AI was also emphasized, suggesting the need for AI-related training for both professionals and tourists.

4.5.3.5 Recommended Improvements to Optimise the Use of AI in Enhancing Tourist Travel Decisions

The responses revealed several key improvements for optimizing the use of AI in enhancing tourist travel decisions. A common recommendation was for improved personalization through AI-driven recommendations, which would better align travel options with individual preferences, behaviours, and past interactions. Additionally, better integration of data sources, such as real-time weather, local events, and pricing updates, was emphasized to provide more accurate and up-to-date information for tourists. Such improvements would help tourists make more informed decisions throughout their journey.

Respondents also suggested enhancing the user interface and experience by incorporating more intuitive, user-friendly platforms. The use of voice-activated assistants or chatbots was recommended to make the booking process easier and more accessible. Transparency and trust were also highlighted as crucial for AI adoption, with clear explanations of AI tools and addressing data privacy concerns being vital to building consumer confidence.

Lastly, there was a call for greater investment in AI technologies tailored specifically to tourism. This included the development of AI systems focused on offering personalized cultural recommendations, real-time travel adjustments, and sustainability insights, which would improve the overall tourist experience. These enhancements were seen as essential for optimizing AI throughout the travel decision-making process.

4.6 Inferential Analysis

4.6.1 Correlation for Effectiveness of AI in Raising Awareness

In examining the relationship between AI-driven marketing strategies and their effectiveness in raising awareness about tourism services, the findings reveal statistically significant positive correlations across all variables analyzed. Notably, personalized social media campaigns demonstrated the strongest association with awareness effectiveness ($r = 0.250$, $p < 0.01$), indicating that tailoring content to individual users significantly enhances outreach. Predictive advertising also showed a moderate correlation ($r = 0.209$, $p < 0.01$), followed by search engine optimization using AI ($r = 0.178$, $p < 0.01$), and AI-based content creation ($r = 0.164$, $p < 0.01$).

Table 4.4: Correlation for Effectiveness of AI in Raising Awareness

		AI-based content creation	Personalized social media campaigns	Predictive advertising	Search engine optimization (SEO) using AI	How effective is AI in raising awareness about your services?
AI-based content creation	Pearson Correlation	1	.074	.225**	.185**	.164**
	Sig. (2-tailed)		.245	.000	.004	.010
	N	247	247	247	247	247
Personalized social media campaigns	Pearson Correlation	.074	1	.035	.067	.250**
	Sig. (2-tailed)	.245		.581	.291	.000
	N	247	247	247	247	247
Predictive advertising	Pearson Correlation	.225**	.035	1	.390**	.209**
	Sig. (2-tailed)	.000	.581		.000	.001
	N	247	247	247	247	247
Search engine optimization (SEO) using AI	Pearson Correlation	.185**	.067	.390**	1	.178**
	Sig. (2-tailed)	.004	.291	.000		.005
	N	247	247	247	247	247
How effective is AI in raising awareness about your services?	Pearson Correlation	.164**	.250**	.209**	.178**	1
	Sig. (2-tailed)	.010	.000	.001	.005	
	N	247	247	247	247	247

**. Correlation is significant at the 0.01 level (2-tailed).

4.6.2 Correlation on Effectiveness of AI in Helping Tourists Make Informed Decisions about Travel Options

The correlation analysis revealed that chatbots for answering tourist questions had a significant positive correlation with the effectiveness of AI in helping tourists make informed decisions (r = .162, p = .011). Similarly, AI recommendation engines also demonstrated a significant positive relationship with informed travel decisions (r = .172, p = .007). However, virtual or augmented reality tours did not show a statistically significant relationship with informed decision-making (r = -0.123, p = .054).

Table 4.5: Effectiveness of AI in Helping Tourists Make Informed Decisions about Travel Options

		Chatbots for answering tourist questions	AI recommendation engines	Virtual or augmented reality tours	effectiveness of AI-informed decisions about travel options?
Chatbots for answering tourist questions	Pearson Correlation	1	-.272**	-.336**	.162*
	Sig. (2-tailed)		0	0	0.011
	N	247	247	247	246
AI recommendation engines	Pearson Correlation	-.272**	1	-.192**	.172**
	Sig. (2-tailed)	0		0.002	0.007
	N	247	247	247	246
Virtual or augmented reality tours	Pearson Correlation	-.336**	-.192**	1	-0.123
	Sig. (2-tailed)	0	0.002		0.054
	N	247	247	247	246
How effective is AI in helping tourists make informed decisions about travel options?	Pearson Correlation	.162*	.172**	-0.123	1
	Sig. (2-tailed)	0.011	0.007	0.054	
	N	246	246	246	246

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

4.6.3 Correlation on Effectiveness of AI in Retaining Tourists and Encourage Repeat Visits

The findings revealed a significant positive correlation between the effectiveness of AI in retaining tourists and encouraging repeat visits and the use of sentiment analysis of reviews (r = .369, p = .000), automated follow-up surveys (r = .255, p = .000), and personalized offers or incentives (r = –.131, p = .041). However, the correlation between AI-based customer support and the effectiveness of AI in retaining tourists was not statistically significant (r = –.052, p = .417).

Table 4.6: Effectiveness of AI in Retaining Tourists and Encourage Repeat Visits

		Automated follow-up surveys	Sentiment analysis of reviews	Personalized offers or incentives	AI-based customer support	effective_AI_retaining_tourists_encouraging_repeat_visits
Automated follow-up surveys	Pearson Correlation	1	.246**	-.333**	-.276**	.255**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	247	247	247	247	245
Sentiment analysis of reviews	Pearson Correlation	.246**	1	-.463**	-.303**	.369**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	247	247	247	247	245
Personalized offers or incentives	Pearson Correlation	-.333**	-.463**	1	.084	-.131*
	Sig. (2-tailed)	.000	.000		.189	.041
	N	247	247	247	247	245
AI-based customer support	Pearson Correlation	-.276**	-.303**	.084	1	-.052
	Sig. (2-tailed)	.000	.000	.189		.417
	N	247	247	247	247	245
effective_AI_retaining_tourists_encouraging_repeat_visits	Pearson Correlation	.255**	.369**	-.131*	-.052	1
	Sig. (2-tailed)	.000	.000	.041	.417	
	N	245	245	245	245	245

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

4.6.4 Correlation on Effectiveness of AI in Enhancing Tourist Experience during the Trip

The correlation analysis revealed several statistically significant relationships between AI tools and tourists' experience during their visit. Tour guides or apps were positively correlated with effective tourist experience (r = .151, p = .018), suggesting that their use enhances on-the-ground satisfaction. Similarly, real-time updates showed a positive correlation (r = .146, p = .022), indicating their contribution to a seamless experience. Although personalized itineraries had a positive correlation (r = .122, p = .056), it was not statistically significant at the 0.05 level. Language translation tools exhibited a weak and non-significant correlation with tourist experience (r = .044, p = .493).

