Research on Consumers' Willingness to Use Tourism Service Robots Based on SPSS Analysis

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Abstract: In the context of the continuous development of artificial intelligence, the application of service robots in tourism is becoming increasingly common. Whether service robots can meet consumers' personalized and diversified needs and whether consumers are willing to use them needs further exploration. Therefore, this paper starts from consumers' willingness to use tourism service robots and takes task-technology fit of tourism service robots as the entry point. Questionnaires were collected online and offline, and SPSS was used to test the reliability and validity of the data. The structural equation model was used to conduct a path analysis, Bootstrap analysis in SPSS was used to test the mediation effect. The results show that task-technology fit has a significant positive impact on consumers' intention to use travel service robots, and performance perception plays a partially mediating role.

Keywords: Task technology fit; Performance expectancy; Willingness to use; Tourism service robot

1 INTRODUCTION

With the development of big data and artificial intelligence, intelligent service has gradually become the development trend of the tourism industry [1]. Intelligent customer service robots, unmanned hotels, and intelligent tourism service robots have gradually entered the public field of vision. Most of the robots on the market have anthropomorphic characteristics, which are similar to human beings in appearance, sound, language, and other aspects. From the perspective of anthropomorphism, Xin Liu et al. (2021) found that tourism service robots that communicate with users in professional terms and have more anthropomorphic features in appearance are more likely to improve users' willingness to co-create with service robots [2]. Besides anthropomorphic demand, consumers now pay more attention to individual needs, so the technical design of service robot is particularly important, model based on technology acceptance and use a fresh (UTAUT), UGC wisdom tourism service platform should be too big data, 5G and the Internet of things technology as the foundation, improve the ability of mining information, Using user portrait to provide personalized services for consumers, to meet the differentiated needs of consumers [3]. Therefore, this paper explores consumers' willingness to use tourism service robots from the perspective of task-technology fit.

MSIEID 2022, December 09-11, Chongqing, People's Republic of China

DOI 10.4108/eai.9-12-2022.2327644

2 LITERATURE REVIEW

2.1 Research status of intelligent tourism

At the same time, the consumption demand of tourists shows a trend of individuation, diversification, and experientialization, and tourists transform from passively receiving information to actively searching information [4]. In this context, smart tourism has attracted wide attention. For smart tourism, most existing studies are based on the perspective of a smart tourism service platform. Chao Yuan et al. (2020) obtained information about tourists' perception of traditional village image based on the analysis of tourist experience content text in the UGC platform [5]. Based on the UTAUT model, Ruoran Xu (2021) builds a structural equation model of influencing factors of users' use of intelligent tourism service platforms to explore users' use behavior. There is also some research from the perspective of scenic spot tourism system wisdom, Feifei Xu and Lei Huang (2018), based on the perspective of tourists, to explore the internal and external factors that affect tourists use scenic spot wisdom tourism system and found that users more important scenic spot wisdom tourism system is practical and simple convenience and ease of use, tourists also pay more attention to the experience of personalized demand [6]. From the perspective of tourism service robots, a few scholars explored how anthropomorphic service robots can better interact with customers in the tourism service scenario, realize interactive co-creation, and thus improve the well-being and value perception of the entire social network (Xin Liu et al., 2019) [2]. This paper explores the willingness to use service robots in tourist attractions from the perspective of consumers.

2.2 Research on service robot

A service robot is the product of modern information technology. Service robots are highly autonomous and systematic, providing customized services to customers and realizing human-computer interaction [9]. A service robot is a robot based on big data, which combines natural language processing and speech recognition technology. Therefore, this paper defines tourism service robots as providing services through interaction with users through the Internet of things, artificial intelligence, and other technologies, to meet user needs. At present, the research of service robots is mainly carried out from function, technology, design, and program. Jeong (2018) took the operation of robot cafe as the research object, introduced how the robot realized the process of ordering, making, and beverage delivery through program setting and human-computer interaction, and evaluated the service capability and level of the robot. Starting from the design of service robots, Xin Liu et al. [2] (2021) explored that service robots with high anthropomorphic levels in appearance and language expression can make customers have higher value co-creation intention. Jie Bao et al. [8] (2018) explored the operation of university libraries. Intelligent service robots can provide readers with an intelligent interactive experience through voice interaction, intelligent consultation, information broadcasting, route guidance, and other intelligent services.

