DECODING THE ANTECEDENTS OF USER ENGAGEMENT AND ADVOCACY IN MOBILE TRAVEL APPS

BY

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A final year project submitted in partial fulfillment of the requirement for the degree of

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We hereby declare that:

(1) This undergraduate FYP is the end result of our own work, and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

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(3) Equal contribution has been made by each group member in completing the FYP.

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DEDICATION

This research project is especially dedicated to

Dr. Lee Voon Hsien

and

our beloved families and friends.

Thank you for your motivation and support in helping us complete this research project.

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LIST OF ABBREVIATIONS

MTAs	Mobile Travel Apps
PU	Perceived Usefulness
PEOU	Perceived Ease of Use
PR	Privacy Risk
PI	Personal Innovativeness
UE	User Engagement
AI	Advocacy Intention
SOR	Stimulus-Organism-Response
TAM	Technology Acceptance Model
TRA	Theory Reasoned Action
TPB	Theory Planned Behavior
UTAUT	Unified Theory of Technology Acceptance and Use
PLS-SEM	Partial Least Squares Structural Equation Modeling
CA	Cronbach's Alpha
CR	Composite Reliability
CV	Convergent Validity

DV	Discriminant Validity
AVE	Average Variance Extracted
WOM	Word-of-Mouth

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PREFACE

This final year project is completed and submitted in fulfillment of the requirements for the Bachelor of Marketing (Hons) at Universiti Tunku Abdul Rahman (UTAR). Following significant technological improvements, mobile travel applications have become indispensable resources for travelers, enabling ease and personalized experiences. With the market becoming increasingly saturated, developers and marketers face the problem of keeping consumers interested and converting them into advocates. This research investigates the factors that influence user engagement and advocacy in mobile travel applications. Understanding the motivations behind travelers' use and recommendations of digital tools is crucial as they continue to seek more from their technology. The study examines aspects such as perceived usefulness (PU), perceived ease of use (PEAU), perceived risk (PR), and personal innovativeness (PI) with the app. Although mobile travel apps are becoming more important, there is not enough research on the factors that affect user engagement and advocacy for these apps. This research intends to bridge the gap by identifying the critical factors that increase user interaction and advocacy for these applications. The objective is to offer insights that aid in creating app features and strategies that not only meet user expectations but also differentiate apps in a competitive environment. The title of the study is " Decoding the Antecedents of User Engagement and Advocacy in Mobile Travel Applications (MTA)."

ABSTRACT

The technology trend with the variety of development of mobile apps fostered. One of the types of mobile apps consider mobile travel apps (MTAs) is growing rapidly and widely worldwide to ensure the smoothness and recovery of tourism activities after the pandemic. Most of the users utilized mobile travel apps while traveling since it effectively replaced many functions in the tourism industry with one-touch which smoothed the tourism communications. Therefore, it was critical to examine the factors that impact user engagement and advocacy intentions towards mobile travel apps. In this research, SOR theory and the TAM were applied as theoretical framework within variables perceived usefulness, perceived ease of use, privacy risk and personal innovativeness which influence user engagement and advocacy towards MTAs. Besides, the data of 303 respondents who have experience by using MTAs will be collected and analyzed by PLS-SEM. The findings enable the researcher, manager, developers and government who include in mobile travel industry to gain more insight, thereby enhanced the user experience and satisfaction toward MTAs.

Keywords: mobile travel apps; SOR; TAM; user engagement; advocacy intention

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CHAPTER 1: INTRODUCTION

1.0 Introduction

The background of MTAs will be introduced and finds out problem to determine factors that influence user engagement and advocacy intention toward mobile travel apps. Besides, the significant of the research also will be covered.

1.1 Research Background

Mobile applications have become an important aspect of many people's daily lives (Sun et al., 2023; Fakfare et al., 2023). This is because almost all daily tasks are facilitated by one or more mobile apps (Zein et al., 2023). From 2010 to 2020, the number of apps on major platforms like Google Play and Apple has increased dramatically, from thousands to millions. However, this proliferation has led to an increase in malicious and vulnerable applications (Mohsen et al., 2022; Meena & Sarabhai, 2023).

Digital transformation is thought to be related to smart travel concept. It was played an important role in supporting competitiveness and sustainability of current and future destinations (Birenboim et al., 2023). Rapid adoption through smartphones and mobile technologies has led to individuals becoming increasingly reliant on Internet-based services to facilitate communication, access to information, enable mobility, and purchase goods, which requires them to enter personal data in

exchange for personalized services (Ying et al., 2023). For example, travelers now often use easy-to-use but effective apps installed on smartphones to collect and access information to support their destination decision making process (Do et al., 2020).

The tourism sector has largely adopted mobile apps, redefining how we organize travel by searching for flights, accommodations, and local experiences (Benaddi et al., 2024). Innovations in these apps have fundamentally changed how individuals plan, book, and experience travel (Linton & Kwortnik, 2019; Coves-Martinez et al., 2023). The arrival of mobile technology has increased tourism and altered tourist behavior (Coves-Martinez et al., 2023). Smartphones and travel apps now play a key role in enhancing travel experiences and are likely to continue attracting strong interest in the tourism industry (Do et al., 2020).

Statista (2024b) reports that mobile apps play a significant role in the travel market, with global revenue from travel apps projected to hit $1.2 billion by 2023. Booking.com ranks as the world's most downloaded online travel agency app, followed by Airbnb and Expedia (Statista, 2024a). As a result, travel agencies are increasingly using mobile technology to enter new markets, lower distribution costs, and enhance customer satisfaction by offering a smooth travel experience (Putra et al., 2022).

The use of smartphones and travel apps during travel indirectly affects satisfaction, as their impact can vary depending on individual experiences (Coves-Martinez et al., 2022). Mobile travel apps cater to different needs: some provide basic information about destinations, while others offer detailed insights or features to enhance convenience. The most popular apps provide real-time information on services like accommodation, transportation, and dining options (Palos-Sanchez et al., 2021). When technology enhances the travel experience, it can improve a tourist's perception of a destination and increase their likelihood to recommend or revisit it (Tavitiyaman et al., 2021).

Figure 1

1.2 Problem Statement

In the post-pandemic era, the widespread adoption of mobile travel apps (MTAs) faces a significant challenge because the uncertainty of continued user engagement (Coves-Martínez et al., 2023). This is because of rapid innovation of technological which forces MTAs susceptible to abandonment and deletion by users compared with other types of apps (Ozturk et al., 2016). In addition, the users rejected to use MTAs because of the usability deficiency (Putra et al., 2022). This is compounded by issues with lacks real-time update of MTAs lead to a decline in user experience (Fakfare & Manosuthi, 2022). According to Statista, although 72% of people use mobile travel applications and making mobile travel applications as a trend, a small portion around 12% still use traditional methods to directly find travel agencies due to technology limitation of users force difficulty in coordinating schedules and managing payments through online

(Armstrong, 2023). Additionally, the privacy and security concern also highlighted by the failure around 97% of popular travel apps to meet standards in the Zimperium study because allows other on the device to potentially steal data from travel apps. (Keating,2019; Winder, 2019). This is because the sensitive data such as the personal information, location and payment details will be collected by MTAs.

Numerous past studies focused on the factors that drive continuous intention to use and loyalty of MTAs (Putra et al., 2022; Medeiros et al., 2022; Coves-Martínez et al., 2023). The researchers also examined the research related the user's attitude and behavior intention toward the MTAs (Dastjerdi et al., 2019b; Ahmad et al., 2021; Wu et al., 2021). Besides, Dastjerdi et al. (2019a) and Coves-Martínez et al. (2022) also deal the related research in studying the user's satisfaction when using the MTAs. Unified theory of acceptance and use of technology (UTAUT) and SOR Model widely adapted in the studies related to MTAs (Fang et al., 2017; Tan & Ooi, 2018; Hew et al., 2018; Wu et al., 2021)

However, a gap seems to be found in the literature of MTAs field. We found out that the researchers have paid limited attention to advocacy intentions in related studies because past studies have focused on examining factors toward users' behavior and intention by using MTAs (Dastjerdi et al., 2019b; Ahmad et al., 2021; Wu et al., 2021). Besides, the personal innovativeness of users towards MTAs limited concern in the previous related studies (Singh et al., 2024). Besides, the combination of TAM and SOR model also is relatively uncommon in the field of MTAs research. Therefore, we decided to investigate the factors of MTAs on user engagement and advocacy intentions within TAM and SOR model for better understand and fill this gap in the related literature.

1.3 Research Objectives and Questions

Research Objectives (RO)	Research Questions (RQ)
RO1: To investigate the impact of PU, PEOU, PR and PI on user engagement within MTAs.	**RQ1:** Does the PU, PEOU, PR and PI influence user engagement in MTAs?
RO2: To investigate the relationship between user engagement and advocacy intention in MTAs context.	**RQ2:** Does user engagement influence advocacy intention in MTAs?

1.4 Research Significant

1.4.1 Theoretical / Academic Significance

This research model contributes to academicians and researchers in tourism management, information systems and consumer behavior because this research provides comprehensive understanding about the factors driving user engagement and advocacy intentions in MTAs. The SOR model and TAM will be advanced in this research to demonstrate the applicability and effectiveness in understanding user behavior in MTAs contexts. The SOR model emphasis on the role of external stimuli and internal states to shape the behavioral responses by using MTAs with the TAM focus on user perceptions of MTAs technology. This study examines the relationship between stimulus (TAM variables, privacy risk, and personal innovativeness), organism (user engagement), and response (advocacy intention) to enhance the understanding about the driving user intention toward MTAs. This comprehensive framework can be helped to understand and predict the user engagement and advocacy intentions toward the mobile travel application.