Table 4.7: Effectiveness of AI in Enhancing Tourist Experience during the Trip

		language translation	tour guides or apps	Real-time updates	Personalized itineraries	effective_AI_tourist_experience
language translation	Pearson Correlation	1	-.334**	-.227**	.238**	.044
	Sig. (2-tailed)		.000	.000	.000	.493
	N	247	247	247	247	245
tour guides or apps	Pearson Correlation	-.334**	1	-.118	-.342**	.151*
	Sig. (2-tailed)	.000		.063	.000	.018
	N	247	247	247	247	245
Real-time updates	Pearson Correlation	-.227**	-.118	1	-.208**	.146*
	Sig. (2-tailed)	.000	.063		.001	.022
	N	247	247	247	247	245
Personalized itineraries	Pearson Correlation	.238**	-.342**	-.208**	1	.122
	Sig. (2-tailed)	.000	.000	.001		.056
	N	247	247	247	247	245
effective_AI_tourist_experience	Pearson Correlation	.044	.151*	.146*	.122	1
	Sig. (2-tailed)	.493	.018	.022	.056	
	N	245	245	245	245	245

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

4.6.5 Correlation on Effectiveness of AI in Optimising Booking Process (Ease of Booking, Pricing Accuracy)

The analysis showed that AI-powered booking systems had a strong positive correlation with ease of booking and pricing accuracy (r = .231, p = .000), followed by chatbots for booking assistance (r = .132, p = .039). This indicates these tools positively contributed to optimizing the booking process. On the contrary, predictive pricing models and AI-driven payment systems were not significantly associated with the perceived effectiveness of AI in booking optimization (r = -0.024, p = .708 and r = 0.043, p = .501, respectively).

Table 4.8: Effectiveness of AI in Optimising Booking Process (Ease of Booking, Pricing Accuracy)

		Chatbots for booking assistance	AI-powered booking systems	Predictive pricing models	AI-driven payment systems	EffectiveAI_Easebooking_Pricing
Chatbots for booking assistance	Pearson Correlation	1	-.194**	-.173**	-.160*	.132*
	Sig. (2-tailed)		0.002	0.006	0.012	0.039
	N	247	247	247	247	245
AI-powered booking systems	Pearson Correlation	-.194**	1	-.137*	-.257**	.231**
	Sig. (2-tailed)	0.002		0.032	0	0
	N	247	247	247	247	245
Predictive pricing models	Pearson Correlation	-.173**	-.137*	1	-0.064	-0.024
	Sig. (2-tailed)	0.006	0.032		0.32	0.708
	N	247	247	247	247	245
AI-driven payment systems	Pearson Correlation	-.160*	-.257**	-0.064	1	0.043
	Sig. (2-tailed)	0.012	0	0.32		0.501
	N	247	247	247	247	245

EffectiveAI_Easebooking_Pricing	Pearson Correlation	.132*	.231**	-0.024	0.043	1
	Sig. (2-tailed)	0.039	0	0.708	0.501	
	N	245	245	245	245	245

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

4.6.6 Correlation on Effectiveness of AI in Retaining Tourists and Repeat Visits

The correlation analysis between various AI-integrated platforms and the effectiveness of AI in retaining tourists and encouraging repeat visits revealed several statistically significant relationships. SafariGo demonstrated the strongest positive correlation ($r = .342$, $p < .01$), suggesting a notable contribution toward fostering tourist loyalty. This was followed by Travelport ($r = .299$, $p < .01$), Skyscanner ($r = .131$, $p < .05$), and IBMWatson ($r = .125$, $p = .051$), each showing moderate associations. Conversely, Google Travel ($r = –.128$, $p < .05$) showed a weak negative relationship, implying it may be less influential in encouraging repeat visits. Other platforms such as SafariBooking, GetYourGuide, and Amadeus had no significant impact on tourist retention.

Table 4.9: Correlation on Effectiveness of AI in Retaining Tourists and Repeat Visits

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	DV
1	Pearson Correlation	1	-0.023	-.312**	0.081	-.154**	-.166**	.c	.c	-.204**	.c	.c	0.04	0.041	0.037	0.104
	Sig. (2-tailed)		0.714	0	0.206	0.015	0.009	.	.	1	.	.	0.53	0.52	0.568	0.103
2	Pearson Correlation	-0.023	1	0.018	-.136*	.283**	-0.058	.c	.c	-0.029	.c	.c	.246**	.258**	.224**	0.052
	Sig. (2-tailed)	0.714		0.78	0.033	0	0.364	.	.	1	.	.	0	0	0	0.414
3	Pearson Correlation	-.312**	0.018	1	0.122	0.054	.224**	.c	.c	.432**	.c	.c	-0.031	-.144*	-0.028	.131*
	Sig. (2-tailed)	0	0.78		0.055	0.401	0	.	.	0	.	.	0.631	0.024	0.662	0.04
4	Pearson Correlation	0.081	-.136*	0.122	1	-.130*	0.045	.c	.c	0.104	.c	.c	-0.097	.643**	-0.024	.299**
	Sig. (2-tailed)	0.206	0.033	0.055		0.041	0.477	.	.	1	.	.	0.127	0	0.705	0

5	Pearson Correlation	-.154**	.283**	0.054	-.130*	1	-0.035	.c	.c	-0.055	.c	.c	0.096	0.005	0.038	-.128*
	Sig. (2-tailed)	0.015	0	0.401	0.041		0.586	.	.	0.386	.	.	0.133	0.935	0.637	0.046
6	Pearson Correlation	-.166**	-0.058	.224*	0.045	-0.035	1	.c	.c	.308**	.c	.c	-0.014	0.016	-0.013	0
	Sig. (2-tailed)	0.009	0.364	0	0.477	0.586		.	.	0	.	.	0.824	0.803	0.839	0.996
7	Pearson Correlation	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c
	Sig. (2-tailed)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
8	Pearson Correlation	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c
	Sig. (2-tailed)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
9	Pearson Correlation	-.204**	-0.029	.432**	-0.104	-0.055	.308**	.c	.c	1	.c	.c	-0.023	-.171**	-0.021	0.125
	Sig. (2-tailed)	0.001	0.651	0	0.101	0.386	0	.	.		.	.	0.723	0.007	0.747	0.051
10	Pearson Correlation	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c
	Sig. (2-tailed)	.	.	.	.	.	.	.	.	.		.	.	.	.	.
11	Pearson Correlation	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c	.c
	Sig. (2-tailed)	.	.	.	.	.	.	.	.	.	.		.	.	.	.
12	Pearson Correlation	0.040	.246**	-0.031	0.097	-0.096	-0.014	.c	.c	-0.023	.c	.c	1	0.028	-0.023	0.045
	Sig. (2-tailed)	0.530	0	0.631	0.127	0.133	0.824	.	.	0.723	.	.		0.663	0.723	0.48
13	Pearson Correlation	0.041	.258**	.144*	.643**	0.005	0.016	.c	.c	-.171**	.c	.c	0.028	1	0.004	.342**
	Sig. (2-tailed)	0.520	0	0.024	0	0.935	0.803	.	.	0.007	.	.	0.663		0.953	0
14	Pearson Correlation	0.037	.224**	-0.028	0.024	-0.063	-0.013	.c	.c	-0.021	.c	.c	-0.023	0.004	1	-0.076
	Sig. (2-tailed)	0.568	0	0.662	0.705	0.637	0.839	.	.	0.747	.	.	0.723	0.953		0.238
DV	Pearson Correlation	0.104	0.052	.131*	.299**	-.128*	0	.c	.c	0.125	.c	.c	0.045	.342**	0.076	1
	Sig. (2-tailed)	0.103	0.414	0.04	0	0.046	0.996	.	.	0.051	.	.	0.480	0	0.238	
	N	245	245	245	245	245	245	245	245	245	245	245	245	245	245	245

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

c Cannot be computed because at least one of the variables is constant.

