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Social Perception and Intention to Use Service Robots: An Evaluation Based on Accommodation Businesses in Çanakkale

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ABSTACT

This study examines the intention to use service robots in accommodation businesses in Çanakkale, with a focus on employees' social perception and the perceived value of robots as key determinants of usage intention. Survey results show that while the advantages of service robots (such as speed, accuracy, and cost savings) create a positive perception among employees, they do not directly influence the intention to use them. Social perception, particularly the capacity of robots to engage in social interaction with humans, plays a crucial role in the acceptance of this technology. Although participants believe that robots cannot fully replace human interaction, they recognize the potential of robots to accelerate business processes and enhance work safety. The study emphasizes that enhancing robots' social perception through anthropomorphic features (human-like appearance, voice, and movements) can increase users' trust and acceptance. However, as described by the concept of the "uncanny valley," when robots resemble humans too closely, this similarity may provoke negative feelings among some users. The study highlights that technological innovations have a significant impact on the social adaptation process, suggesting that businesses should carefully consider this during the technology integration process. The research was conducted under the ethics committee approval of Çanakkale Onsekiz Mart University, dated 28/12/2023 and numbered 16/7, Data for the research were collected through face-to-face interviews.

Keywords: Service Robots, Social Perception, Tourism Industry, Accommodation Businesses, Technological Adaptation

Toplumsal Algı ve Hizmet Robotlarını Kullanma Niyeti: Çanakkale Konaklama İşletmeleri Üzerine Bir Değerlendirme

ÖZ

Çanakkale'deki konaklama işletmelerinde hizmet robotlarının kullanım niyetini inceleyen bu çalışmada, çalışanların sosyal algısı ve robotların algılanan değeri kullanım niyetinin temel belirleyicisi olarak öne çıkmaktadır. Anket sonuçlarına göre, hizmet robotlarının avantajları (hız, doğruluk ve maliyet tasarrufu gibi) çalışanlar arasında olumlu bir algı yaratmakta ancak doğrudan kullanım niyetini etkilememektedir. Sosyal algı, yani robotların insanlarla sosyal etkileşime girme kapasitesi, insanların bu teknolojiyi kabul etmesinde kritik bir rol oynamaktadır. Çalışmada katılımcılar, robotların insan etkileşiminin yerini tam olarak alamayacağını düşünse de robot kullanımının iş süreçlerini hızlandırma ve iş güvenliğini artırma potansiyeline sahip olduğuna inanmaktadırlar. Robotların sosyal algıya katkıda bulunması, yani antropomorfik özellikler göstermesi (insana benzer görünüm, ses, hareketler), kullanıcıların robotlara olan güvenini ve kabulünü artırmaktadır. Ancak, "tekinsiz vadi" olarak bilinen kavram gereğince, robotlar insana çok benzemeye başladığında bu durum bazı kullanıcılar arasında olumsuz duygular uyandırabilmektedir. Çalışma, teknolojik yeniliklerin sosyal uyum süreci üzerinde önemli bir etkisi olduğunu vurgulamaktadır; bu da işletmelerin teknolojiyi adaptasyon sürecine özen göstermesi gerektiğini göstermektedir. Araştırma, 28/12/2023 tarihli ve 16/7 numaralı Çanakkale Onsekiz Mart Üniversitesi etik kurul onayı ile gerçekleştirilmiştir. Araştırma verileri yüz yüze görüşmeler yoluyla toplanmıştır.

Anahtar Kelimeler: Hizmet Robotları, Sosyal Algı, Turizm Sektörü, Konaklama İşletmeleri, Teknolojik Adaptasyon

Introduction

In today's tourism sector, the increasing influence of technology enables businesses to implement innovative applications across a wide range of operational processes and service delivery. In this context, the use of service robots has become a significant factor, transforming the effects of technology on the workforce and the customer service experience.

*Sorumlu Yazar

Tourism businesses aim to gain a competitive advantage by effectively utilizing technology while striving to provide quality service to customers. The integration of service robots into the tourism sector not only provides labor savings but also has the potential to improve service quality. However, the adoption of these technologies brings various challenges in terms of cultural capital accumulation, technological adaptation, and social impacts.

With the advent of artificial intelligence, the use of robotic systems developed to simplify daily life practices and reduce people's workload has become widespread in many areas, from daily routines to business relationships. Along with the introduction of robotic systems into daily or working life, people's, employees', and customers' attitudes and acceptance of them have emerged as an issue. According to Başer & Bakırtaş (2023), the use of service robots in Turkey is dominated by an engineering perspective, and there is not a widespread field of study in terms of social sciences regarding their usage. For service robots to adapt to service culture, it is essential to humanize their appearance and improve their mobility (Murphy et al., 2017).