Therefore, the academicians and researchers in this field will benefit from having in depth insights from this study.

1.4.2 Practical / Managerial Significance

The research contributes to the designers and managers in the development of the MTAs industry. This research has insights into the TAM variables that can help designers create user-friendly interfaces and functional MTAs. This allows developers to enhance the overall user experience by prioritizing features that align with user preferences and needs, thereby increasing user engagement. Additionally, this research is important for designers and developers to implement strong security measures when they design the MTAs to enhance user trust and satisfaction, ultimately promoting greater engagement and advocacy. In addition, this research can also contribute to policy makers and regulators to understand and address the privacy and security risks that present in MTAs. Due to the increasing concerns about data privacy and security to the digital, this research can help them to develop a strong regulations and standards to protect user data and ensure trust in the MTAs ecosystem.

1.5 Outline

Chapter one introduces the research topic of mobile travel applications and their role in transforming the tourism industry. Chapter two provides a literature review, incorporating a theoretical framework based on the SOR models and TAM. It examines constructs such as perceived usefulness, perceived ease of use, privacy risks, and personal innovativeness to understand their indirect impact on user engagement and advocacy. Chapter three outlines the data collection methods, while chapter four presents the study's findings. Chapter five discusses the main findings and their implications, offering practical guidance for app developers to enhance

user engagement and promotion. It also evaluates the research limitations and suggests future research directions.

1.6 Conclusion

An overview of this study is presented and determine the scope of the comprehensive investigation in relation to the objectives.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

The SOR model and TAM as well as the variables will be study based on literature review. The hypothesis will be developed along with research model.

2.1 Theoretical Foundations

2.1.1 SOR Model

Stimulus-Organism-Response (SOR) model is introduced by Robert Sessions Woodworth through his book “Dynamic Psychology.” which published in 1918. This theory is developed to explore how the external factor influences the consumer’s feeling which cause the result of the behavior (Mehrabian & Russell, 1974). Besides, SOR also classified as an alternative theory from stimulus-response (SR) proposed by Edward Thorndike in 1905 suggested that the consequences of the action will influence the user behavior (Woodworth ,1918). In SOR, Woodworth (1918) introduced the organism as the participant in the internal psychological process that can react to the stimulus and behavior.

This theory widely adopted in several studies related to the mobile shopping sector such as the research to study the consumer's intention toward the mobile online shopping (Chopdar & Balakrishnan, 2020; Le & Ngoc, 2023; Zhu et al., 2023). According to Wu et al. (2023), SOR model also served as the framework in the research to understand how consumers behavior is affected by influencers who market sustainable food on social media. Besides, the research that related the mobile application usage such as meal and medicine delivery also developed with the SOR model to explore the consumer behavior (Shah et al., 2023; Chakraborty et al., 2023). Based on the past study review, SOR was studied the user's intention and experience toward mobile VR and AR application in tourism field (Do et al., 2020; Schiopu et al., 2022)

There are three of the elements consist by the SOR which include stimuli, organism, and response (Hewei and Lee,2022). Stimuli (S) refer to an external environment or social factor that can affect the action of an organism. Organism (O) is an individual internal psychological process that transfers stimuli to information. Response (R) consider as the user behavior toward the stimulus information.

In this research, TAM variables and perceived value applied as external stimulus and the user's engagement would be organism in the SOR model. This theory is developed to interpret the advocacy intention toward the MTAs.

2.1.2 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is an information technology framework was introduced by Fred Davis in 1989 to study how to influence the user accept and use the technology (Davis, 1989). This model considered as an extension of Theory Reasoned Action (TRA) and

Theory Planned Behavior (TPB) to forecast the behavior of the people in relation to acceptance of new technologies. In TAM, Davis (1989) indicated that the usage attitude and feeling of individuals toward technology will be directly influenced by the beliefs easy to use and useful, which determine the behavior intention and willingness of the people to utilize the technology.

TAM applied widely in the various range of the research study such as Artificial Intelligent (AI) technology to examine the interaction between the advance robots and consumers in the tourism and hospitality industry (Go et al. ,2020). Besides, TAM also has been used to examine in the users' behavioral intentions to use shared and automated parking modes (Niu et al., 2021; Edelmann et al., 2023) Besides, TAM was also popular required in the social science research regarding the students' behavioral intention to use e-learning during COVID-19 (Sukendro et al., 2020; Alassafi, 2022; Natasia et al., 2022).

Besides, the TAM conduct the two of the key components to adopt the people into the technology which are perceived usefulness (PU) and perceived ease of use (PEOU). Firstly, the PU refers to the level of an individual that the implementation of the specific system will increase job performance (Davis, 1989). Secondly, PEOU reflects the level of a person that simply using system. It depends on the ability and attitude of the person to implement the system (Davis, 1989).

This research applies TAM to explain the PU and PEOU affect the user engagement and advocacy intention toward MTAs.

2.2 Review of variable

2.2.1 Perceived usefulness (PU)

Research indicates that perceived usefulness (PU) is a subjective evaluation of an individual toward the degree which a particular technology is likely improving the productivity and performance to achieve specific goals or tasks (Davis, 1989; Sohn, 2017). It used to understand user attitudes and behaviors towards adopting new innovations (Pop et al., 2023). This is because PU influences a person's intention to use a technology, which in turn affects their actual usage behavior (Akdim et al., 2022). In other words, if an individual perceives a technology as useful, they are more likely to adopt it and use it regularly. According to De Lourdes Bastos et al. (2024), the user considers the valuable and useful technology since function it is more effectiveness and simple to use in enhancing productivity. Besides, PU can vary from person to person based on their individual experiences, preferences, and goals. (Zhang et al., 2023; Alqarni et al., 2024). In mobile application sector, PU focus on the information searching through the review from mobile travel application will enhance their travel tasks (Zhang et al., 2023).

2.2.2 Perceived ease of use (PEOU)

Perceived ease of use (PEOU) refers to the degree of confidence users believed that technology could help to minimize the effort in their job (Green, 2024; Putro & Takahashi, 2024). It's based on their personal perceptions and feelings about the usability and user-friendliness of that thing. The users' attitudes, intentions, and behaviors toward adoption of technology can be influenced by the PEOU (Hansen et al., 2018; Caffaro et al., 2020). Generally, the technology that is perceived as easy to use is more likely to be adopted and utilized by the user compared to the technology that

is perceived as difficult. For example, user-friendliness technology contributes to perceived ease of use through simple interface design, creativity, and a clear and straightforward understanding of the function (Pelet & Taieb, 2022; Koh et al., 2023; Putro & Takahashi, 2024). This is because PEOU of technology can enhance user satisfaction and promote adoption and usage of technology. Additionally, Putra et al. (2022) also suggested that PEOU is an important factor in studying about the user intention and behavior toward MTAs.

2.2.3 Privacy Risk (PR)

In the digital globalization, the personal data collection and transmission through the electronic within huge amount has become common which creating the privacy risks (Chen et al., 2022). Privacy risk (PR) refers to the user's concern about the leakage or misuse of sensitive personal information led to negative consequences (Balapour et al., 2020). This is because users' private information can be collected and analyzed quickly by using data analysis technologies. Since the widespread use of technology makes personal privacy data easy to collect and transmit, the degree of loss of control over personal privacy information will increase, resulting in a higher privacy risk (Lu, 2024). According to Chen et al. (2022), PR occurs because of the data breaches, insufficient of technology, lack of security measures and access without permission. Besides, PR can predict the user behavior because it can influence the willingness of the user to expose personal information by using mobile travel applications (Coves-Martínez et al., 2023). If individuals concern about their privacy loss due to data transfer by using the MTAs, they will be less likely to engage with the application (Coves-Martínez et al., 2023).

2.2.4 Personal Innovativeness (PI)

Personal innovativeness (PI) refers to the degree of acceptance which an individual adapts to a new environment or tries something new without experience shows the expression toward novelty-seeking tendencies (Lin & Filieri, 2015; Patil et al., 2020). According to Chen (2022), the individuals with a higher degree of innovativeness will tend to have more positive views toward the new technology. This is because individuals who have high levels of personal innovativeness have the characteristic of being open-minded, curious, and adventurous, so they are willing to take risks when exploring something new (Lin & Filieri, 2015; Li et al., 2024). In information system field, they are usually will be the first one involved and adopt in the new technologies because of their proactive in seeking and utilizing on innovations (Chen,2022). Besides, PI is important because it enables to help the individuals stay ahead of the trend and catch out the opportunities for growth and advancement (Li et al., 2024). Based on previous research reviews, PI has rarely been used in the research related to user intentions of mobile travel applications (Singh et al., 2024). Here, PI applied focus the user engagement and advocacy intentions toward the mobile travel application.

