



# Factors Influencing Mobile Tourism Recommender Systems Adoption by Smart Travellers: Perceived Value and Parasocial Interaction Perspectives

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**Abstract.** This study aims to investigate the role of perceived value and parasocial interaction that encourages smart travellers in adopting mobile tourism recommendation systems (MTRS). This research is conducted by distributing an online questionnaire and obtained 172 respondents. The results show that functional, hedonic, and social value affect the perceived usefulness of the tourism recommendation system. While social interaction is only influenced by social value, both perceived usefulness and parasocial interaction affect the smart traveller's intention to use and recommend MTRS. Thus, this research contributes both on practices and theory, in particular revealing the perceived values of MTRS and their impact on parasocial interaction and adoption intention, which is rarely explored in the literature.

**Keywords:** Smart tourism · Mobile tourism recommender systems · Perceived value · Parasocial interaction · Technology adoption

## 1 Introduction

The trend of tourism in Indonesia in the past few years is growing fast. Indonesia ranks ninth in the list of countries with the fastest growing tourism in the world based on a list released by the World Travel & Tourism Council [1]. One of the triggers behind this is the advancement of Internet technologies that drive the emergence of social media, various smart tourism applications, online tour & travel services, startups engaged in tourism, etc.

Social media as one of the triggers for this development enables information sharing related to tourism among travellers. The use of social media through mobile devices, in fact, has been part of everyday human life, including by smart travellers, those who frequently seek recommendations related to tourism products. TripAdvisor, for example, as one of the global tourism recommendation sites, has an average of 455 million unique visitors each month. While in Indonesia, Instagram is still the most popular media for searching the tourism-related recommendations. Of its 56 million users in Indonesia, Instagram has a travel menu that users can use to see posts from others who share their experiences in tourism. The use of mobile devices to obtain recommendations for tourism products, we refer this to as mobile tourism recommender systems (MTRS).

Through MTRS, travellers obtain various benefits, for example, they can search for information related to tourist attractions, obtain various information on tourism products that suit their needs, including discussions with other travellers related their experiences in using these tourism products. The mobile device allows intense interaction between users and the MTRS, which certainly can open opportunities for travellers to establish parasocial interaction, a theory that was originally used on television and films to describe a one-sided feeling of intimacy [2].

Unfortunately, how the role of the value-based adoption model (VAM) [3] and parasocial interaction are still rarely explored in the context of MTRS adoption. Previous studies were mostly focused on the credibility and trust of the electronic word-of-mouth (e-wom) as the main sources of the recommendations [4–12]. Other studies used theories such as the Technology Acceptance Model [13, 14], and Theory of Planned Behavior [15]. As such, there are still plenty of opportunities to contribute in particular theory to see the role of perceived value and social interaction in encouraging travellers to use tourism products, which is becoming the main gap that we want to address in this study.

The rest of this paper is organized as follows. In the second section, we will discuss the key theories that underlie this research as well as our research hypotheses. Next, we present our research methodology followed by our results, discussion, and implications. Lastly, we provide the conclusions of this study.

## **2 Theoretical Background and Hypotheses Development**

### **2.1 Perceived Usefulness**

Perceived usefulness is a perception from a user that the system he/she uses can provide benefits to him/her, for example in efficiency and productivity. In the context of technology adoption, perceived usefulness is one of the biggest drivers of technology use, as evidenced in the Technology Acceptance Model (TAM) theory [16]. The results of that study show that this factor is empirically proven and able to explain the reasons for end users in using information systems. In addition, it can also define that the new systems that were being developed were accepted by end users. Later, this is also reinforced by Thompson, Higgins, & Howell [17] who showed that the usefulness of information technology is the expected effect by users of information technology in carrying out their duties. Perceived usefulness has been proven in many studies to have a major impact on technology adoption, including in the context of the use of social media [18].

### 2.2 Parasocial Interaction

Parasocial Interaction is a theory of communication that was first introduced by Horton & Wohl [2]. Parasocial interaction allows the audience to establish pseudo interactions in mass media such as television. Parasocial Interaction is widely used in television shows, such as talk shows, news, quizzes, and so on by engaging the audiences to communicate. Although it is actually a one-way communication through a particular mechanism, the host creates a pseudo interaction between him/her and the audiences. The audiences involve in that activities as they consider media personalities as friends, despite having limited interactions with. This communication or interaction is known as the Parasocial Interaction. Parasocial interaction is now widely used to model interactions in social media, and is proven to have an impact, for example on celebrity and follower relationships [19–21], intention to buy goods [22, 23], and so on.