Along with mobility, the developing artificial intelligence allows humanoid robots or service robots to become increasingly usable by engaging in social learning when interacting with people (Breazeal et al., 2009). With the development of robotic systems, humanoid robots have started to be used in many fields. It can be said that while our attitudes towards humanoid robots are relatively more positive, we still do not fully accept them. Indeed, the assumption in the literature that as a robot's resemblance to a human increase, the sense of familiarity and trust it evokes in individuals also increases, but that this similarity reaching a point of realism can cause negative feelings, is expressed by the concept of the "Uncanny Valley" (MacDorman, K. F., 2006). Additionally, Dogan and Vatan (2019), who examined user/customer reviews in hotels where service robots are used, found that positive comments used adjectives like cool, fun, modern, cute, nice, wonderful, and interesting, while negative comments included words such as bad, difficult, unresponsive, creepy, disappointing, scary, strange, eerie, and lifeless. The humanoid appearance, sought as a feature in service robots given communication tasks with humans, increases their acceptability. These types of robots, especially in the service sector, are seen to have humanoid features such as being structured to resemble the human body, having a human-like voice and face, and the ability to move their heads, arms, and legs (Christou, 2020).

A robot's anthropomorphism affects people's acceptance of it, increases their trust, encourages them to spend more time with robots, or leads to greater tolerance for a robot's errors (Mourey et al., 2017). While the perception of anthropomorphism can facilitate and deepen human-robot interaction, inappropriate designs of anthropomorphism can cause discomfort in consumers, especially eerie feelings and a threat to human identity (Mende et al., 2019).

While it is an important topic how robot design can adapt to and develop service culture (Murphy et al., 2017), it is seen that robot manufacturers are producing synthetic robots that resemble human appearance (Duffy, B. R., 2003). According to Thomsen, service robots will replace humans in basic hotel services in the near future (Thomsen, 2020). While technology is a phenomenon encountered in every aspect of human life and its every phase, it is also a fact that many errors and failures occur. For this reason, service robots are generally seen to be used in areas where there is little dialogue with humans, rather than directly interacting and communicating with people (Lee et al., 2021).

According to Aslantürk & Erdem, service robots in hotels are more easily preferred in services such as food and beverage service or room/corridor cleaning, where there is less physical contact with people. According to Özgürel & Şahin, in situations where physical interaction between humans needs to be minimized, as experienced during the Covid-19 pandemic, the idea of robots taking more place in production and service delivery has become widespread. Similarly, applications of robotization in tourism, including robot-human relationships and interactions, are becoming a reality of life.

Tourism, as a service industry, has historically developed as a human-to-human service, and there has been an established understanding in this direction. However, with the changes and transformations

happening now, it is foreseen that the replacement of interpersonal contact with robots will go beyond what has been theorized in tourism literature so far (Tussyadiah, 2020).

In both year-round and seasonal tourism businesses, using robots 24/7 reduces the need for human resources, increases service production, avoids issues such as work safety or occupational disease problems, saves time and money, and enhances the business's efficiency in operational processes (Belanche et al., 2020). The presence of robots in tourism businesses will have a positive effect on creating an innovative tourism business image (Kuo et al., 2017). These robots not only perform basic and routine tasks in hotels and restaurants but also carry out advanced front-office tasks that involve attracting the social interest of customers (Belanche et al., 2020). Adding human-like features to such products to encourage consumer familiarity, participation, and positive evaluations is important (Kayabaşı et al., 2022). Lin and Mattila (2021) state that after the COVID-19 pandemic, various technologies, including service robots, were preferred to ensure and attract guests. Considering the rapid rise of robotization in the first quarter of the 21st century, it is predicted that service providers will largely transition to automation in the coming years (Frey and Osborn, 2017).

Although the widespread use of service robots is anticipated, it is stated that service robots do not aim to replace humans in service delivery and that a deeper technological system is required for this (Lu et al., 2019). For example, Japan's Henn-na Hotel, which opened in 2015 with an all-robot staff, decided to remove half of its robots from service processes due to unsatisfactory performances (Go et al., 2020). Lee et al. (2018) found that the potential positive business outcomes of restaurant service robots (such as speeding up the customer order-taking and delivery processes) positively influenced managers' attitudes and intentions to use robots.