2.2.5 User Engagement (UE)

In relationship marketing, user engagement is recognized as a complex concept that significantly impacts aspects like value perception, word-of-mouth communication, involvement, trust, satisfaction, and loyalty (Kritzinger and Petzer, 2020). Vayghan et al. (2022) demonstrate that customer engagement can be used to predict consumer behaviors, such as loyalty and recommendations. Hsu (2023) defines engagement as the degree to which users are cognitively, emotionally, and physically connected with organizations providing services. Furthermore, Hsu (2023) describes user engagement as the level of involvement and affinity users show towards an

organization's offerings, whether initiated by the customer or the organization itself. Japutra et al. (2022) characterize customer engagement behavior as observable actions beyond mere purchases, driven by motivations such as word-of-mouth, recommendations, blogging, writing reviews, or even participating in legal actions. Hepola et al. (2020) also suggest that these engagement behaviors are motivated by factors beyond transactional activities. Next, Bitrián et al. (2021) observed that previous research on user engagement with mobile apps has mainly focused on identifying specific app elements—such as functionality, user-friendliness, privacy, security, and interactivity—that influence user engagement.

2.2.6 Advocacy Intention (AI)

Consumer advocacy intention is the willingness of satisfied consumers to promote and defend a brand both online and offline, often through channels like YouTube, Facebook, Instagram, and Twitter (Kalam et al., 2024). This advocacy includes sharing reviews, posts, and engaging with brand content, as well as recommending products or services to others. Recent studies highlight the crucial role of social media platforms in brand advocacy. Saini and Arasanmi (2020) describe advocacy as recommending or supporting a corporate offering, either through social behavior, like word-of-mouth recommendations, or physical behavior, such as purchasing products. Abdelmaaboud et al. (2024) define customer advocacy as active engagement, where customers support and promote a company through actions like displaying logos and merchandise. Razzaq and Akhtar (2024) emphasize that tourist advocacy involves recommending destinations and sharing positive experiences, influencing others' travel decisions. Thus, advocacy intention is the sharing or influencing of others' choices or decisions based on personal experience.

Table 2.1

Definition of Variables

Variables	Definition	Citation/References
Perceived usefulness	The degree which mobile travel apps is likely improving the productivity and performance to achieve travel tasks.	(Davis, 1989)
Perceived ease of use	The degree of confidence in mobile travel apps to minimize effort in travel planning task.	(Davis, 1989)
Privacy risk	The concern of users about leakage or misuse of personal information by using mobile travel apps which lead to negative consequences	(Balapour et al., 2020)
Personal Innovativeness	The degree of acceptance and adaptation in trying new mobile travel apps without experience	(Patil et al., 2020)
User Engagement	The levels of engagement and affinity that show user's cognitive, emotional, and physical connections to mobile travel apps	(Hsu, 2023)
Advocacy Intention	The willingness of satisfied consumers to promote the mobile travel apps on social media or share with others around them	(Kalam et al. ,2024)

2.3 Hypothesis Development

2.3.1 Perceived usefulness (PU) and user engagement (UE)

Perceived usefulness (PU) affects user's perception of platform usefulness, and is related to satisfaction, engagement, and acceptance of e-learning technology (Gunness et al., 2023). Arghashi and Yüksel (2022) suggests that when consumers perceive a technology as useful, they are more likely to engage with it. This implies a positive relationship between PU toward technology, and trust in it. As example in Arghashi and Yüksel (2022) found that the inclusion of AR features has a direct impact on the PU of AR technology, consequently bolstering consumer engagement through AR apps. Recalde et al. (2024) cited that perceived usefulness in the context of augmented reality (AR) technology for shopping entails shoppers' positive assessment of its ability to match their needs, offering a more realistic and informative way to evaluate products, ultimately reducing uncertainty, generating high levels of engagement and increasing purchase intention. Next, Wang and Li (2019) argue that when the quality of eWOM is high, characterized by detailed information about travel service providers or destinations, providing individuals with more relevant information may lead them to perceive the website as useful or valuable for meeting their needs. In other words, positive usefulness in term of eWOM is generated when users have a high level of engagement with detailed information about travel service providers or destinations, which is highly useful to its users. Hence, we propose the following hypothesis:

H1: The PU positively affects UE.

2.3.2 Perceived ease of use (PEOU) and user engagement (UE)

The perceived ease of use (PEOU) is crucial for engagement because it indicates the consumer's perception of the accessibility and willingness to invest time and effort in interacting with the platform (Din et al., 2023). Fraccascia and Nastasi (2023) suggest that when individuals find food waste reduction mobile apps easy to navigate, they are more inclined to download and use them. Moreover, Lim et al. (2022) propose that mobile apps facilitate customer access to a company's products or services, potentially encouraging them to shop more frequently. Duffett and Maraule (2024) points out that ease of use is critical to enhancing customer engagement. Consumers are more likely to use websites and apps that they perceive as user-friendly. This increases their satisfaction and loyalty. The study also noted that user-friendly and engaging platforms increase user satisfaction, and users are more likely to return to and recommend these platforms that provide a good user experience. Hence, we formulate the following hypothesis:

H2: The PEOU has positively affected the UE.

2.3.3 Privacy risks (PR) and user engagement (UE)

According to Pang and Ruan (2023), users' perception of a service or application is significantly influenced by privacy risks. Consequently, the infringement upon privacy directly elicits adverse emotions. Upon realizing that their privacy is compromised through tracking, surveillance, or similar breaches, users might curtail or cease their engagement with smartphone applications. Next, according to Roy et al. (2023), previous research suggests that platforms which demand increased effort expectancy and pose greater risks, such as privacy risks, are likely to discourage customer engagement. Conversely, platforms that deliver expected performance and offer enjoyable

experiences in a reliable manner are more likely to motivate customers to interact with them. In addition, according to Fox et al. (2021), when people perceive that using mobile applications compromises their privacy, they are inclined to avoid engaging with the app. Consequently, they might also be less inclined to depend on the application for health advice since doing so involves using it and thereby exposing themselves to potential privacy risks. Tseng et al. (2022) found that perceptions of privacy risks can adversely affect individuals' behavior and engagement with online platforms. In addition, these privacy concerns can also hinder an individual's intention to seek and share information. Lu (2024) suggests that as consumers recognize the advantages of mobile banking apps, like their widespread accessibility, they'll likely become more willing to disclose personal information and engage with the platform. Nevertheless, privacy worries remain a barrier to user engagement with these apps. Alrawad et al. (2023) discovered that the personal risk significantly impacts customers' engagement to adopt new technology, a finding corroborated by Verkijika and Neneh (2021). Hence, we formulate the following hypothesis:

H3: The PR negatively influence the UE.

2.3.4 Personal innovativeness (PI) and user engagement (UE)

According to Yen et al. (2020) asserted that innovativeness could have a positive impact on user engagement, consequently fostering customer value co-creation behaviors. Kamboj et al. (2024) found a positive relationship between personal innovativeness and engagement to use contactless mobile payment application. This suggests that individuals who are more open to adopting new ideas and technologies are more likely to embrace and use contactless mobile payment application compared to those who are less inclined towards innovation. In their research, Tai and Nguyen (2023) found that highly innovative people tend to try new technologies rather than stick to their current choices. This said that innovativeness is related to a willingness to engage in change and explore new options for the use of technology. Alalwan et al. (2020) highlight that the capacity of

mobile shopping applications to customize and personalize their features according to individual customer preferences represents a significant innovation. They suggest that when customers perceive these systems, along with associated marketing efforts such as design, information, interface, services, products, and recommendations, as tailored and relevant to their needs and preferences, they are more inclined to engage with the mobile shopping app. This suggests a clear relationship between the innovative personalization features of mobile shopping apps and customer engagement. Sia et al. (2022) conducted a groundbreaking study focused on understanding developers' perceptions of smart features in MTAs. The study shows a close relationship between innovation and user engagement, as innovative features in MTAs can significantly increase user interest and adoption. Hence, we formulate the following hypothesis:

H4: The PI positively influences the UE.

2.3.5 User engagement (UE) and Advocacy Intention (AI)

The hypothesis of this research is that user satisfaction in mobile travel apps is a key factor in the development of advocacy intention. This assertion is based on the findings of Molinillo et al. (2022), who demonstrated that satisfied users of retail apps are more likely to continue using these services and recommend them to others. This is a logical extension to the realm of travel apps, as users who are satisfied with their experience are more likely to engage with the app consistently and advocate for its use to others. According to Vayghan et al. (2022) proposed that fostering customer engagement could lead to the joint generation of value and loyalty. In a subsequent study, Hsu (2023) found that consumer engagement has the potential to enhance brand experiences by facilitating the sharing of information on various platforms such as mobile and online engagement platforms. Hepola et al. (2020) explained that satisfaction positively influences the intention to continue using a service, supported by motivation theory and previous empirical research on consumer engagement and behavioral intentions. It can be said that the higher the engagement of

users, the higher the willingness of users to advocate when using MTAs due to the improvement of satisfaction. Hence, we formulate the following hypothesis:

H5: The UE positively influences the AI.