Legend Table

specialised AI brand Used	NO
Amadeus	1
SafariBooking	2
Skyscanner	3
Travelport	4
GoogleTravel	5
Sabre	6
Hopper	7
Concur_SAP	8
IBMWatson	9
OTAInsight	10
Avvio	11
GetyourGuide	12
SafariGo	13
other	14
effective_AI_retaining_tourists_encouraging_repeat_visits	DV

4.6.7 Correlation of Effectiveness of Generative AI Tools in Helping Tourists Make Informed Decisions

The correlation analysis demonstrated several statistically significant relationships between generative AI tools and the perceived effectiveness of AI in assisting tourists with informed travel decisions. Notably, Watson Assistant by IBM showed the strongest positive correlation with the dependent variable (r = .208, p = .001), followed by Bing AI Chatbot (r = .162, p = .011), Expedia Chatbot (r = .158, p = .013), and Copilot by Microsoft (r = .151, p = .018). These tools were positively and significantly associated with enhanced decision-making among tourists. Other AI tools such as ChatGPT, Gemini, and Google Bard did not yield significant associations with the outcome variable.

Table 4.10: Correlation on Effectiveness of Generative AI Tools in Helping Tourists Make Informed Decisions

		1	2	3	4	5	6	7	8	DV
1	Pearson Correlation	1	-.291**	-0.012	.279**	.213**	.287**	.269**	.187**	0.046
	Sig. (2-tailed)		0	0.852	0	0.001	0	0	0.003	0.469
2	Pearson Correlation	-.291**	1	.195**	-.171**	-0.052	.495**	.611**	.514**	.151*
	Sig. (2-tailed)	0		0.002	0.007	0.412	0	0	0	0.018
3	Pearson Correlation	-0.012	.195**	1	0.125	-0.023	-0.032	0.029	0.005	0.082

	Sig. (2-tailed)	0.852	0.002		0.051	0.717	0.616	0.652	0.939	0.199
4	Pearson Correlation	-.279**	-.171**	0.125	1	0.094	-.230**	-0.123	-.132*	0.007
	Sig. (2-tailed)	0	0.007	0.051		0.139	0	0.055	0.038	0.915
5	Pearson Correlation	-.213**	-0.052	-0.023	0.094	1	-0.069	-0.067	-0.052	-0.096
	Sig. (2-tailed)	0.001	0.412	0.717	0.139		0.279	0.295	0.414	0.134
6	Pearson Correlation	-.287**	.495**	-0.032	-.230**	-0.069	1	.578**	.512**	.158*
	Sig. (2-tailed)	0	0	0.616	0	0.279		0	0	0.013
7	Pearson Correlation	-.269**	.611**	0.029	-0.123	-0.067	.578**	1	.614**	.208**
	Sig. (2-tailed)	0	0	0.652	0.055	0.295	0		0	0.001
9	Pearson Correlation	-.187**	.514**	0.005	-.132*	-0.052	.512**	.614**	1	.162*
	Sig. (2-tailed)	0.003	0	0.939	0.038	0.414	0	0		0.011
DV	Pearson Correlation	0.046	.151*	0.082	0.007	-0.096	.158*	.208**	.162*	1
	Sig. (2-tailed)	0.469	0.018	0.199	0.915	0.134	0.013	0.001	0.011	
	N	246	246	246	246	246	246	246	246	246

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Legend Table

No	Generative AI (chatbot brand)
1	ChatGPT_byOpenAI
2	Copilot_by Microsoft
3	Quilbot_by Learneo
4	Gemini_by Google
5	GoogleBard_by Google
6	Expedia_Chatbot
7	WatsonAssistant_by IBM
8	Bing_AI_Chatbot
DV	How effective is AI in helping tourists make informed decisions about travel options?

4.7 Regression Analysis

4.7.1 Effectiveness of AI in Raising Awareness

The overall model was statistically significant, $F(4, 242) = 8.231$, $p < .001$, with an R^2 of .120, indicating that 12.0% of the variance in awareness effectiveness was explained by the predictors. Among the predictors, personalized social media campaigns significantly predicted awareness effectiveness ($\beta = .232$, $t = 3.827$, $p < .001$). Predictive advertising also contributed significantly to the model ($\beta = .144$, $t = 2.172$, $p = .031$). However, AI-based content creation ($\beta = .098$, $p = .118$) and SEO using AI ($\beta = .088$, $p = .185$) were not statistically significant predictors.

Table 4.11: Effectiveness of AI in Raising Awareness

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig. (p)
(Constant)	3.266	0.065	–	49.998	.000
AI-based content creation	0.111	0.071	0.098	1.568	0.118
Personalized social media campaigns	0.269	0.07	0.232	3.827	.000
Predictive advertising	0.171	0.079	0.144	2.172	0.031
Search engine optimization (SEO) using AI	0.103	0.077	0.088	1.331	0.185

R^2 = .120, **Adjusted R^2 = .105**, **F(4, 242) = 8.231**, **p < .001**

Dependent Variable: *How effective is AI in raising awareness about your services?*

4.7.2 Effectiveness of AI in Helping Tourists Make Informed Decisions about Travel Options

The regression analysis showed that chatbots for answering tourist questions (β = .223, p = .002) and AI recommendation engines (β = .232, p = .001) were both statistically significant predictors of how effective AI is in aiding informed travel decisions. These results suggest that both tools play a meaningful role in enhancing tourist decision-making. However, virtual or augmented reality tours did not significantly predict this outcome (β = –.003, p = .964). The overall model was significant, F(3, 242) = 6.672, p < .001, with an R^2 = .076, indicating that approximately 7.6% of the variance in decision-making effectiveness is explained by the predictors.

Table 4.12: Effectiveness of AI in Helping Tourists Make Informed Decisions about Travel Options

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig. (p)
(Constant)	3.266	0.088	–	36.964	.000
Chatbots for answering tourist questions	0.258	0.081	0.223	3.169	0.002
AI recommendation engines	0.266	0.078	0.232	3.43	0.001
Virtual or augmented reality tours	–0.005	0.104	–0.003	–0.045	0.964

R^2 = .076, Adjusted R^2 = .065, F(3, 242) = 6.672, p < .001

Dependent Variable: *How effective is AI in helping tourists make informed decisions about travel options?*

4.7.3 Effectiveness of AI in Retaining Tourists and Encourage Repeat Visits

The multiple regression analysis revealed that the model was statistically significant, $F(4, 240) = 14.032$, $p < .001$, explaining approximately 19.0% of the variance in the effectiveness of AI in retaining tourists and encouraging repeat visits ($R^2 = .190$, Adjusted $R^2 = .176$). Among the predictors, sentiment analysis of reviews emerged as the strongest contributor ($\beta = .416$, $p < .001$), followed by automated follow-up surveys ($\beta = .238$, $p < .001$), and AI-based customer support ($\beta = .132$, $p = .038$). While personalized offers or incentives had a positive effect, it was only marginally significant ($\beta = .135$, $p = .052$).