It is expected that service robots will facilitate service processes and increase service capacity in proportion to the technology (Ivanov et al., 2020). This expectation also leads businesses to change their working structures and adopt robotic technologies (Ince, Başer, 2023). The tourism industry is emphasized to be central to the use of service robots (Nannelli et al., 2023). Besides technology, social impact plays a role in the widespread use of service robots. How others perceive a new technology user is important in the adoption of new technology (Ivkov et al., 2020). One important factor in the adoption of new technologies is the level of social pressure applied to the individual. When someone wants to use a new technology, they may change their behavior based on the reactions they expect to receive from their close ones or environment (Venkatesh et al., 2003), or they may use robotic technologies based on the opinions and thoughts of others (Bishop et al., 2019).

Given today's technological capabilities, in addition to the existing robots at Henn-na Hotel, it can be predicted that in the future, robots such as chef robots, bartender robots, and waiter robots will be developed and used in both different departments of the accommodation sector and different sectors (Durna, Baysal, 2021).

With the help of the sensors they use, robots can make real-time assessments and adapt to the situation. Thus, many new services have been opened to accommodation and travel businesses in the tourism sector (De Kervenoael et al., 2020).

Service robots facilitate easy and continuous connection with other people in social life, encourage the social participation of disabled or elderly people, and improve their quality of life (Turchetti et al., 2011). As AI-powered robot technology advances, care robots are becoming more independent and are evolving into companions that help people beyond physical care support, through more social interaction. According to Metzler and Barnes (2014), care robot applications can redefine the meanings of concepts like "friendship" and "care"; interacting with care robots cannot be a one-way activity but rather a two-way one, where people and robots shape each other in the end.

Innovations in robotic technologies can help elderly adults live independently by taking on some care functions. There is no universal definition of care robots. In general, care robots are perceived as technological devices integrated into care practices for healthcare or care personnel. Different categories

have been defined for elderly care robots; for example, assistive social robots and rehabilitation robots (Broekens et al., 2009) or healthcare robots providing physical assistance, companionship, and health monitoring/security tracking (Broadbent et al., 2009) are among the main categories.

It is estimated that more than 1.5 billion robots will be operational worldwide by 2025, and that the number of robots will surpass the number of humans by the early 2030s. This brings to mind how humanoid robots, being more involved in human life as service and service robots in various fields, will affect human-robot relationships (Başer, Bakırtaş, 2023).

Due to the reasons mentioned above, the use of service robots in the tourism sector is important. To measure the necessity and awareness of this usage, a study was conducted with hotel managers and employees in Çanakkale, which ranks 5th in Turkey with 746 certified establishments according to 2021 data. Table 1 presents data regarding the hotels located in Çanakkale, obtained from the Ministry of Tourism.

Table 1: *Numbers of Accommodation Establishments in Çanakkale*

		Number of facilities	Number of rooms	Capacity
Aparthotel		2	39	80
Boutique Hotel		7	137	294
Camping		3	123	369
Rural Tourism Facility		5	56	126
Hotel	1 Star	5	76	152
	2 Stars	6	148	281
	3 Stars	46	1955	3919
	4 Stars	10	823	1667
	5 Stars	2	438	946
Boarding		15	119	237
Holiday Village		1	99	396
Thermal otel	3 Stars	1	40	80
	4 Stars	2	129	276
Total		105	4182	8823

Out of the 105 establishments located in Çanakkale, face-to-face surveys were conducted with 49 of them. This survey aimed to gather the opinions of employees and managers in hotels in Çanakkale regarding service robots and to specifically measure their intention to use them. For this purpose, the answers to the research questions provided below were investigated.
Question 1) How do the perceived advantages and disadvantages of service robot usage, the perceived value if a service robot is used, and the problems they might encounter affect the intention to use service robots among hotel employees in Çanakkale? Is the intention to use service robots dependent on these variables?
Question 2) Are there differences in the averages of service robot usage intention, advantages, disadvantages, perceived value without using service robots, and the difficulties encountered based on subgroups of various demographic factors?
Question 3) What is the factor that affects the intention to use service robots among hotel owners in Çanakkale?

To answer these questions, literature research was conducted, and scales were found. The subsequent sections of the study include the implementation phase, results, and discussions.