2.4 Research Framework

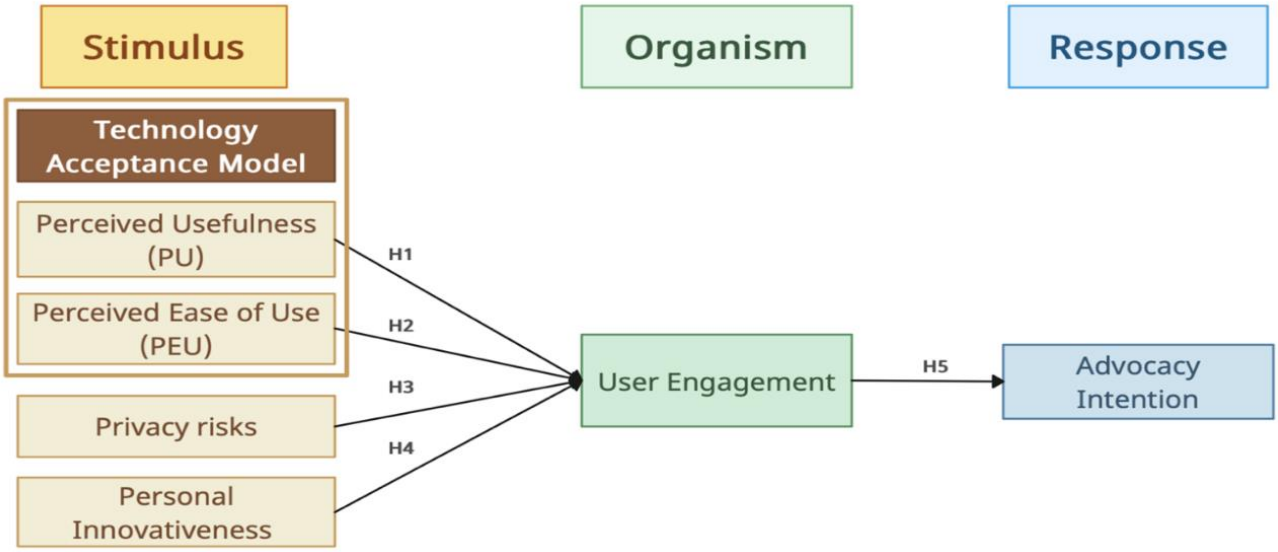

Figure 2

The proposed model (Figure 2) grounded by SOR model include TAM variables, privacy risks and personal innovativeness as stimulus. The organism here is shown as user engagement, and response refers to advocacy intention to use MTAs.

2.5 Conclusion

This chapter studied the SOR model and TAM within variables and there are total five of hypothesis to study the relationship between the variables.

CHAPTER 3: METHODOLOGY

3.0 Introduction

The research methodology will be covered including research and sample design, data collection methods and the tools analysis.

3.1 Research Design

3.1.1 Purpose

The research aims to explore the complex relationship between user engagement and advocacy intention toward MTAs to provide valuable insights for app developers, marketers, and government in the tourism industry.

3.1.2 Online survey

Quantitative research involves dealing with numbers and converting collected information into digital data (Kotronoulas & Papadopoulou, 2023). It heavily relies on survey methods and assumes that the constructs being studied are measurable (Stoffel et al., 2023). The aim of quantitative research is to process numerical data to identify trends and relationships and to verify measurements to answer questions such as who, how much, what, where, when, how many, and how (Kotronoulas et al., 2023). Therefore, in this study, we chose online surveys as the data collection method. This choice is based on several key factors that make online surveys our preferred research method.

Besides, one of the advantages of online surveys is that it is relatively easy to create and manage. This is because online survey tools and platforms provide not only a variety of templates, but also features and options to customize and optimize survey design, distribution, and analysis. Over the past few decades, most survey research has changed from using mailed questionnaires to using online methods.This change is intended to make it easier to collect data and encourage research participation (Stoffel et al., 2023). Although telephone or mail survey methods are still used, most surveys today have become digital, as almost everyone is now online (Mahmutovic, 2022). Moreover, the Pew Research Center (2024) found that the percentage of Americans aged 18 to 29 who are online increased from 70 percent in 2000 to 97 percent in 2023. Therefore, our target population of generation z is very suitable for this way.

In addition, the advantage of using online surveys is not only the reduction of research costs, but also the shorter time required for implementation (Stoffel et al., 2023). In today's world, people are more connected to their electronics than directly interacting with them. Therefore, the use of online surveys will be an advantageous option for many types of research. Respondents can use their free time to participate in the survey (Putranto, 2019). Also, according to Bhat (2023) online

surveys can be quickly configured and sent. Because they are easy, they will save researchers a lot of time (Bhat, 2023). According to Rogator (2024), this also saves time, money, and personnel costs as there is no need to print and send or manual data transfer and evaluation.

Besides that, online surveys facilitate rapid data analysis (Unimrkt Research, 2022). Online surveys are often standardized, thus quantitative data can be collected seamlessly. While qualitative survey research techniques such as focus groups or telephone interviews may produce fascinating results, the process of interpreting these results is more complex (Unimrkt Research, 2022). Next, the results of online surveys can be analyzed at any time. Online surveys facilitate viewing real-time results so investigators can take quick action, create reports and charts, export data for further analysis, and share results with anyone.

3.1.3 Cross-sectional

Our study employed a cross-sectional design to investigate user engagement with travel mobile apps among a diverse population of users. As noted by Gad (2024), a cross-sectional study is an observational research method that analyzes data from a population at a single point in time, capturing both causes and effects simultaneously. This approach is particularly valuable for its efficiency and cost-effectiveness, allowing researchers to build preliminary evidence that can inform more advanced future studies (Wang and Cheng, 2020). In our study, we aimed to gather insights into how four key factors—perceived usefulness, perceived ease of use, privacy risk, and personal innovativeness—affect user engagement with travel apps. By collecting data from a broad and varied sample of participants, we were able to capture a snapshot of current user behaviors and explore potential associations or patterns. This approach allows us to understand the dynamics of mobile travel app engagement across different demographics and user segments without the need for longitudinal follow-up. Through rigorous data collection and analysis, our study offers

valuable insights into the factors influencing travel app usage, laying the groundwork for future research in this area.

3.1.4 Unit Analysis

According to Sheppard (2020), a unit of analysis is an entity that you want to have some insight into at the end of research, typically something would classify as the main subject study. In this case, it could be an individual user of a MTAs such as their interaction, preferences, behaviors, or other aspect related with the app. By focusing on this unit, we are targeting people who have experience with using MTAs, thereby understanding their preferences, needs, and potential improvements to these apps.

3.2 Population and sampling methodologies

3.2.1 Target Population

In this study, individuals using MTAs will be considered target population. Given the widespread adoption of MTAs, this demographic includes a broad user profile. Research shows that more than 800 million people worldwide will use MTAs by 2022 highlighting the pervasive impact of mobile platforms in the tourism industry (App Business, 2024). This large target audience provides us with an opportunity to gain insights from a variety of travelers who take advantage of the features and products offered by MTAs. According to Statista (2024), the most downloaded MTAs worldwide in 2022 included Booking.com, Airbnb and Expedia. In addition, Statista's device

revenue forecast for major online travel agencies shows Booking Holdings' mobile division surpassing its desktop division, with more than $9 billion in revenue in 2022. Besides, Tian et al. (2021) claim that different tourism attributes have varying effects on different custome rs regarding MTAs involvement. For those with higher education levels, compatibility has a greater impact the customers' use of MTAs than for those with lower education levels. In addition, GITNUX (2024a) survey results show that 25 until 34-year-olds are the most avid users of MTAs for travel plans searching. This demographic trend suggests that this age group is more inclined to use travel apps, which may be due to younger people's tendency to utilize technology in a variety of travel related activities including planning and booking. This observation aligns well with previous data from GitNux (2023c), which showed that 60% of millennials prioritize travel spending over home savings, with more than 69% of them preferring to arrange travel online. Furthermore, GitNux (2023b) highlights that solo travel is more prevalent among women, with 72% of solo travelers being female compared to 28% of men. This data highlights women's significant preference for solo travel, which is often seen as a way of self-exploration and empowerment. For female respondents, usability has a greater impact on customers' use of mobile travel apps than for male respondents (Tian et al., 2021). The widespread use of MTAs reflects the transformative impact of technology on the travel industry, with a wide variety of users using these platforms for a variety of purposes. Understanding these trends and demographics is critical for businesses and researchers to optimize their products and insights in the evolving field of MTAs.

3.2.2 Sample Size

According to GITNUX (2024), there are 49% of smartphone users engaged with travel-related apps in 2020 reflecting their strong appeal among users. This high engagement rate underscores the vital role these apps play in various aspects of travel, including booking accommodations, exploring destinations, purchasing flights, and discovering local attractions. The data also emphasizes how smartphone technology is influencing modern travel habits and highlights the

growing dependence on digital platforms to improve travel experiences. Moreover, airline app usage rose by 90%, and hotel app downloads increased by 60% in 2018, signaling a similar surge in the use of mobile apps for flight and accommodation services. This trend suggests that consumer behavior is shifting towards more convenient and efficient service access (GITNUX, 2024). In this thriving tourism market, our research will employ factor analysis. Hinkin (1995) emphasized that large sample sizes provide stable estimates of standard errors, boosting confidence that observed factor loadings accurately reflect population values. For factor analysis, an item-response ratio of 1:4 to 1:10 is advised for each set of scales. Therefore, the sample size is estimated to be around 270 and above since our research involving 27 items.