3 HYPOTHESIS

3.1 Task technology fit and Consumer' willingness to use

Goodhue et al. first proposed a task technology matching model to measure whether new technology can help users complete tasks, including technical characteristics, task characteristics, task-technology fit, and personal characteristics [10]. Task-technology fit refers to the degree to which the new technology supports users to complete the required tasks. Users are more willing to use the new technology if the new technology helps users meet their requirements. R.A. Shang et al. [11] predicted that task-technology matching significantly affected users' willingness to use blogs, Heyang Chen et al. [12] pointed out that task-technology matching significantly affected users' willingness to adopt mobile library, And Feifei Xu et al. [6] found that task-technology matching positively affected users' behavior of using scenic spot smart tourism system. Task technology fit also affects performance expectations. When the TTF of consumers is high, their perception of performance expectations will be improved, to promote the use of tourism service robots by consumers. Therefore, the hypothesis is proposed:

H1: Task technology fit has a significant positive impact on consumers' willingness to use tourism service robots.

H2: Task technology fit has a significant positive impact on consumers' performance expectancy.

3.2 Performance expectancy and Consumer' willingness to use

According to the UTATU model, performance expectation significantly impacts users' behavioral intentions [12]. When tourists have a high perceived performance of UGC-type smart tourism platforms, tourists will use their platforms to a higher degree [3]. James E. Andrews et al. [9] found that users' performance expectations for ARTIFICIAL intelligence and related technologies significantly affected users' willingness to use them. Heyang Chen et al. [7] pointed out that task-technology matching affects users' adoption intentions through performance expectation. Therefore, the hypothesis is proposed:

H3: Performance expectancy has a significant positive impact on consumers' willingness to use tourism service robots.

H4: Task technology fit affects consumers' willingness to use tourism service robots through performance expectancy.

To sum up, the research model of this paper is proposed, as shown in Figure 1:

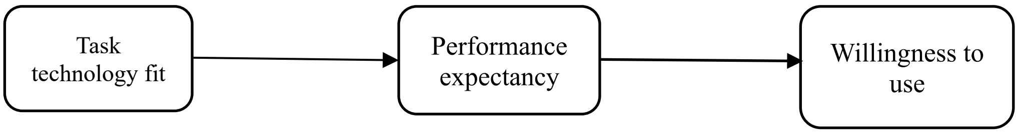

Figure 1 The Research Model

4 RESEARCH METHODS AND DATA ANALYSIS

4.1 Variable measurement

Task technology fit was measured by seven items, refer to Lin and Huang (2008) [13]; Performance expectancy is measured by six items, refer to Venkatesh et al. (2003) [14]. Consumers' willingness to use is measured by four items, for reference Davis et al. (1989) [15] and Kang et al. (2015) [16]. Variables were measured on a 5-level Likert scale, with 1 indicating strongly disagree and 7 indicating strongly agree.

4.2 Reliability and validity test

AMOS was used for the reliability and validity tests, and the results were shown in Table 1. Cronbach's Alpha and CR of the variables were all greater than 0.7, indicating that the scale had good reliability. The factor loading of each variable item was greater than 0.5, indicating that the scale had good convergence validity.