Table 4.13: Effectiveness of AI in Retaining Tourists and Encourage Repeat Visits

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig. (p)
(Constant)	3.008	0.085	–	35.334	.000
Automated follow-up surveys	0.277	0.075	0.238	3.71	.000
Sentiment analysis of reviews	0.495	0.082	0.416	6.006	.000
Personalized offers or incentives	0.202	0.104	0.135	1.951	0.052
AI-based customer support	0.218	0.104	0.132	2.087	0.038

$R^2 = .190$, Adjusted $R^2 = .176$, $F(4, 240) = 14.032$, $p < .001$

Dependent Variable: *Effectiveness of AI in retaining tourists and encouraging repeat visits*

4.7.4 Effectiveness of AI in Enhancing Tourist Experience during the Trip

The regression model was statistically significant, $F(4, 240) = 8.895$, $p < .001$, and accounted for 12.9% of the variance in tourists' experience ($R^2 = .129$, Adjusted $R^2 = .115$). All four predictors made significant contributions. Tour guides or apps were the strongest predictor ($\beta = .329$, $p < .001$), followed by real-time updates ($\beta = .279$, $p < .001$), personalized itineraries ($\beta = .259$, $p < .001$), and language translation tools ($\beta = .159$, $p = .019$). These findings suggest that on-the-

ground AI tools that provide guidance, timely information, and customized plans significantly enhance the tourist experience.

Table 4.14: Effectiveness of AI in Enhancing Tourist Experience during the Trip

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig. (p)
(Constant)	2.992	0.088	–	34.155	.000
Language translation	0.242	0.102	0.159	2.369	0.019
Tour guides or apps	0.437	0.093	0.329	4.71	.000
Real-time updates	0.363	0.085	0.279	4.258	.000
Personalized itineraries	0.352	0.091	0.259	3.866	.000

R^2 = .129, Adjusted R^2 = .115, F(4, 240) = 8.895, **p** < .001
Dependent Variable: *effectiveness of AI in enhancing tourist experience*

4.7.5 Effectiveness of AI in Optimising Booking Process (Ease of Booking, Pricing Accuracy)

The regression analysis revealed that AI applications significantly influenced the effectiveness of AI in optimizing booking processes, particularly ease of booking and pricing accuracy. The model was statistically significant, $F(4, 240) = 7.750$, $p < .001$, explaining 11.4% of the variance in the dependent variable ($R^2 = .114$, Adjusted $R^2 = .100$). Among the predictors, AI-powered booking systems ($B = 0.426$, $\beta = .334$, $p < .001$), chatbots for booking assistance ($B = 0.306$, $\beta = .239$, $p < .001$), and AI-driven payment systems ($B = 0.327$, $\beta = .173$, $p = .009$) were significant contributors to enhancing booking efficiency and pricing accuracy. However, predictive pricing models did not significantly impact the dependent variable ($B = 0.129$, $\beta = .075$, $p = .236$). These findings suggest that interactive and transactional AI tools are more impactful in improving tourists' booking experiences.

Table 4.15: Effectiveness of AI in Optimising Booking Process (Ease of Booking, Pricing Accuracy)

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig. (p)
(Constant)	3.007	0.091	–	33.223	0.000
Chatbots for booking assistance	0.306	0.084	0.239	3.647	0.000
AI-powered booking systems	0.426	0.085	0.334	5.011	0.000
Predictive pricing models	0.129	0.109	0.075	1.187	0.236
AI-driven payment systems	0.327	0.123	0.173	2.65	0.009

$R^2 = .114$, Adjusted $R^2 = .100$, $F(4, 240) = 7.750$, **p** < .001

Dependent Variable: *Effectiveness of AI in Ease of Booking and Pricing Accuracy*

4.7.6 Effectiveness of AI in Retaining Tourists and Repeat Visits

A multiple linear regression was performed to examine the relationship between various AI travel platforms and the effectiveness of AI in retaining tourists and encouraging repeat visits. The overall model was statistically significant, $F(10, 234) = 4.774$, $p < .001$, indicating that the AI tools collectively contributed to predicting the dependent variable. The model explained 16.9% of the variance in the effectiveness of AI in tourist retention ($R^2 = .169$, Adjusted $R^2 = .134$).

Among the predictors, SafariGo emerged as the only statistically significant variable ($B = 0.249$, $\beta = .213$, $p = .018$), suggesting that its use is positively associated with enhancing tourist retention and repeat visitation. Other tools such as Amadeus, Skyscanner, Travelport, and GoogleTravel had positive or negative coefficients but did not reach statistical significance ($p > .05$). AI tools like Sabre, Watson Assistant, and GetYourGuide also did not significantly influence the outcome. This implies that while some AI platforms show potential, SafariGo stands out as the most impactful in this context.

Table 4.16: Effectiveness of AI in Retaining Tourists and Repeat Visits

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig. (p)
(Constant)	3.101	0.155	–	20.032	0.000
Amadeus	0.26	0.155	0.108	1.679	0.094
SafariBooking	0.067	0.094	0.053	0.708	0.479
Skyscanner	0.325	0.212	0.106	1.536	0.126
Travelport	0.168	0.111	0.131	1.52	0.130
GoogleTravel	-0.193	0.109	-0.113	-1.778	0.077
Sabre	-0.216	0.406	-0.034	-0.532	0.595
IBMWatson	0.228	0.282	0.056	0.809	0.420
GetyourGuide	0.179	0.231	0.048	0.775	0.439
SafariGo	0.249	0.104	0.213	2.384	0.018
Other	-0.322	0.252	-0.079	-1.28	0.202

$R^2 = .169$, Adjusted $R^2 = .134$, $F(10, 234) = 4.774$, $p < .001$

Dependent Variable: Effectiveness of AI in Retaining Tourists and Encouraging Repeat Visits

4.7.7 Effectiveness of Generative AI Tools in Helping Tourists Make Informed Decisions

A multiple linear regression was conducted to assess the impact of various generative AI chatbots on the effectiveness of AI in helping tourists make informed travel decisions. The overall model was statistically significant, $F (8, 237) = 2.448$, $p = .015$, indicating that the combined use of these chatbots had a meaningful predictive value. The model explained 7.6% of the variance in informed decision-making ($R^2 = .076$, Adjusted $R^2 = .045$).

Among the AI tools assessed, only ChatGPT by OpenAI demonstrated a statistically significant positive effect ($B = 0.190$, $\beta = .150$, $p = .045$), indicating its contribution to helping tourists make better travel choices. Other tools such as Watson Assistant by IBM and Gemini by Google showed positive coefficients but were not statistically significant. Remaining tools, including Copilot, Google Bard, Expedia Chatbot, Quilbot, and Bing AI Chatbot, did not significantly influence the dependent variable ($p > .05$).