3.2.3 Sampling Techniques

Since the sampling frame cannot be obtained, the non-probabilistic sampling technique will be adopted in this study. Non-probability sampling is commonly employed when access to the entire population is restricted or unnecessary, particularly when seeking the perspectives of specific individuals based on their location or characteristics (Qualtrics, 2024). Among the many non-probabilistic sampling techniques, we use judgment sampling in our study. According to Obilor (2023), judgement sampling is also known as purposive sampling. It is used for qualitative research. This method is primarily used to gain insight into specific phenomena, rather than by statistical inference or applied to very small and specific populations.

3.3 Data Collection Methods

3.3.1 Primary Data

Primary data is the information that collected directly by the researcher as firsthand through the latest questionnaires which more specific to research. The process needs to take some time due to the complexity of studying and addressing the problem. The online questionnaire created based on research needs by utilizing Google Forms which an online survey testing tool and distributed to population target respondents. The Google Forms enables the wide distribution as its shareable link can be shared via emails and social media like Instagram, WhatsApp etc. reach to the respondent in short time. Therefore, this was convenience for us to collect the large amount of the data required.

3.3.2 Questionnaire Design

The questionnaire is completely written in English and self-administered. The questionnaire was created after reviewing previous literature. Part A, Part B, and pre-screening had been included in the three sections of the questionnaire. Before answering the questionnaire, pre-screening is required such as "Do you have any experience with mobile travel apps?". Besides, part A is the demographics including age, gender, education level, employment status and monthly income. For part B, the questions will be conducted to measure variables in SOR model such as TAM variables (PU and PEOU), privacy risk, personal innovativeness, user engagement and advocacy intention. Overall, there are total 27 questions in the three parts. The questionnaires measure by using the seven-point Likert scale from 1 strongly disagree to 7 strongly agree to examine the extent of agreement or disagreement for each statement.

Table 3.1

Variables Resources Measurement

Variables	Item	Source	Measurement
PU	6	(Akdim et el., 2022)	
PEOU	4	(Akdim et el., 2022)	Seven-point
PR	5	(Sia et al., 2023)	Likert scale
PI	3	(Sia et al., 2023)	(1: strongly disagree
UE	6	(Hsu , 2023)	to 7: strongly agree)
AI	3	(Garrouch and Ghali, 2023)	

3.3.3 Pre-test

Pre-test referred to the trial assessment conducted before distributing to the respondents for study. The pre-testing is important to the researchers on the improvement of questionnaire because it identified unclear questions and problems in setup before mistake research is conducted. Therefore, it was considered as necessary since the respondents understand the intent of the questions and make sure that the data is interpreted correctly. In this research, the pre-testing was done by 3 academicians and professionals who related in the tourism and technology industry within providing some feedback and recommends to our research questionnaires. Based on the comment providing by academicians and professionals, we modified questionnaire before distribution to improved quality data collection.

3.3.4 Pilot test

A pilot test is a small-scale study where sample of target respondents is chosen to evaluate the feasibility of full-scale research study. It helps researchers identify potential problems and ensure data accuracy since the questions can understand by the target respondents. Based on past studies, Hertzog (2008) said that a sample size between 10 and 40 was evaluated in a pilot study. Bujang et al. (2024) suggested that 30 target respondents was minimum acceptable standard of pilot test. Therefore, a sample of 30 representatives from the target population of study in pilot test. After that, the reliability test within Cronbach's alpha will investigate the reliability. Cronbach's Alpha values vary from 0.807 to 0.942 which considers the reliability established (Table 3.1).

Table 3.2

Pilot Study

Construct	Cronbach's alpha	Composite reliability (rho_a)
PU	0.929	0.963
PEOU	0.909	0.914
PI	0.814	0.857
PR	0.938	0.953
UE	0.942	0.946
AI	0.807	0.85

3.4 Analysis Tool

3.4.1 Descriptive analysis

Descriptive analysis is a method that describes the features of database and summarizes the points to gain deep insight from the data. The descriptive analysis in this study is important for the measurement of frequency distribution which reveals various outcomes in different categories, such as gender, age, and frequency of travel. The collected data will be converted into statistical to generate questionnaire results for this research through SmartPLS and presented in tables and figures.

3.4.2 SmartPLS

SmartPLS3.0 is a software which applied PLS-SEM analysis to test and analyze the proposed hypotheses (Hair et al., 2017; Habachi et al., 2023). The PLS-SEM was selected because it simplicity of use on managing numerous structural model relationships (Sabol et al., 2023). It also known for ability and effectiveness in calculating path estimates and model parameters under non-normal conditions compared to the other software (Richter & Tudoran, 2024). Besides, it is also suitable for small-to-medium-sized samples test (Memon et al., 2020). Therefore, SmartPLS can be considered the most appropriate method for this study.

3.4.3 Measurement Model

The measurement model is a framework used to investigate the reliability and validity of models in research. Reliability analysis is used to evaluate internal consistency variables that measure the same concept and produce similar scores which means high reliability. Cronbach's Alpha (CA) and Composite Reliability (CR) will be examined which the value of CA increases to a minimum of 0.7 and above consider as more reliable (Cheah et al., 2023). Besides, Henseler et al. (2017) stated CR can be assessed in the same way as CA. The establishment of internal consistency reliability within value exceeded 0.7, while 0.6 and below are suggested as lack of reliability.

In validity analysis, convergent validity (CV) and discriminant validity (DV) will be tested the in the research (Shou et al., 2022). The average variance extracted (AVE) will be assessed by CV to ensures that different indicators of the same construct are correlated (Shin, 2017; Lim, 2024). If the AVE is greater or equal to 0.5, the framework is considered established the CV. Besides, DV is to differentiate constructs in the research from other research by using cross loading and Fornell-Larcker criterion (Franke & Sarstedt, 2019). Cross loading examines whether the values of items associated with a variable higher than other variable items. Besides, Fornell-Larcker will compare the square root of AVE with the other constructs and should be greater than the squared correlation between other variables.

3.4.4 Structural Model

The relationship between variables has been evaluated by structural model (Shang & Wu, 2017; Chien, 2022). The bootstrapping method will be used to explore and measure the statistic path coefficients and t-values (Rouf & Akhtaruddin, 2018). Besides, the hypothesis relationships between the variables also tested by the path coefficients through p-values for significance and

non-significance measurement. The hypothesis is considered as significant since the p-value is less than 0.05 while the p-value is greater than 0.05 can be considered insignificant (Chén et al., 2023).

3.5 Conclusion

Chapter 3 explains the research framework within all the research methods used to ensure the reliable and valid in study. The designed questionnaires were reviewed by pre-test and pilot study before distributed.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

SMART-PLS 4 has been employed to evaluate and analyze the data collected from 303 surveys and will be discussed in this chapter.

4.1 Demographic

The demographic collected from a wide range of respondents included the experience applying MTAs, gender, age, income, frequency of travel, and preferred MTAs. An overall number of 303 sets of responses were collected for the survey and agreed to process their personal data and they are the users MTAs. Based on results, major participants are females (59.7%) in term of the gender distribution and were aged between 21 and 30 years old (63.7%). A significant portion of the respondents had an undergraduate level of education (70.3%). There are showed that nearly half of the respondents (49.5%) were students in employment status. Besides, monthly income for most respondents ranged between RM1500 and RM2999 (54.1%). In the survey, the respondents reported traveling in 2 to 3 times a year (41.9%). Most of respondent had experience using mobile travel apps (94.7%) with Agoda (38%) being the most preferred app among of the respondents.

Table 4.1

Demographic *of Respondents*

Attributes	Frequency	Percentage
	Experience in mobile travel apps	
Yes	303	100%
No	0	0%
	Frequency of Travel	
Never	0	0%
Once a year	104	34.3%
2-3 times a year	127	41.9%
4-5 times a year	34	11.2%
More than 5 times a year	38	12.5%
	Preferred Mobile Travel Apps.	
Booking.com	101	33.3%
Agoda	115	38%
Trip.com	44	14.5%
Expedia	28	9.2%
Traveloka	9	3%
Other: Klook, Google Travel, Official Website	6	1.8%
	Age	
21-30	193	63.7%
31-40	58	19.1%
41-50	43	14.2%
51-60	7	2.3%
Above 60	2	0.7%
	Gender	
Male	122	40.3%

Female	181	59.7%
Education Level		
Primary School	0	0%
Secondary School	33	10.9%
STPM/Foundation/Diploma	42	13.9%
Undergraduate	214	70.3%
Master or above	15	5%
Employment status		
Student	150	49.5%
Employed	87	28.7%
Self-employed	59	19.5%
Unemployed	7	2.3%
Retired	0	0%
Monthly Income/ Allowances		
RM 1,500 - RM 2,999	164	54.1%
RM 3,000 - RM 4,999	58	19%
RM 5,000 - RM 6,999	44	14.5%
RM 7,000 - RM 9,999	33	10.9%
RM 10,000 and above	4	1.3%

4.2 Measurement Model Assessment

4.2.1 Reliability Analysis

Table 4.2 shows the reliability analysis test from 303 sets of available data. Based on the results, the reliability was established because the value of CA and CR meets the minimum requirement since each of variables is higher than 0.7.

Table 4.2

Reliability Analysis Data

Construct	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Number of Items
PU	0.862	0.868	0.897	6
PEOU	0.802	0.806	0.870	4
PR	0.937	0.944	0.952	5
PI	0.786	0.795	0.875	3
UE	0.915	0.916	0.934	6
AI	0.757	0.773	0.859	3

4.2.2 Validity Analysis

4.2.2.1 Convergent Validity

Table 4.3 presented the convergent validity of contracts ranged from 0.593 to 0.799 in this study. Based on the following results, the AVE of each variable satisfied the convergent validity of this study because the AVE value was exceeded 0.50.