Method and Application

In the study, a face-to-face survey was conducted to investigate various aspects of the use of service robots in accommodation businesses operating in Çanakkale. The scales used in the study were adapted from Lu et al. (2019), Ivanov et al. (2018), and Qui et al. (2020) to measure the advantages of service robots, and from Qui et al. (2020) and Ivanov et al. (2018) to measure the disadvantages of service

robots. The perceived value from service robots was measured using scales obtained from Zhong et al. (2020) and Kervenoael et al. (2020). The intention to use service robots and the basic challenges were measured based on the study by Xu et al. (2019).

The population of the study consists of accommodation businesses operating in Çanakkale, and the sample consists of 49 establishments selected through convenience sampling. The research was conducted under the ethics committee approval of Çanakkale Onsekiz Mart University, dated 28/12/2023 and numbered 16/7, Data for the research were collected through face-to-face interviews. The construct validity of the measurement tool was assessed using Exploratory Factor Analysis, while reliability was assessed with the Cronbach alpha coefficient. Subsequently, the data were interpreted through multivariate regression analysis and variance analyses. SPSS for Windows 25.0 statistical software was used for the analyses.

Research Model and Hypotheses

The research model is presented below. The intention to use service robots by accommodation business managers and employees was measured in four dimensions.

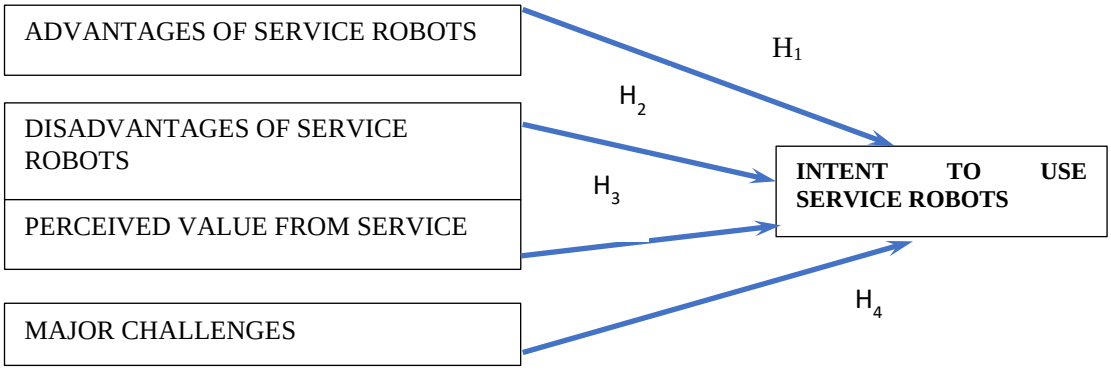

Figure 1. Research Model

The hypotheses created based on the established model are presented below.

Hypothesis 1 (H1): The perceived advantage of service robots explains the intention to use services.
Hypothesis 2 (H2): The perceived disadvantages of service robots explain the intention to use services.
Hypothesis 3 (H3): The perceived value in the use of service robots explains the intention to use services.
Hypothesis 4 (H4): The major challenges that may be encountered in using service robots explain the intention to use services.
A multiple linear regression model was conducted to test the hypotheses. The results of the analyses are presented below.

Findings

In the analysis of the data, SPSS for Windows 28.0 (Statistical Package for Social Science) statistical software was used. Descriptive statistical methods (number, percentage, mean, standard deviation) were employed to evaluate the data. Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity were conducted to assess the adequacy and suitability of the sample size for the analysis. Internal consistency analysis (Cronbach's alpha coefficient) was used to evaluate the reliability of the scale. A statistical significance level of $p<0.05$ was accepted in the analyses.

The assumptions of multiple linear regression are as follows: all variables are continuous, there is a linear relationship between dependent and independent variables, there are no significant outliers in the data series, there is no relationship between residual values and independent variables, dependent and independent variables have equal variance, residual variables are approximately normally distributed,

and there is no multicollinearity. Once these seven assumptions are met, a multiple linear regression model can be established.

The demographic characteristics of the participants are provided in Table 2. Among the participants, 24.5% are female, and 75.5% are male. Looking at the age groups of the participants, it can be seen that they predominantly belong to the middle-aged group. In terms of marital status, more than half are married. In terms of education, those with a bachelor's degree have the highest proportion at 44.9%. In terms of the type of business, hotels have the highest proportion at 79.6%. Among these hotels, 42.9% are 2-3 stars, and 34.7% are 4-5 stars. In the surveyed accommodation businesses, the years of service of the employees are equally distributed between 1 and 20 years. Among the accommodation businesses participating in the survey, 34.7% are in managerial positions, while 61.2% are in employee positions.