### 2.3 Perceived Value

In business theory, perceived value is the trade-off between perceived benefits and perceived sacrifice (or trade-off between positive and negative consequences) [24]. The perception of benefits is the result of consumer evaluations of products, both physical attributes, service attributes, and technical support obtained when buying or using the product. While the perception of sacrifice is the cost or effort spent by consumers when buying or using a product, perceived value is the overall consumer assessment of product benefits based on what they receive and what they spend [25]. The proposed research model in this study can be seen in Fig. 1.

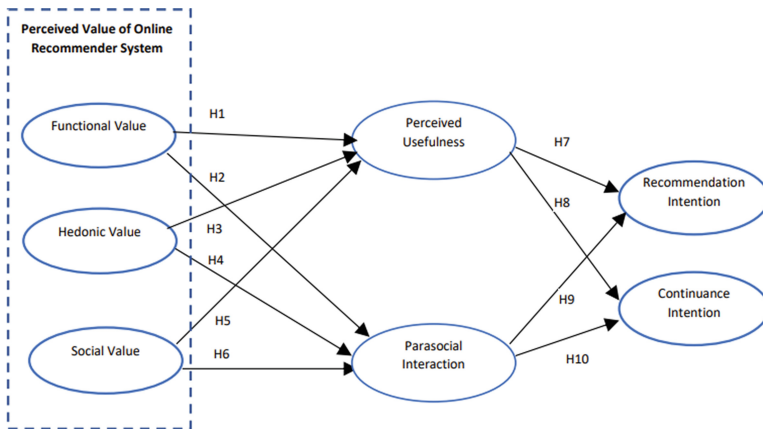


Fig. 1. Proposed research model.

In social network perspective, customer value includes three dimensions: functional, hedonic, and social values [26]. Functional value is based on the assumption that individuals are rational problem-solvers [26]. From an MTRS perspective, functional value reflects the ability of the system to provide tourism product recommendations that

meet users' needs. By providing information and recommendations related to tourism products, users can optimise their time in finding the tourism products they need.

Hedonic values represent the feelings and emotions of pleasure obtained by customers from their community involvement [27]. While hedonic value illustrates the enjoyment felt by travellers in using MTRS which will ultimately lead to fun and pleasure, social values describe user status and self-esteem for the communities they follow [28]. MTRS allows a traveller to share information related to his/her experience in using tourism products, which can later be used by other travellers. Travellers who often contribute to MTRS will definitely obtain a higher social status compared to others.

When a traveller perceives the benefits of MTRS, then surely travellers can feel the usefulness of the MTRS. MTRS allows travellers to obtain information related to tourism, discuss with other travellers in the community, and include having fun by seeing various tourism information provided by travellers with various multimedia formats. Thus, travellers will feel the usefulness of MTRS, especially related to the ease of making decisions associated to tourism products. This is confirmed by the findings of Chen & Lu [29] and Rafique et al. [30] which shows the role of perceived value in influencing perceived usefulness. From these, we draw hypotheses as follows:

H1: The functional value of MTRS positively affects the perceived usefulness of MTRS

H2: Hedonic value of MTRS positively affects the perceived usefulness of MTRS

H3: The social value of MTRS positively affects the perceived usefulness of MTRS

The perceived value obtained from MTRS also encourages travellers to experience parasocial interaction. The travellers can feel the interaction provided by MTRS through various tourism recommendations, both given by travellers who are members of MTRS, as well as by MTRS itself that can learn the behaviour of its users. Study of Zheng et al. [31] shows how task, physical and social attraction affect parasocial interaction. Thus, the following hypothesis can be formulated:

H4: Functional value of MTRS positively influences parasocial interaction with MTRS

H5: Hedonic value of MTRS positively influences parasocial interaction with MTRS

H6: Social value of MTRS positively influences parasocial interaction with MTRS

Parasocial interaction with MTRS causes MTRS to be seen as a friend by the travellers. This makes it easier for travellers to accept the recommendations given by MTRS. Thus, it is easier for travellers to continue using MTRS by considering their closeness to MTRS [31]. This close relationship certainly also makes it easier for travellers to recommend MTRS to other travellers. Perceived usefulness has also been shown in previous studies to influence behavioural intention in technology [16]. Thus, the perceived usefulness of MTRS will encourage the use of MTRS and their intention to recommend MTRS to other travellers. Thus, the following hypothesis can be formulated:

H7: Perceived usefulness of MTRS affects the intention to continue using MTRS again

H8: Perceived usefulness of MTRS influences intention to recommend MTRS

H9: Parasocial interaction with MTRS affects the intention to continue using MTRS

H10: Parasocial interaction with MTRS affects the intention to recommend MTRS.