Table 4.3

Average variance extracted

Construct	Average variance extracted (AVE)
PU	0.593
PEOU	0.627
PR	0.799
PI	0.701
UE	0.703
AI	0.671

4.2.2.2 Discriminant Validity

The model research was tested for discriminant validity through cross-loadings (Ahmad et al., 2021). Joshanloo et al. (2017) found that the cross-loadings in the measurement model can significantly affect the size of the key factor correlations for inferring discriminant validity. The

discriminant validity was verified by analyzing the performance of cross-loadings where each indicator must show a higher loading with other variables (Apolinário et al., 2023). In Table 4.4, discriminant validity is effective since the external loading values of each variable indicator are higher than the values of other variables in cross-loading.

Table 4.4

Cross *Loading*

	AI	PEOU	PI	PR	PU	UE
AI1	**0.823**	0.530	0.494	0.189	0.525	0.603
AI2	**0.790**	0.446	0.474	0.182	0.495	0.528
AI3	**0.844**	0.436	0.654	0.274	0.397	0.723
PEOU1	0.375	**0.787**	0.262	0.081	0.584	0.353
PEOU2	0.484	**0.793**	0.345	0.167	0.571	0.406
PEOU3	0.487	**0.787**	0.379	0.214	0.518	0.454
PEOU4	0.449	**0.799**	0.335	0.162	0.564	0.398
PI1	0.534	0.414	**0.778**	0.249	0.351	0.582
PI2	0.590	0.301	**0.874**	0.293	0.282	0.704
PI3	0.559	0.358	**0.857**	0.228	0.299	0.647
PR1	0.238	0.251	0.206	**0.845**	0.113	0.197
PR2	0.242	0.201	0.281	**0.909**	0.132	0.230
PR3	0.262	0.157	0.274	**0.915**	0.075	0.209
PR4	0.227	0.160	0.278	**0.905**	0.037	0.188
PR5	0.229	0.142	0.323	**0.894**	0.036	0.246
PU1	0.390	0.554	0.264	0.054	**0.809**	0.370
PU2	0.515	0.556	0.376	0.110	**0.789**	0.442
PU3	0.347	0.430	0.245	0.081	**0.680**	0.312
PU4	0.470	0.506	0.294	0.145	**0.757**	0.392

PU5	0.472	0.615	0.244	0.004	**0.777**	0.365
PU6	0.401	0.585	0.248	-0.004	**0.803**	0.342
UE1	0.637	0.367	0.646	0.190	0.338	**0.810**
UE2	0.623	0.412	0.662	0.214	0.429	**0.851**
UE3	0.643	0.510	0.649	0.175	0.473	**0.859**
UE4	0.641	0.427	0.672	0.188	0.362	**0.863**
UE5	0.654	0.390	0.673	0.278	0.310	**0.850**
UE6	0.651	0.470	0.583	0.171	0.532	**0.797**

Moreover, the discriminant validity assessment proposed by Fornell-Larcker where the square roots of AVE are greater than the construct correlation with other constructs in the model (Fornell and Larcker, 1981; Ahmad et al., 2021). In Table 4.5, bold values given in the first row of each column represent the square roots of AVEs while values that non bold which show the interrelationships. As a result, the discriminant validity is accepted due to AVE value of each variable being greater than its shared variance which achieved the Fornell-Larcker criterion.

Table 4.5

Fornell-Lacker

	AI	**PEOU**	**PI**	**PR**	**PU**	**UE**
AI	**0.819**					
PEOU	0.571	**0.792**				
PI	0.671	0.422	**0.837**			
PR	0.268	0.202	0.308	**0.894**		
PU	0.568	0.704	0.367	0.088	**0.770**	
UE	0.765	0.513	0.773	0.242	0.486	**0.839**

4.3 Structural Model Assessment

The path coefficient is calculated through bootstrapping to examine the association between each variable (Benitez et al., 2020). In Table 4.6, the variables of perceived usefulness (β = 0.156, p =0.031) and personal innovativeness (β =0.664, p = 0.000) proved to be positive significant toward user engagement while the perceived ease of use (β=0.123, p= 0.105) and privacy risk (β = -0.001, p = 0.979) showed the negative significant negative predictors to user engagement. Moreover, the advocacy intention is significantly influenced by user engagement (β =0.765, p = 0.000).

Table 4.6

Path Coefficient

	Original sample (O)	**Sample mean (M)**	**Standard deviation (STDEV)**	**T statistics (|O/STDEV|)**	**P values**	**Significance**
PU -> UE	0.156	0.154	0.072	2.159	0.031	**Yes**
PEOU -> UE	0.123	0.129	0.076	1.619	0.105	**No**
PR -> UE	-0.001	-0.001	0.039	0.027	0.979	**No**
PI -> UE	0.664	0.662	0.049	13.465	0.000	**Yes**
UE -> AI	0.765	0.767	0.034	22.347	0.000	**Yes**

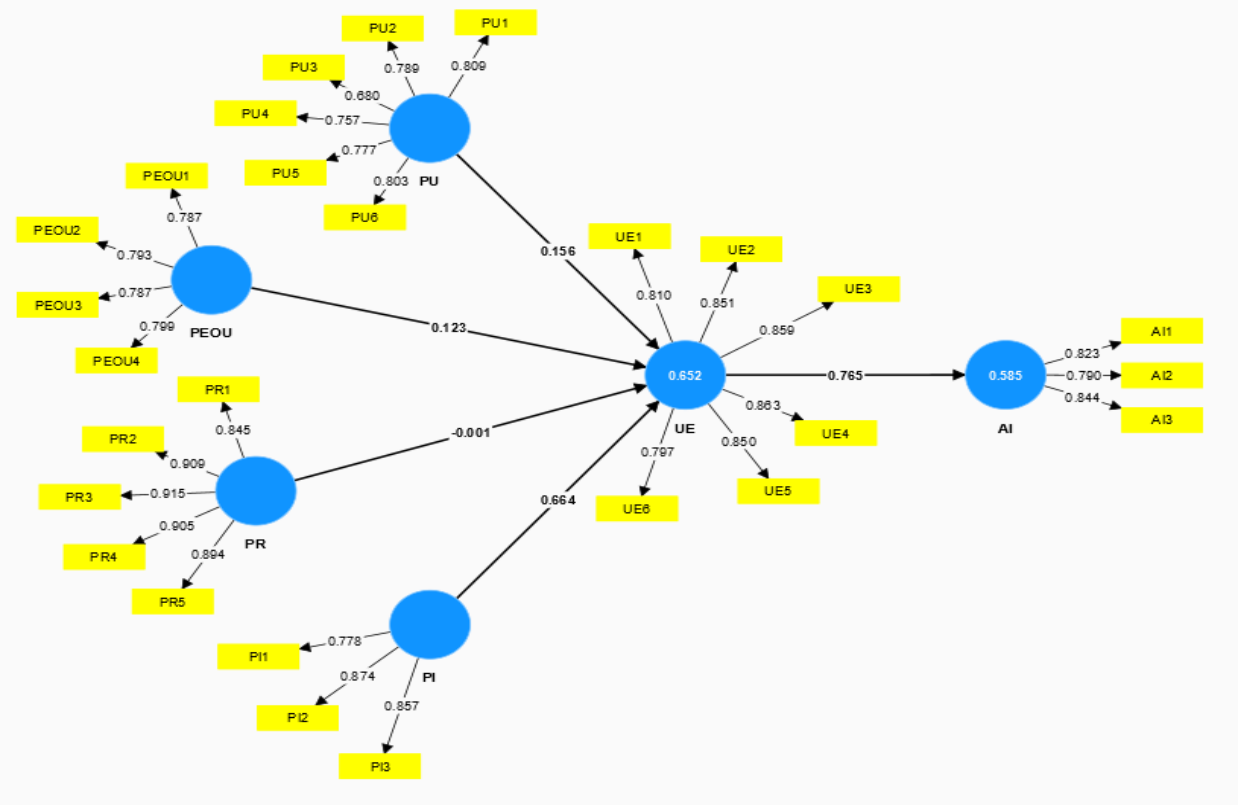

Figure 3 SMART-PLS

4.4 Conclusion

According to summary of result tables, the reliability and validity were established in this study. Besides, path coefficient concluded that three of hypothesis were significant while two of hypothesis were insignificant.

CHAPTER 5: CONCLUSION

5.0 Introduction

The findings and implications will be discussed. It also addresses the limitations and offers recommendations for enhancing research quality in future investigations.

5.1 Findings Discussion

Table 5.1

Acceptance hypothesis statement

Hypothesis	**Result**
H1: The PU positively affects UE	H1 is supported
H2: The PEOU has positively affected UE	H2 is not supported
H3: The PR negatively influence UE	H3 is not supported
H4: The PI positively influences UE	H4 is supported
H5: The UE positively influences AI.	H5 is supported

5.1.1 The positive relationship between PU and UE

The finding suggests that H1 is supported in positive relationship between perceived usefulness and user engagement. Fang et al. (2017) demonstrated a positive correlation between MTA's engagement and PU, suggesting that users with higher engagement with the app also experience greater usefulness gains. According to Ho et al. (2021), when users recognize the value of an application, they are likely to share its positive features with their peers. This awareness of the application's benefits contributes to increased loyalty and continued usage among other users. Kim et al. (2008) found that PU plays a greater role in determining users' willingness to use mobile devices compared to PEOU. This suggests that the motivation to use mobile devices is more strongly linked to their functional benefits, such as convenience, effectiveness, and productivity, rather than to the enjoyment or simplicity of interacting with the devices. Therefore, improving the usefulness of MTA is crucial to improve their user engagement and retention.