Table 4.17: Effectiveness of Generative AI Tools in Helping Tourists Make Informed Decisions

Predictor	B	Std. Error	Beta	t	Sig. (p)
(Constant)	3.311	0.103	–	32.047	0.000
ChatGPT by OpenAI	0.19	0.094	0.15	2.013	0.045
Copilot by Microsoft	0.058	0.145	0.035	0.401	0.689
Quilbot by Learneo	0.123	0.129	0.062	0.952	0.342
Gemini by Google	0.114	0.082	0.098	1.383	0.168
Google Bard by Google	-0.121	0.155	-0.051	-0.783	0.435
Expedia Chatbot	0.219	0.189	0.097	1.156	0.249
Watson Assistant by IBM	0.358	0.215	0.154	1.669	0.097
Bing AI Chatbot	0.11	0.241	0.038	0.458	0.647

$R = .276$, $R^2 = .076$, Adjusted $R^2 = .045$, $F(8, 237) = 2.448$, $p = .015$

Dependent Variable: How effective is AI in helping tourists make informed decisions about travel options?

Note: *p < .05.

Chapter Five:
Discussions, Conclusion and Recommendations

5.1 Introduction

This chapter discusses the key findings of the study in relation to existing literature. The analysis was based on descriptive statistics, correlation, and regression methods to assess the extent to which AI tools are used by tour operators in Arusha to influence tourist travel decision-making at different stages of the customer journey. Additionally, this chapter provides a comprehensive summary of the study, followed by key conclusions drawn from the empirical findings. It also includes practical and policy-based recommendations. The study aimed to evaluate the use of AI by tour operators in Arusha and its impact on influencing tourist travel decisions, from the awareness stage to post-visit engagement.

5.2 Discussions

5.2.1 Use of AI Tools Across the Tourist Journey

The study reveals near-universal adoption of AI tools among Arusha's tour operators over 90%, with ChatGPT, TripAdvisor, and SafariGo dominating usage. This aligns with global trends where AI integration in tourism has surged post-pandemic, particularly for awareness creation (96.3%) and post-trip engagement (92.2%) (Adam et al., 2021; Cheng & Jiang, 2022). However, the heavy reliance on third-party platforms like TripAdvisor contrasts with Nicolescu and Tudorache, (2022) findings in European markets, where proprietary AI systems are more common. This disparity may reflect resource constraints in emerging economies (Ivanov & Webster, 2017), suggesting a need for localized AI solutions tailored to African operators' budgets and infrastructure.

5.2.2 AI Awareness Creation: The Power of Personalization

The strong predictive power of personalized social media campaigns ($\beta = .232$, $p < .001$) and predictive advertising ($\beta = .144$, $p = .031$) corroborates Bulchand-Gidumal et al., (2023) assertion that AI's value lies in hyper-targeted content delivery. Notably, while SEO using AI showed correlation ($r = .178$, $p < .01$), its non-significance in regression ($p = .185$) implies its role is secondary, a nuance overlooked by King'ori, (2023), who treated all digital marketing tools as equally impactful. This finding challenges Zlatanov and Popesku, (2019) broad claims about AI-

driven platforms, highlighting instead the primacy of algorithmic personalization over mere automation.

5.2.3 AI's Role in Enhancing Informed Decision-Making: Chatbots vs. Human Touch

The efficacy of chatbots ($\beta = .223$, $p = .002$) and recommendation engines ($\beta = .232$, $p = .001$) supports Pillai and Sivathanu, (2020) the framework of AI as a decision-facilitation tool. However, the non-significance of VR/AR tours ($\beta = -.003$, $p = .964$) contradicts Goldenberg et al., (2021) predictions about immersive technologies. This may reflect technology access barriers in Arusha or tourist preferences for utilitarian over experiential AI tools (Shi et al., 2021). Further, Ivanov and Webster, (2019) emphasis on AI's role in overcoming language barriers was partially validated, but the moderate effect sizes suggest human-agent hybrids may still be needed for complex queries.

5.2.4 AI in Booking Optimization: Efficiency Over Price Sensitivity

The dominance of AI-powered booking systems ($\beta = .334$, $p < .001$) aligns with Sharma, (2023) transactional efficiency paradigm. However, the weak impact of predictive pricing ($\beta = .075$, $p = .236$) diverges from Yu and Chen, (2022) findings in Asian markets, where dynamic pricing drove conversions. This implies Arusha's tourists prioritize booking convenience over cost optimization a behavior potentially linked to the region's premium safari market segment (Calvano et al., 2020).

5.2.5 AI in Enhancing On-Trip Experience: Real-Time AI as a Differentiator

The significant effects of tour apps ($\beta = .329$, $p < .001$) and real-time updates ($\beta = .279$, $p < .001$) reinforce Babatunde et al., (2024) Real-time AI inputs always enhance satisfaction by facilitating adaptive decisions and enabling multilingual support for foreign tourists. Moreover, Getchell et al., (2022), AI Language chatbots integrated into tourism platforms and hotel apps offer 24/7 support, assisting travelers with bookings, directions, and inquiries in real-time. However, the lower adoption of language tools ($\beta = .159$, $p = .019$) compared to global benchmarks Topsakal and Çuhadar, (2024) suggests untapped potential. This gap may stem from over-reliance on English in Arusha's tourism or underestimation of non-English-speaking markets.

5.2.6 Post-Travel Engagement and Retention: Sentiment Analysis as a Game-Changer

The outsized role of sentiment analysis ($\beta = .416$, $p < .001$) in retention underscores Filieri et al., (2021) "Emotional analytics" idea that emphasized the post-trip use of AI for feedback collection and relationship management as key to encouraging loyalty and return visits. Similarly, Mussa, (2020) support that when tourists feel valued and engaged even after their trip, they are more likely to develop a sense of belonging and attachment to the destination or service providers. Yet, the minimal use of personalized incentives ($\beta = .135$, $p = .052$) contrasts with Badouch and Boutaounte, (2023) proven strategies in Moroccan tourism, indicating Arusha operators may undervalue post-visit monetization.

5.2.7 Generative AI's Emerging Role: ChatGPT Leads, Others Lag

ChatGPT's significance ($\beta = .150$, $p = .045$) validates Nguyen et al., (2023) findings on Large Language Model (LLM)-powered decision aids. Similarly, Alotaibi et al., (2020), stated that generative AI tools improve the decision-making experience by offering intelligent assistance and fostering trust through responsive interactions. However, the non-significance of tools like Google Bard ($p = .435$) suggests a first-mover advantage for OpenAI, complicating Dwivedi et al.'s (2024) assumption of uniform generative AI adoption.