### 3 Research Methodology

This research is conducted by distributing an online questionnaire to users of MTRS. The users of MTRS are those who use a recommender system such as TripAdvisor or Instagram travel through their mobile devices. We posted our request to social media such as Facebook, Instagram, and Twitter which have the largest users base in Indonesia. The questionnaire consists of 21 questions representing seven variables in the proposed model and developed using five points Likert scale (1-strongly disagree, 5-strongly agree). The functional, hedonic, social value, continuance intention, and recommendation intention constructs were adapted from Ukpabi et al. [32]. Perceived usefulness and parasocial interaction constructs are adapted from Xiang et al. [22]. All questions in the questionnaire have experienced a readability testing to avoid ambiguity. The collected data is then processed using Partial Least Square (PLS) technique with the help of SmartPLS 3.0 software. The PLS procedures follow the recommendation from Hair, Ringle, & Sarstedt [33] which comprises two main stages: measurement model testing and structural model testing.

### 4 Results and Discussion

After collecting data for two weeks, we obtained 172 respondents. The majority of respondents aged 18–25 years or amounted to 83.7%. From their job, 74.6% are students, 20.7% are workers and the rest are others. From their educational level, 66.9% are undergraduate, 4.1% are diploma, and the rest are high school or below. From the frequency use of MTRS in a day, 45.3% use 1 - <3 h, and 32.6% 3 - <5 h. The data is then processed with SmartPLS 3.0 and the results are presented in the following section.

#### 4.1 Measurement Model Evaluation

Measurement model evaluation is carried out to evaluate the validity and reliability of research instruments. The suitability of the measurement model is done by looking at the value of convergent validity, discriminant validity, and reliability. Evaluation of convergent validity is done by looking at the values of the loading factor. The loading factor value should be above 0.7 according to the recommendations of Hair, Ringle, & Sarstedt [33]. As such, there is one indicator (CI3) that must be removed from the model. After deletion it, all loading factor values are above 0.7.

The average variance extracted (AVE) is also entirely above 0.5 according to recommendations from Hair, Ringle, & Sarstedt [33]. For reliability, the evaluated value is composite reliability (CR), all of which are above 0.7 and meet recommendation from Hair, Ringle, & Sarstedt [33]. The value of loading factor, CR and AVE can be seen in Table 1. The results of the discriminant validity test in Table 2 have also shown no correlation between variables, the square root of the AVE value is already higher than the correlation between each construct [33]. Thus, the discriminant validity criteria have also been reached.

**Table 1.** The values of loading factor, composite reliability, average variance extracted.

Variable	Indicator	Loading factor	CR	AVE
Functional value	FV1	0.867	0.888	0.726
	FV3	0.798		
	FV4	0.887		
Hedonic value	HV1	0.893	0.844	0.731
	HV2	0.815		
Social value	SV1	0.897	0.932	0.819
	SV2	0.943		
	SV3	0.875		
Perceived usefulness	USEF1	0.894	0.910	0.771
	USEF2	0.869		
	USEF3	0.870		
Parasocial interaction	PSI1	0.790	0.885	0.721
	PSI4	0.889		
	PSI5	0.865		
Recommendation intention	RI1	0.904	0.931	0.817
	RI3	0.924		
	RI4	0.885		
Continuance intention	CI1	0.800	0.766	0.53
	CI2	0.877		
	CI3*	-0.035		
	CI4	0.842		

\*Deleted

**Table 2.** Fornell-Larcker testing results.

Variable	CI	FV	HV	PSI	USEF	RI	SV
CI	0.728						
FV	0.510	0.852					
HV	0.437	0.658	0.855				
PSI	0.479	0.244	0.165	0.849			
USEF	0.486	0.455	0.394	0.336	0.878		
RI	0.634	0.490	0.537	0.453	0.451	0.904	
SV	0.562	0.328	0.231	0.668	0.288	0.460	0.905

## 4.2 Structural Model Evaluation

Structural test is then performed using bootstrapping with a subsample of 5000. Evaluation of structural tests was carried out by looking at the value of R<sup>2</sup>, as well as the p-value of all hypothesis relationships (one-tailed with alpha 0.05). The overall results of the hypothesis test can be seen in Table 3. While the R<sup>2</sup> values for all endogenous variables can be seen in Table 4.

**Table 3.** Structural model testing results.

	Hypothesis	t-value	p-value	Conclusion*
H1	Functional value → perceived usefulness	2.850	0.002	Accepted
H2	Hedonic value → perceived usefulness	1.738	0.041	Accepted
H3	Social value → perceived usefulness	2.304	0.021	Accepted
H4	Functional value → parasocial interaction	0.403	0.344	Rejected
H5	Hedonic value → parasocial interaction	0.102	0.459	Rejected
H6	Social value → parasocial interaction	12.521	0.000	Accepted
H7	Perceived usefulness → Recommendation intention	4.002	0.000	Accepted
H8	Perceived usefulness → Continuance intention	5.250	0.000	Accepted
H9	Parasocial interaction → Recommendation intention	3.581	0.000	Accepted
H10	Parasocial interaction → Continuance intention	4.071	0.000	Accepted

\*We accept the hypothesis with 95% level of confidence.