5.1.2 The positive relationship between PEOU and UE

The finding indicated that H2 is not supported refer to insignificant relationship between PEOU and UE. Numerous studies have explored the relationship between PEOU and user engagement in MTAs often highlighting a complex interplay. For example, Marikyan and Papagiannidis (2023) cited that in their Unified Theory of Technology Acceptance and Use (UTAUT) model point out that PEOU is a key factor influencing user engagement. However, some research suggests a subtle dynamic that ease of use may not always be positively correlated with user engagement. According to a study by Normalini (2017), users find it easy to search, download, and use mobile apps. This is already common usage for users, so the PEOU is not important to them. As a result, ease of use

becomes a basic rather than a unique feature in MTAs. Kim et al. (2008) showed that users tend to engage more deeply with applications that provide convenient, effective, and productive experiences rather than those that are easy to use. This shift suggests that as digital literacy in the general population increases, the emphasis on ease-of-use decreases, giving way to other factors such as functionality, content richness, and interactivity to drive user engagement.

5.1.3 The negative relationship between PR and UE

The finding of H3 is not supported. There is an insignificant relationship between PR and UE. Despite privacy risks, app satisfaction remains unaffected as tourists often prioritize the benefits of personalized and well-coordinated travel experiences over potential data privacy concerns (Coves-Martínez et al., 2023). Coves-Martínez et al. (2023) cited that users who wish to receive more personalized information regarding products, services, or activities on offer at the destination must share certain private information with the app, such as preferences, tastes, locations, or past experiences. Ioannou et al. (2020) assert that the varying technological solutions used by user such as location-based services, offer different levels of control over the information collected and shared. Consequently, user who feel they have greater control over their personal data disclosure and usage in online travel environments tend to have fewer privacy concerns. This indicates that while privacy concerns exist, they are often outweighed by the perceived value of tailored travel services, leading to a generally positive user engagement with MTAs despite the associated privacy risks.

5.1.4 The positive relationship between PI and UE

The finding implied that H4 is supported which mean the relationship between personal innovativeness and user engagement significant toward MTAs. According to Molinillo et al. (2024), individuals with high levels of personal innovation are more likely to find new technologies useful and easy to use, which positively affects their willingness to adopt these technologies. Chang's (2022) findings support this, indicating that users with higher levels of personal innovation are more likely to engage deeply with MTAs. This highlights the importance of understanding individual differences when designing and marketing mobile apps, suggesting that targeting highly innovative individuals can lead to higher engagement and more successful apps. Additionally, Ciftci et al. (2021) found that in the hospitality and tourism sector, personal innovation plays a crucial role in technology adoption across various segments, technology types, customer demographics, and social power distances. PI are more inclined to use technology when it is applicable in diverse hospitality and tourism environments. These findings align with past research by Yen et al. (2020), Kamboj et al. (2024), Tai and Nguyen (2023), and Sia et al. (2022), collectively supporting the notion that PI is a key determinant of user engagement in mobile travel applications.

5.1.5 The positive relationship between UE and AI

The finding of H5 is supported. User engagement is a key factor in determining whether users will recommend the application to others. High engagement typically leads to a positive user experience, which in turn fosters user loyalty and advocacy. Ali et al. (2021) found that system quality, information quality, and service quality of MTAs significantly affect user engagement. In

turn, user engagement positively impacts user satisfaction, preference, and behavioural intentions, including advocacy. Furthermore, Hamouda (2021) discovered that the functional or hedonic benefits derived from a mobile application significantly influence user experience, which in turn affects advocacy behaviours. This suggests that when users find an app both useful and enjoyable, their level of engagement increases, leading to stronger advocacy intentions. Additionally, users with high engagement are more likely to maintain ongoing interaction with the app, resulting in positive experiences that boost brand loyalty and advocacy (Ahn & Back, 2018; Abou-Shouk & Soliman, 2021). Moreover, brand engagement within online communities has been shown to foster trust and commitment, which are crucial for encouraging advocacy behaviour. When users perceive strong brand engagement, it enhances their commitment and trust, thereby increasing advocacy within the community (Hao et al., 2024).

5.2 Implications

5.2.1 Theoretical Implications

This research investigates factors that influence user engagement and advocacy intention in MTAs by applying the SOR model and TAM to examine how various factors influence user engagement and advocacy intention. These two models also applied in the previous mobile travel apps past studies (Fang et al., 2017).

First, the integration of SOR and TAM models was highlighted to provides a comprehensive framework to more fully understand how users interact with MTAs and enhance advocacy

intervention. This is because previous studies have usually applied these two models independently. This model integration enhances theoretical understanding by showing the interconnectedness between user technology acceptance factors and consumer engagement direct to advocacy intentions.

Secondly, this research highlights that not only the PU as suggested by the TAM, personal traits such as innovativeness also played important role in attracting users to travel apps. This insight suggests that users often seek innovative and efficient travel solutions in their travel plans. However, this study also challenges the common assumptions and theories in the past literature which showing that most users do not prioritize ease of use and privacy issues in mobile travel apps. It suggests that users' perceptions of using MTAs have changed since the widespread of mobile apps nowadays. They are more willing to sacrifice their privacy in exchange for the convenience and benefits provided by MTAs.

Thirdly, the research also identified a clear link between user engagement and advocacy intention. This insight is valuable because it expands the application of the SOR model to include advocacy intention as specific form of behavioral response. It also provides a more detailed understanding of how user engagement drives positive WOM and recommendation behavior which are critical to the success of MTAs.

5.2.2 Managerial Implications

Based on the findings, the manager and designer in the MTAs industry should focus their efforts on enhancing features that keep users actively involved with the app is crucial. First, the developers should prioritize updating the functionality of mobile travel apps, such as real-time updates, personalized recommendations, and comprehensive travel planning tools to enhance PU which ensure that users find the MTAs is valuable. In addition, MTAs developers also should ensure that their apps offer innovative and cutting-edge features to attract and retain users who are naturally inclined to try new technologies.

Despite PEOU and PR being insignificant toward user engagement in this study, these two variables are still important aspects of user trust and long-term engagement. The developer and managers should maintain the user-friendly interfaces and also high privacy protection to increases their confidence in MTAs.

Moreover, the managers also should consider implementing loyalty programs, referral rewards, and social sharing options to encourage users promote the app in their networks. This is because positive WOM from engaged and satisfied users can significantly increase a MTAs credibility to others. In addition, managers and designers must also pay attention to feedback from MTAs users to make improvements and innovations. They can measure this through reviews, and ratings to ensure that MTAs can be continuously developed based on user expectations and preferences to promote continued engagement and advocacy.

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5.3 Limitation and Recommendations

In this research, it also found out some of limitation that can be improved. First, the scope that proposed in this study is limited in the Malaysia area, so the amount of information collected is also limited. There are valuable insights to be gained if the study expands the scope to include other countries which can provide a comparative of how the differences culture of each country influence user engagement and advocacy intentions in mobile travel apps. Second, this research is difficult to control the type of subjects sampled when collecting data through online questionnaires. This is because most of our respondents are young (21 to 30 years old) and students in this study. It was suggested implementing quota sampling to ensure adequate representation of each demographic. Third, there are only four factors proposed to study the user engagement and advocacy intention of MTAs, thereby the future research is suggested including more factors such as information quality which enhance the explanatory power of the research model.

5.4 Conclusion

According to our research analysis result, most of the hypothesis were proved to be significant except the hypothesis PEOU and PR toward the user engagement are proved as insignificant. Therefore, this study also showed the importance of focusing on enhancing user engagement through PU and PI to drive advocacy intention. The findings also gain insight to MTAs developers and managers for prioritizing to enhance the usefulness and innovative aspects of MTAs which improved the user experience toward the MTAs.

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Appendices

Appendix 1: Questionnaire

Variables	Items	Descriptions	References
Perceived usefulness	PU1	The mobile travel app enhances my ability to make choices more effectively.	(Akdim et el., 2022)
	PU2	The mobile travel app saves my time.	
	PU3	The mobile travel app enables to acquire tourism information more quickly.	
	PU4	The mobile travel app is useful in my travel-related purchasing experience.	
	PU5	Using the mobile travel app helps me to perform many things more conveniently.	
	PU6	Overall, the mobile travel app is useful.	
Perceived ease of use	PEOU1	My interaction with mobile travel apps is clear and understandable.	(Akdim et el., 2022)
	PEOU2	Learning to use mobile travel apps is easy.	
	PEOU3	It is easy for me to become skillful at using the mobile travel app.	
	PEOU4	Overall, I find the mobile travel app easy to use.	
Privacy risk	PR1	I feel safe in providing personal private information to mobile travel apps	(Sia et al., 2023)
	PR2	I am not worried that other people may be able to access my mobile travel apps account.	
	PR3	I feel secure sending sensitive information across mobile travel apps.	
	PR4	I am not worried that mobile travel apps will collect personal information.	
	PR5	I am not concerned that my personal information in mobile travel apps could be leaked and misused.	
Personal innovativeness	PI1	I will look for the ways to try new mobile travel apps	(Sia et al., 2023)
	PI2	I am usually the first to explore new mobile apps among the peers.	