5.2.8 AI Role in Shaping Tourist Travel Decisions

This study examined the role of AI applications by tour operators in shaping tourist travel decision behavior across five key dimensions: destination choices, itinerary planning, booking behavior, customer touchpoints, and satisfaction/loyalty. The findings highlight AI's transformative impact on Arusha's tourism sector, aligning with global trends in digital tourism (Buhalis & Sinarta, 2019). Below are the implications of the results with existing literature.

i. Destination Choices: AI plays a significant role in destination selection, with 95.5% of tour operators utilising AI to assist tourists in comparing options. This is primarily achieved through chatbots (56.7%) and recommendation engines (55%). Research by Gretzel et al., (2015) supports this, showing that AI-driven personalisation helps reduce decision fatigue by filtering choices based on user preferences. Additionally, 70% of operators noted that AI has a positive impact on tourists' final decisions, highlighting the importance of machine

learning in predicting traveller preferences (Koo & Xiang, 2021; Xiang et al., 2015). However, the limited use of virtual and augmented reality (17.9%) indicates that there is still untapped potential for immersive destination marketing.

ii. Itinerary Planning (Preferences): AI significantly enhances the customization of itineraries, with 34.4% of operators utilizing personalized AI itineraries and 37.8% making use of real-time updates. This aligns with Varkaris and Neuhofer, (2017), who argue that dynamic AI adjustments improve the efficiency of trip planning. However, the relatively low adoption rate of predictive pricing at 16.6% highlights gaps in real-time cost optimization, which is crucial for itinerary flexibility (Chen & Wei, 2024; Derrick et al., 2017). Future innovations, such as AI-powered multilingual assistants, could further streamline the planning process for diverse tourist demographics.

iii. Booking Behavior (Decisions): AI has significantly optimized booking processes, with 92.7% of operators reporting improved efficiency. This improvement is primarily driven by AI-powered booking systems (62.1%) and chatbots (42.1%). These findings align with Huang et al., (2022), who noted that AI reduces friction in transactional processes. However, predictive pricing models are still underutilized, with only 16.6% of operators implementing them. This contrasts with global trends showing that dynamic pricing increases conversion rates (Balushi, 2023). Notably, there is high satisfaction with AI-assisted bookings, as 47.1% of users reported being "very satisfied." This suggests that ease of use is crucial, which Tussyadiah and Park, (2018) has also emphasized in their study on AI usability.

iv. Customer Touchpoints: Social media ads (74.7%) and operator websites (61.2%) are the dominant AI-powered touchpoints, reflecting the shift toward digital engagement (Rana et al., 2022). However, the minimal use of airline websites (3.3%) highlights fragmentation in cross-platform AI integration. This aligns with (Chen & Wei, 2024), who emphasize the need for seamless omnichannel strategies. Post-trip, sentiment analysis (65.4%) dominates feedback collection, supporting Santos and Gonçalves, (2021) assertion that AI-driven insights enhance retention strategies.

v. Satisfaction and Loyalty: AI has significantly enhanced customer satisfaction, with 56.4% of operators reporting notable improvements and 54.3% acknowledging its role in encouraging repeat visits. This supports the findings of Chintasi et al., (2024), which indicate that AI-driven personalization strengthens emotional engagement. However, challenges such as high costs (60.6%) and skill gaps (65.9%) are obstructing wider adoption. This aligns with the concerns raised by Ivanov and Webster, (2019) regarding the accessibility of AI in emerging markets.

5.2.9 Challenges Hindering AI Usage

The study identified three dominant barriers: lack of technical skills (65.9%), high implementation costs (60.6%), and system integration challenges (60.6%). These findings align with El-Mofock, (2023) "AI Readiness Gap" framework, which positions technical skill shortages as the foremost hurdle for SMEs in emerging markets. However, the near-identical prevalence of cost and integration barriers (both 60.6%) suggests these are interdependent challenges a nuance overlooked by Feng, (2021), who treated them as isolated issues. Nam and Dutt, (2020) cost-centric model thus requires refinement for African contexts, where legacy system incompatibility such as manual reservation processes may amplify both financial and technical adoption costs.

Notably, privacy and ethical concerns emerged as secondary but growing barriers, resonating with Filieri et al., (2021) "Trust Paradox" in AI-driven tourism. While Ivanov and Webster, (2024) attributed such skepticism largely to facial recognition and job displacement fears, Arusha's operators emphasized data misuse risks in personalized marketing, a divergence highlighting how cultural contexts shape AI ethics perceptions. This underscores the need for localized transparency protocols, as generic GDPR-style frameworks (often studied in Global North contexts) may not address Global South operators' specific concerns.

5.3 Conclusion

Artificial Intelligence is fundamentally transforming the tourism landscape in Arusha by enhancing decision-making processes and improving operational efficiencies. To fully leverage these advancements, stakeholders within the tourism sector should consider several strategic initiatives.

Firstly, there is a significant opportunity to expand the use of immersive AI technologies, such as Virtual Reality (VR) and Augmented Reality (AR), to create engaging and interactive destination marketing campaigns. These tools can offer potential visitors virtual experiences of Arusha's stunning landscapes, vibrant culture, and unique wildlife, ultimately drawing more tourists to the region.

Secondly, integrating predictive pricing models can greatly enhance booking flexibility. By utilizing AI algorithms to analyze market trends, customer behavior, and historical data, businesses can dynamically adjust prices to optimize occupancy rates and revenues, ensuring that travel options remain accessible and appealing to a diverse range of travelers.

Moreover, investing in comprehensive training programs for staff is crucial to overcoming barriers associated with the implementation of these advanced technologies. Ensuring that employees are well-equipped with the necessary skills to use AI tools effectively will foster a smoother transition and enhance overall service quality.

Lastly, future research should delve into the long-term effects of AI on tourist loyalty specifically within the African markets. Understanding how these technologies influence customer satisfaction and repeat visits will provide valuable insights, helping stakeholders tailor their offerings and marketing strategies to build lasting relationships with travelers.

By addressing these key areas, the tourism sector in Arusha can capitalize on the potential of AI, fostering a more robust and sustainable tourism ecosystem that benefits all stakeholders involved.

5.4 Recommendations

Based on the findings of this study, several recommendations are offered to assist tour operators, policymakers, and academic stakeholders in improving the adoption and effectiveness of Artificial Intelligence in influencing tourist travel decision-making within Arusha's tourism sector. These recommendations aim to support the strategic integration of AI throughout the customer journey, enhance institutional capacities, and promote research-informed practices to create a more competitive and innovative tourism industry.

5.4.1 Tour Operators

Tour operators should invest in staff training and capacity building to bridge the existing technical skills gap in AI usage. This includes continuous professional development through workshops, online certifications, and hands-on training on AI-powered tools such as chatbots, recommendation engines, sentiment analysis platforms, and AI-driven booking systems. Operators are encouraged to adopt cost-effective AI technologies such as open-source platforms and to prioritize the use of personalized social media campaigns and automated customer engagement systems that have proven effective in enhancing tourist decision-making. Additionally, they should collaborate with tech providers to co-develop AI solutions that suit tourism-specific needs, such as itinerary personalization, real-time support, and post-visit engagement.

5.4.2 Policymakers

Policymakers should establish supportive regulatory frameworks and national strategies to promote the integration of AI in tourism. This includes offering tax incentives, subsidies, or grants for small and medium tourism enterprises (SMEs) investing in AI technologies. They should also invest in nationwide awareness campaigns to promote digital transformation and reduce resistance to AI. Infrastructure development, particularly in rural and underserved areas, should be prioritized to improve internet connectivity and accessibility to digital services. Furthermore, policymakers should set standards and ethical guidelines to ensure transparency, privacy, and fairness in AI applications, addressing issues related to data protection and algorithmic bias.

5.4.3 Academia and Researchers

Academic institutions should revise their tourism and hospitality curricula to include AI-related modules such as data analytics, digital transformation, and machine learning applications in tourism. Researchers are encouraged to explore emerging areas such as AI ethics, personalization algorithms, AI in sustainable tourism, and the cross-cultural impacts of AI on tourist behavior. Institutions should also collaborate with the industry to conduct applied research that helps generate local AI solutions for tourism and to offer community-based training programs aimed at skilling up local tour operators and digital marketers in the tourism sector.