Table 1 Variable measurement items

Variable	measurement items	Factor Loading
Task technology fit Cronbach's Alpha=0.854 AVE=0.4543 C.R=0.8517	TTF1. Tourism service robots meet my needs in terms of planning travel routes.	0.688
	TTF2. Tourism service robots meet my needs in providing explanations of scenic spots.	0.609
	TTF3. Tourism service robots meet my needs in terms of language interaction.	0.544
	TTF4. Tourism service robots meet my needs in recommending personalized services.	0.653
	TTF5. The function of the tourism service robot to help me complete the travel plan is enough.	0.636
	TTF6. A tourism service robot is what I need during the trip.	0.818
	TTF7. A tourism service robot is suitable for me.	0.735
Performance expectancy Cronbach's Alpha=0.826 AVE=0.4492 C.R=0.8289	PE1. Using a tourism service robot can help me find the information I need.	0.635
	PE2. Using a tourism service robot can improve my efficiency of sightseeing.	0.579
	PE3. Using a tourism service robot allows me to save time and money.	0.676
	PE4. A tourism service robot can enhance my travel experience.	0.758
	PE5. A tourism service robot can meet my personalized tourism needs.	0.606

	PE6. In general, it is useful for me to make use of a tourism service robot for sightseeing.	0.747
Willingness to use Cronbach's Alpha=0.708 AVE=0.4430 C.R=0.7572	WU1. I would like to use a tourism service robot.	0.757
	WU2. I would recommend others to use tourism service robots.	0.738
	WU3. I think more tourist service robots should be put in scenic spots.	0.530
	WU4. I hope more scenic spots can provide tourism service robots.	0.611

4.3 Path check

AMOS structural equation model was used for path analysis, and the results are shown in Table 2. According to the table, CMIN/DF=1.650 < 3; RMSEA = 0.068 < 0.08; CFI = 0.929 > 0.9; IFI = 0.930 > 0.9; TLI=0.917 > 0.9, indicating that the fitting degree of the model is acceptable.

The standardized path coefficient of task technical fit on performance expectation is 0.809, P-value < 0.001, indicating a significant impact, assuming H1 is true. The standardized path coefficient of task technology fit on consumers' willingness to use tourism service robots is 0.568, P-value < 0.001, indicating a significant influence. H2 is assumed to be true. The standardized path coefficient of the impact of performance expectancy on consumers' willingness to use tourism service robots is 0.973, P-value < 0.001, indicating a significant impact, assuming that H3 is valid.

Table 2 Path check

X→Y	*SE*	*z*	*p*	Std. Estimate
TTF→PE	0.105	0.6545	0.000	0.809
PE→WU	0.162	0.9467	0.000	0.973
TTF→WU	0.70	0.3226	0.000	0.568
CMIN/DF=1.650; RMSEA=0.068; CFI=0.929; IFI=0.930; TLI=0.917				

4.4 Mediating effect test

Bootstrap analysis in SPSS showed that the mediation effect was 0.7151, P-value < 0.000, LLCI = 0.5541, ULCI = 0.8762, [0.5541, 0.8762] did not contain 0, so the mediation effect was significant. It indicates that task technology fit affects consumers' willingness to use tourism service robots through performance expectancy. Hypothesis H4 is established.

Table 3 Mediating effect test

	coeff	se	t	p	LLCI	ULCI
TTF→PE→WU	0.7151	0.0815	8.7798	0.0000	0.5541	0.8762

5 CONCLUSION

With the development of big data and artificial intelligence, robots are gradually entering people's lives. Tourist attractions are also constantly trying to use service robots to meet the personalized and diversified needs of tourists. However, there are few studies on consumers' willingness to use tourism service robots in scenic areas. Based on the task technology fit of tourism service robots as the entry point, this paper studies consumers' willingness to use tourism service robots by taking consumers' perceived performance expectancy as a mediator variable. The results show that task technology fit has a significant impact on consumers' willingness to use, and performance expectancy has a significant mediating effect between the two. Therefore, the technical functions of tourism service robots should be improved to meet the personalized needs of consumers in terms of appearance design and internal functions and to provide consumers with a new and comprehensive tourism service experience.

This paper only studies the task-technology fit of tourism robots. In addition to this factor, it can also study whether the anthropomorphic degree of the appearance and human-computer interaction of tourism service robots can better meet the personalized and diversified needs of consumers from the perspective of anthropomorphism. Therefore, future research can be carried out from the perspective of anthropomorphic tourism service robots.

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