**Table 4.** The values of R<sup>2</sup>.

Endogenous variable	R-square
Continuance intention	0.349
Parasocial interaction	0.446
Perceived usefulness	0.244
Recommendation intention	0.306

The results showed that 8 out of 10 hypotheses were accepted in this study. Functional value, hedonic value, and social value affect the perceived usefulness of MTRS. While parasocial interaction is only influenced by social value. Both perceived usefulness and parasocial interaction influence the travellers' intention to use and recommend MTRS. The R<sup>2</sup> values of perceived usefulness, parasocial interaction, continuance intention, and recommendation intention were 0.244, 0.446, 0.349, and 0.306 respectively.

## 4.3 Discussion and Implications

The results of this study indicate the important role of perceived value in encouraging intentions to adopt MTRS. The three dimensions of perceived value namely functional

value, hedonic value, and social value were proven to influence the perceived usefulness of MTRS. Of the three dimensions of perceived value investigated, the dimension that influences perceived usefulness the most is functional value, followed by social value, and finally is hedonic value. The main function of the MTRS is to provide tourism product recommendations to travellers through their mobile devices. This makes the travellers to carry out their travel planning easier. Therefore, the functional value is considered as the biggest driver of perceived value compared to the other dimensions. This is in line with [34] which also emphasizes the importance functional value or utilitarian value that drives the perceived usefulness of mobile reading. As the purpose of MTRS is for travel planning, thus the travellers feel that the functional value of MTRS is the most essential dimension that should be considered by MTRS developers.

Furthermore, our findings also showed that the parasocial interaction of MTRS is only influenced by social value. Parasocial interaction is a pseudo interaction in a media, so that through social value travellers certainly feel themselves to be friends of MTRS who always provide tourism recommendations for them. Through the recommendations given at any time by the MTRS, the apparent interaction occurs. These results support the findings of Zheng et al. [31] that showed the role of social attraction (or we refer to as social value) as the highest driver of parasocial interaction in the social commerce website. On the other hand, our results did not support the findings of Zheng et al. [31] that highlighted the importance of task attraction (or we refer to as functional value) as the determinant of parasocial interaction.

The results also showed that both perceived usefulness and parasocial interaction had an impact on adoption and intention to recommend MTRS. Both variables are almost equally powerful in giving an impact on adoption and recommendation intentions, although perceived usefulness contributes a little more. Our results confirm the findings from [35] that shows the role of parasocial interaction and perceived usefulness in driving use intention of online games. However, our results are slightly different with the results from Zheng et al. [31] in that the significant relationship between parasocial interaction and use intention but not for the path between perceived usefulness and use intention.

These results show the important role of perceived value and social interaction that drives the adoption of MTRS by smart travellers. For MTRS providers, the results of this research give important directions in MTRS design focus, that are required to pay attention to functionality, hedonic features, and especially social features that drive both perceived usefulness and parasocial interaction. MTRS providers can strengthen social features possessed by MTRS, for example by providing discussion features among travellers, messaging features that are more personal, and group feature to accommodate travellers with the same interests. In addition, related to functionality, MTRS providers must strengthen recommendation features that adjust to the preferences of the traveller, and include the reputation functions to assist travellers in evaluating e-wom created by the others. From a theoretical perspective, this research contributes a new perspective on MTRS adoption theory, which is currently more focused on the e-wom context (dominated by credibility and trust theory). This research opens insights related to the important role of perceived value and social interaction in MTRS adoption.



## 5 Conclusions

This research was conducted to investigate the role of MTRS perceived value and its impact on perceived usefulness and parasocial interaction. The results showed that the three dimensions of perceived value (functional value, hedonic value, and social value) had an impact on perceived value and parasocial interaction. The three dimensions of perceived value indicate an influence on perceived usefulness, whereas social interaction is only influenced by social value. Both perceived value and parasocial interaction affect continuance intention and recommendation intention. These results open an important role of perceived value and social interaction in the adoption of MTRS. This research also has limitations. The small sampling size is one of the potential problems in the generalization of the results of this study. Similarly, demographics are still dominated by students. For further research, other researchers can explore more on MTRS characteristics, for example by looking at the quality of the recommendation and personalization, to see their role in the adoption of MTRS. Besides, we also can explore the role of perceived enjoyment in driving MTRS adoption.

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