		PI3	In general, I like to experiment with new mobile travel apps.	
User engagement	**Cognitive processing**	UE1	I frequently use the mobile travel app.	(Hsu , 2023)
		UE2	Using mobile travel apps stimulates my interest to learn more.	
		UE3	I am inspired by using mobile travel app	
	Affection	UE4	I have strong emotions toward mobile travel apps.	
		UE5	I spend a lot of time with mobile travel apps because it's enjoyable.	
	Activation	UE6	Mobile travel apps stimulate my thinking and problem solving in travels	
Advocacy intention		AV1	I am fully willing to recommend the usage of mobile travel apps platforms to anybody who would ask me for advice.	(Garrouch and Ghali, 2023)
		AV 2	I recommend others to use mobile travel application.	
		AV3	talk about mobile travel apps with others quite frequently.	

Appendix 2: Research Instrument

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UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF BUSINESS AND FINANCE

BACHELOR OF MARKETING (HONS)

UNDERGRADUATE FINAL YEAR PROJECT (FYP)

Title of Topic:

Decoding the Antecedents of User Engagement and Advocacy in Mobile Travel Apps

Interview Questions

Dear Respondents,

We are final year undergraduate students of Bachelor of Marketing (Hons), from Faculty of Business and Finance in University Tunku Abdul Rahman (UTAR) Kampar campus. As part of our research, we are conducting a research project on **" Decoding the Antecedents of User Engagement and Advocacy in Mobile Travel Apps"** This research aims to investigate the factors including perceived usefulness, perceived ease of use, privacy risk, and personal innovativeness that influence the user engagement and advocacy intention on mobile travel applications.

This survey will only take you approximately **5 minutes**, and all participation towards this survey are voluntary. Rest assured that all the responses collected will be used solely for academic

purposes and will be kept private and confidential. Thank you in advance for your time and cooperation in answering our questionnaire.

Your participation is highly appreciated.

For further inquiries, please contact us.

Yours sincerely,

LIM NEE YIN, 2005635

OOI YAN YI, 2001534

Prepared by:

LIM NEE YIN
(20ABB05635)

OOI YAN YI
(20ABB01534)

Endorsed by:

Dr. Lee Voon Hsien
Date: 25 April 2024

PERSONAL DATA PROTECTION STATEMENT

Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which came into force on 15 November 2013, Universiti Tunku Abdul Rahman ("UTAR") is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

Notice:

1. The purposes for which your personal data may be used are inclusive but not limited to:-
   - For assessment of any application to UTAR
   - For processing any benefits and services
   - For communication purposes
   - For advertorial and news
   - For general administration and record purposes
   - For enhancing the value of education
   - For educational and related purposes consequential to UTAR
   - For the purpose of our corporate governance
   - For consideration as a guarantor for UTAR staff/ student applying for his/her scholarship/ study loan

2. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose of fulfilling our obligations to you in respect of the purposes and all such other purposes that are related to the purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.

3. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.

4. UTAR is committed in ensuring the confidentiality, protection, security and accuracy of your personal information made available to us and it has been our ongoing strict policy to ensure that your personal information is accurate, complete, not misleading and updated. UTAR would also ensure that your personal data shall not be used for political and commercial purposes.

Consent:

1. By submitting this form you hereby authorise and consent to us processing (including disclosing) your personal data and any updates of your information, for the purposes and/or for any other purposes related to the purpose.

2. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.

3. You may access and update your personal data by writing to us.

Acknowledgment of Notice

[/] I I have been notified by you and that I hereby understood, consented and agreed per UTAR above notice.

[ ] I disagree, my personal data will not be processed.

……
Name: Ooi Yan Yi
Date: 25 April 2024

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DU012(A)

Universiti Tunku Abdul Rahman

FACULTY OF BUSINESS AND FINANCE

BACHELOR OF MARKETING (HONS)

Title of Topic:

Decoding the Antecedents of User Engagement and Advocacy in Mobile Travel Apps

Instructions:

1. There are **TWO (2**) sections in this questionnaire. Please answer ALL questions in ALL sections.
2. Completion of this form will take you less than 5 minutes.
3. The contents of this questionnaire will be kept **strictly confidential**.

Voluntary Nature of the Study

Participation in this research is entirely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. There is no foreseeable risk of harm or discomfort in answering this questionnaire. This is an anonymous questionnaire; as such, it is not able to trace response back to any individual participant. All information collected is treated as strictly confidential and will be used for the purpose of this study only.

I have been informed about the purpose of the study and I give my consent to participate in this survey.
YES ( ) NO ( )

Note: *If yes, you may proceed to next page or if no, you may return the questionnaire to researchers and thanks for your time and cooperation.*

Pre-Screening Question

1. Do you have any experience with mobile travel apps?

- ☐ Yes
- ☐ No

2. Frequency of Travel.

- ☐ Never
- ☐ Once a year
- ☐ 2-3 times a year
- ☐ 4-5 times a year
- ☐ More than 5 times a year

3. Preferred Mobile Travel Apps.

- ☐ Booking.com
- ☐ Agoda
- ☐ Trip.com
- ☐ Expedia
- ☐ Traveloka
- ☐ Other

Section A: Demographic Profile

Please tick ONE appropriate answer

1 Gender

- ☐ Male
- ☐ Female

2 Age

- ☐ 23-30
- ☐ 31-40
- ☐ 41-50
- ☐ 51-60
- ☐ Above 60

3	Education Level	☐ Primary School ☐ Secondary School ☐ STPM/ Foundation/Diploma ☐ Master or above
3	Occupation	☐ Students ☐ Employed ☐ Self-employed ☐ Unemployed ☐ Retired
4	Monthly Personal Income/ Allowance	☐ RM1500 - RM2999 ☐ RM 3,000 - RM 4,999 ☐ RM 5,000 - RM 6,999 ☐ RM 7,000 - RM 9,999 ☐ RM 10,000 and above

Section B: The factor of PU, PEOU, PR, PI on MTA that influence the user engagement and advocacy intention.

Please circle the best answer based on the scale of 1 to 7 (1=strongly disagree, 7=strongly agree)

No	Questions	1=strongly disagree, 7=strongly agree						
Perceived Usefulness								
PU1	The mobile travel app enhances my ability to make choices more effectively.	1	2	3	4	5	6	7
PU2	The mobile travel app saves my time.	1	2	3	4	5	6	7
PU3	he mobile travel app enables to acquire tourism information more quickly.	1	2	3	4	5	6	7
PU4	The mobile travel app is useful in my travel-related purchasing experience.	1	2	3	4	5	6	7
PU5	Using the mobile travel app helps me to perform many things more conveniently.	1	2	3	4	5	6	7

PU6	Overall, the mobile travel app is useful.	1	2	3	4	5	6	7
Perceived Ease of Use								
PEOU1	My interaction with mobile travel apps is clear and understandable.	1	2	3	4	5	6	7
PEOU2	Learning to utilize the mobile travel app is easy for me.	1	2	3	4	5	6	7
PEOU3	It is easy for me to become skillful at using the mobile travel app.	1	2	3	4	5	6	7
PEOU4	Overall, I find the mobile travel app easy to use.	1	2	3	4	5	6	7
Privacy Risk								
PR1	I feel safe in providing personal private information to mobile travel apps.	1	2	3	4	5	6	7
PR2	I am not worried that other people may be able to access my mobile travel apps account.	1	2	3	4	5	6	7
PR3	I feel secure sending sensitive information across mobile travel apps.	1	2	3	4	5	6	7
PR4	I am not worried that mobile travel apps will collect personal information.	1	2	3	4	5	6	7
PR5	I am not concerned that my personal information in mobile travel apps could be leaked and misused.	1	2	3	4	5	6	7
Personal Innovativeness								
PI1	I will look for the ways to try new mobile travel apps.	1	2	3	4	5	6	7
PI2	I am usually the first to explore new mobile apps among the peers	1	2	3	4	5	6	7
PI3	In general, I like to experiment with new mobile travel apps.	1	2	3	4	5	6	7
User Engagement: Cognitive Processing								
UE1	I frequently use the mobile travel app.	1	2	3	4	5	6	7
UE2	Using mobile travel apps stimulates my interest to learn more	1	2	3	4	5	6	7
UE3	I am inspired by using mobile travel app.	1	2	3	4	5	6	7
User Engagement: Affection								
UE4	I have strong emotions toward mobile travel apps.	1	2	3	4	5	6	7
UE5	I spend a lot of time with mobile travel apps because it's enjoyable.	1	2	3	4	5	6	7
User Engagement: Activation								
UE6	Mobile travel apps stimulate my thinking and problem solving in travels.	1	2	3	4	5	6	7
Advocacy Intention								

AI1	I am fully willing to recommend the usage of mobile travel apps platforms to anybody who would ask me for advice.	1	2	3	4	5	6	7
AI2	I recommend others to use mobile travel application.	1	2	3	4	5	6	7
AI2	I talk about mobile travel apps with others quite frequently.	1	2	3	4	5	6	7