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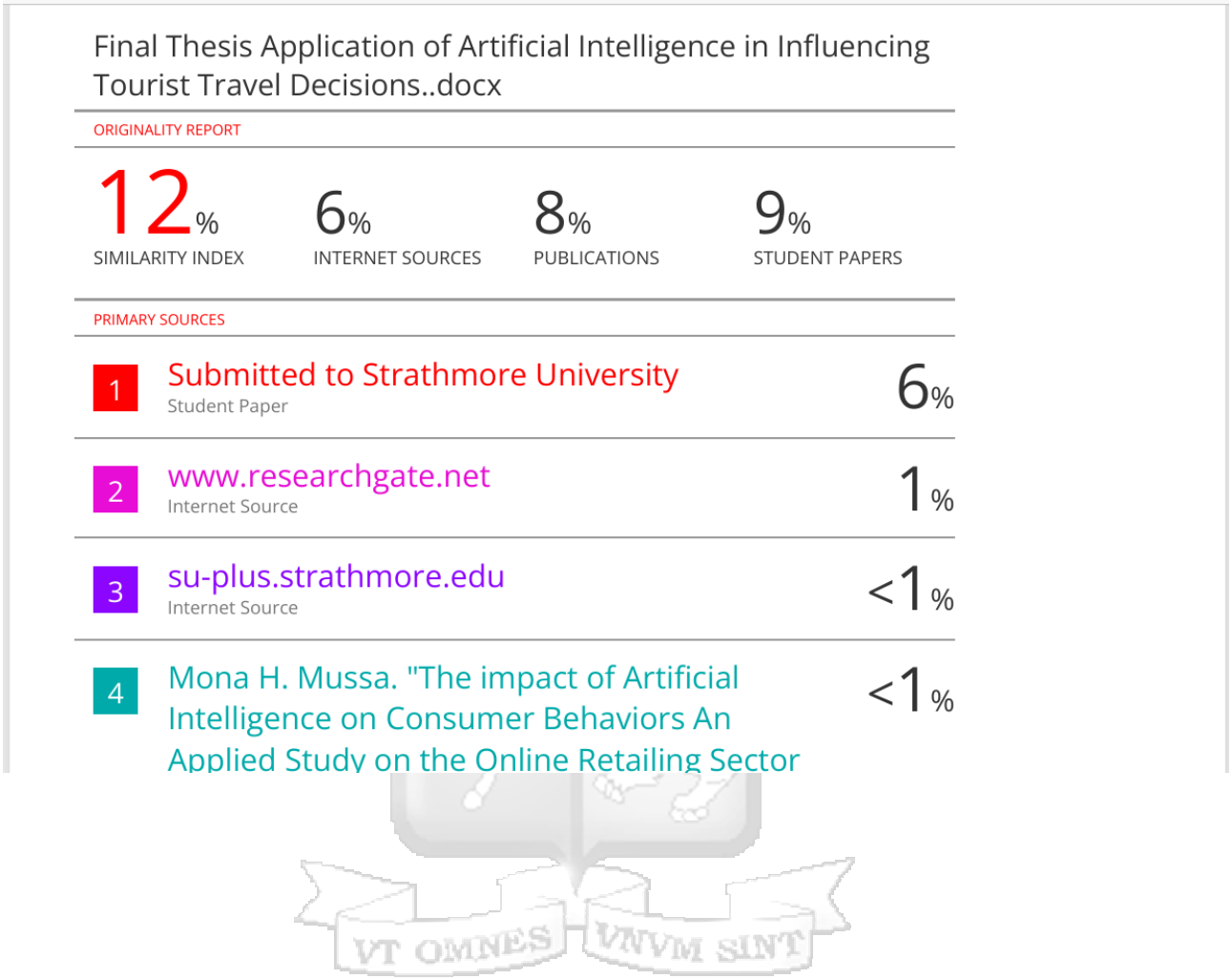
Appendices

Appendix A: Similarity Report



Final Thesis Application of Artificial Intelligence in Influencing Tourist Travel Decisions..docx

ORIGINALITY REPORT

12%	6%	8%	9%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Strathmore University Student Paper	6%
2	www.researchgate.net Internet Source	1%
3	su-plus.strathmore.edu Internet Source	<1%
4	Mona H. Mussa. "The impact of Artificial Intelligence on Consumer Behaviors An Applied Study on the Online Retailing Sector	<1%

Appendix B: Ethics Review Certificate

Strathmore UNIVERSITY

3rd February 2025

Mr Uswege Danford,
danfordnoah@gmail.com

Dear Mr Uswege,

RE: The Application of Artificial Intelligence by Tour Operators in Influencing Tourist Travel Decisions, Case of Tour Operators in Arusha Tanzania

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** proposal. Your application reference number is **SU-ISERC2613/25.** The approval period is from **3rd February 2025 to 2nd February 2026.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.
iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours.
v. Clearance for the export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

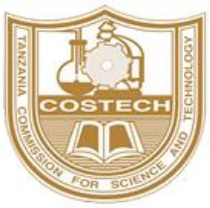
Mr Ambrose Rachier,
Chairperson; SU-ISERC

Ole Sangale Rd, Madaraka Estate. PO Box 59857-00200, Nairobi, Kenya. Tel +254 (0)703 034000
Email admissions@strathmore.edu www.strathmore.edu

Appendix C: COSTEC Research Clearance

TANZANIA COMMISSION FOR SCIENCE AND TECHNOLOGY

RESEARCH CLEARANCE RECEIPT



Receipt Number:	**925087320516877**
Received from:	**DANIFORD USWEGE**
SPCode:	**SP178**
Paid Amount:	**131500.00**
Paid Amount in words:	**One Hundred Thirty-One Thousand Five Hundred TZS Only.**
OutStanding Balance:	**0.0**

In respect of the following bill items (1):

	1. Research Clearance Application Fee	131500.00
	Total Billed Amount	**131500.00**

Bill Reference:	**RIMS20250328-1743164595**
Payment Control Number:	991780030283
Payment Date:	28-03-2025
Issued By:	Costech
Date Issued:	28-03-2025

Questionnaire

The Application of Artificial Intelligence in Influencing Tourist Travel Decisions. From the Perspective of Tour Operators in Arusha Tanzania

To Our Dear Tour Operator

Kindly complete this questionnaire accurately and truthfully. Dear Respondent, I am Danford N. Uswege, researching for my thesis, " The Application of Artificial Intelligence by Tour Operators in Influencing Tourist Travel Decisions. From the Perspective of Tour Operators in Arusha Tanzania," The purpose of this survey is to gather insights from individuals like you, which will help us understand how tour operators apply AI in their daily operation and How Effective AI is in influencing tourist Travel decisions and what are the challenges of AI usage encountered by tour operators. Rest assured that your response to this survey will be treated with the utmost confidentiality. They will be used solely for this research. Completing the survey should take approximately 7 Minutes. Thank you for your time and participation!

SECTION A: GENERAL INFORMATION

Kindly complete the statements below, regarding your general information

1. Name of the company ……

2. What is your position in the company?
   - Owner (Director)
   - General Manager
   - Sales and Marketing
   - Operation Manager
   - Reservation
   - Other position (please mention) ……

3. What is the size of your tour operating company?
   - Small (1-10 employees)
   - Medium (11-50 employees)
   - Large (51+ employees)

4. How long has your company been operating in Arusha Tanzania?
   - Less than a year
   - 1-5 years
   - More than 5 years

5. Years of your Experience in the Tourism Industry
   - 1-3 years
   - 4-7 years
   - 8-10 years
   - 10+ years

6. Is your company owned by local Tanzanian or foreign investors?
   - Local Tanzanian
   - Foreign Investor
   - Both local and foreign investor

7. What is your Gender?
   - Male

- Female
- Other

8. Please select your Age
    - 18-29
    - 30-39
    - 40-49
    - 50-59
    - 60 and above

9. What is your highest level of education?
    - Non-formal education
    - Primary education (Standard 1–7)
    - Secondary education (O-Level & or High school)
    - Diploma or vocational training
    - Bachelor's degree
    - Master's degree or Higher

10. Is your educational background related to tourism?
    - Yes, I have a tourism-related educational background.
    - No, I have a non-tourism-related educational background
    - I have no formal education background

11. How familiar are you with Artificial Intelligence (AI) technologies in tourism?
    Not familiar
    Somewhat familiar
    Very familiar
    Expert

SECTION B: CURRENT USE OF AI IN ARUSHA'S TOURISM INDUSTRY

12. What Specialized AI integrated brand platform do you currently use in your company? (Select all that apply)
    - Amadeus
    - Booking.com
    - Skyscanner
    - Travelport
    - TripAdvisor
    - Google Travel
    - Sabre
    - Hopper
    - Concur (SAP)
    - IBM Watson
    - OTA Insight
    - Avvio
    - Others

13. What Generative AI (Chatbot brand) do you currently use in your company? (Select all that apply)
    - ChatGPT – by OpenAI

- Google Bard – by Google
- Copilot – by Microsoft
- CopyAI
- Expedia Chatbot
- Bing AI Chatbot
- Quilbot – by Learneo
- Gemini – by Google
- Watson Assistant– by IBM
- Others

14. Does your company use AI to raise awareness of your services among potential tourists (e.g., through AI-driven advertising or social media campaigns)?
    - Yes
    - No
    - Planning to implement

15. If yes, which AI-powered tools do you use to increase brand awareness? (Check all that apply)
    - Predictive advertising
    - AI-based content creation
    - Personalized social media campaigns
    - Search engine optimization (SEO) using AI
    - Other (please specify)

16. Do you use AI to assist tourists in considering and comparing travel options, packages, or destinations?
    - Yes
    - No
    - Planning to implement

17. If yes, what AI-powered tools are used at this stage? (Check all that apply)
    - AI recommendation engines
    - Virtual or augmented reality tours
    - Chatbots for answering tourist questions
    - Other (please specify)

18. Has AI helped to influence tourists' travel decisions positively in considering and comparing travel options, packages, or destinations?
    - Yes, significantly
    - Yes, somewhat
    - No noticeable impact

19. Does your company use AI to streamline the booking process for tourists?
    - Yes
    - No
    - Planning to implement

20. If yes, what AI technologies are used to assist tourists during the booking process?

(Check all that apply)

AI-powered booking systems
Predictive pricing models
Chatbots for booking assistance
AI-driven payment systems
Other (please specify)

21. Do you use AI to enhance tourists' experiences during their stay in Arusha?
    - Yes
    - No
    - Planning to implement

22. If yes, how does AI contribute to the on-the-ground experience?
(Check all that apply)
    - AI-powered tour guides or apps
    - Real-time updates (e.g., traffic, weather)
    - Personalized itineraries based on real-time data
    - AI-based language translation tools
    - Other (please specify)

23. Does your company use AI to gather feedback and engage tourists after their trip?
    - Yes
    - No
    - Planning to implement

24. If yes, how is AI applied in the post-experience stage to enhance customer engagement?
(Check all that apply)

Automated follow-up surveys
Sentiment analysis of reviews
Personalized offers or incentives
AI-based customer support
Other (please specify)

25. Which factors influence your decision to use AI in your company?
(Select all that apply)

Customer Demand
Competitive Advantage
Regulatory Requirements
Technological Capabilities
Cost Considerations
Other

26. Which marketing channels (touchpoints) do you currently use AI to influence tourist travel decisions?
(Select all that apply)

Social Media Ads
Email Marketing
Search Engine Optimization
Paid Advertising
Content Marketing and Travel blogs
Online reviews

Airline websites
Travel agency websites,
Online booking platforms
Tour operators' websites
Others

SECTION 3: EFFECTIVENESS OF AI IN ENHANCING TOURIST TRAVEL DECISION-MAKING

27. How effective is AI in raising awareness about your services?
    Not effective
    Somewhat effective
    Effective
    Very effective

28. How effective is AI in helping tourists make informed decisions about travel options?
    - Not effective
    - Somewhat effective
    - Effective
    - Very effective

29. Has AI-driven personalization in considering and comparing travel options, packages, or destinations increased customer satisfaction and conversion rates?
    Yes, significantly
    Yes, somewhat
    No noticeable impact

30. How effective is AI in optimizing the booking process (e.g., ease of booking, pricing accuracy)?
    - Not effective
    - Somewhat effective
    - Effective
    - Very effective

31. Has the use of AI in booking systems resulted in increased booking rates for your business?
    Yes, significantly
    Yes, somewhat
    No noticeable impact
    Decreased bookings

32. How do tourists rate the ease and convenience of the AI-assisted booking process?
    Very satisfied
    Satisfied
    Neutral
    Dissatisfied

33. How effective is AI in enhancing the tourist experience during their trip in Arusha?
    - Not effective
    - Somewhat effective
    - Effective
    - Very effective

34. Has AI improved tourist satisfaction during their stay in Arusha?
    Yes, significantly
    Yes, somewhat
    No noticeable impact

35. How effective is AI in retaining tourists or encouraging repeat visits?
    - Not effective
    - Somewhat effective
    - Effective
    - Very effective

SECTION 4: CHALLENGES OF AI USAGE BY TOURISM OPERATORS

36. What challenges have you faced in implementing AI in your tourism business? (Check all that apply)
    High implementation costs
    Lack of technical skills or expertise
    Limited availability of AI tools suited for tourism
    Integration challenges with existing systems
    Lack of customer trust in AI services
    Other (please specify)

37. How do you address or plan to address these challenges? (Open-ended)

……
……

38. In your opinion, what are the key barriers to AI adoption in Arusha's tourism industry? (Open-ended)

……
……

SECTION 5: GENERAL PERSPECTIVE

39. What do you believe are the main benefits of using AI across the customer journey decision-making process? (Open-ended)

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.....

40. What future improvements or innovations in AI would you like to see in Arusha's tourism industry? (Open-ended)

.....
.....

41. What improvements would you recommend to optimize the use of AI in enhancing tourist travel decisions at each stage?

……
……

Thank you for your participation! Your responses will provide valuable insights into the role of AI in enhancing tourism in Arusha.