Table 2: *Demographic Characteristics of Participants*

Gender	**Frequency**	**Row N(%)**	**Education**	**Frequency**	**Row N(%)**
Female	12	24,5	High school and below	13	26,5
Male	37	75,5	Associate degree	8	16,3
Age			Bachelor's degree	22	44,9
18-24	6	12,2	Master's degree	4	8,2
25-31	13	26,5	Business Type		
32-38	13	26,5	Apart hotel	3	6,1
39 and +	16	32,7	Boutique hotel	7	14,3
Marital Status			Hotel	39	79,6
Single	17	34,7	Years of employment		
Bekar	29	59,2	1-2 years of employment	5	10,2
Other	2	4,1	3-6 years of employment	5	10,2
Number of stars			7-9 years of employment	3	6,1
No stars	11	22,4	10-20 years of employment	6	12,2
2 and 3 stars	21	42,9	Position		
4 and 5 stars	17	34,7	Manager	17	34,7
			Employee	30	61,2

Before the analyses were conducted, the construct validity and reliability of the scales were tested. An Exploratory Factor Analysis was performed for this purpose. The analysis results are presented in Table 3.

Table 3: *Results of the Exploratory Factor Analysis*

Items **ADVANTAGES OF SERVICE ROBOTS**	**Fac. Load**	**Skewness**	**Kurtosis**	**Mean**
SRA1-I think service robots will be faster than human workers	0,761	-0,393	-0,544	3,41
SRA2-I think service robots will calculate better than human workers	0,784	-0,594	-0,613	3,79
SRA3-I think service robots will provide more accurate information than human employees	0,74	-0,131	-1,127	3,35
SRA4-I think service robots can provide information in more languages than human employees	0,72	-1,343	1,273	4,06
SRA5-I think service robots will be more polite than human employees	0,792	0,025	-1,016	2,83
SRA6-I think service robots will do their job without getting tired, no matter how many questions you ask or what tasks you need	0,849	-0,993	-0,006	3,86
SRA7-I think that thanks to service robots, customers will not have to wait as much during service processes (check-in, check-out, meal, etc.)	0,789	-0,031	-1,203	3,57
SRA8-I think that thanks to service robots, customers will be able to avoid unnecessary personal contact	0,772	-0,733	-0,211	3,92
SRA9-I think service robots will be more reliable than humans in service	0,496	-0,23	-0,753	3,27
SRA10-I think service robots will be more sensitive than humans in service	0,73	0,589	-0,04	2,51

SRA11-I think that the information provided by service robots is more accurate, meaning there will be less human error in their service	0,719	-0,559	-0,122	3,57
SRA12-I think service robots will provide more consistent service than humans in service	0,809	-0,377	-0,57	3,45
KMO: 0,756 Approx. Chi-Square: 226,639 df: 66 sig.: 0,000 Total Variance Explained:%71,141				
DISADVANTAGES OF SERVICE ROBOTS				
SRD1- I think service robots can malfunction during service	0,618	-1,53	2,236	4,02
SRD2- I think service robots can misunderstand a question	0,913	-0,685	-0,51	3,61
SRD3-I think service robots can misunderstand an order	0,852	-0,466	-613	3,5
SRD4- I think service robots cannot make special requests from customers/only work within a programmed framework	0,526	-1,289	0,936	4,15
SRD5-I think service robots cannot understand the feelings of guests	0,88	-1,277	0,58	4
SRD6-I think service robots' standard movements and attitudes can make customers uncomfortable	0,582	-0,218	-0,812	3,37
SRD7-I think service robots limit the experience in the service environment	0,844	-0,185	-0,82	3,53
KMO: 0,648 Approx. Chi-Square: 128,696 df: 21 sig.: 0,000 Total Variance Explained: %63,705				
PERCEIVED VALUE FROM SERVICE ROBOTS				
SRPV1-Compared to traditional service delivery, the use of robots in a service environment is valuable to me	0,858	0,132	-0,65	2,78
SRPV2- I think the use of robots in a service environment will provide a satisfying experience	0,86	-0,03	-0,726	2,92
SRPV3- Compared to the service cost I have to pay, I think the use of robots in a service environment will cover my costs	0,818	0,63	-0,642	3,22
SRPV4- I think the use of service robots can increase hotel service efficiency	0,823	-0,331	-0,606	3,31
SRPV5- I think the use of service robots can guarantee a better service quality	0,909	-0,01	-0,662	2,96
KMO: 0,686 Approx. Chi-Square: 81,926 df: 10 sig.: 0,000 Total Variance Explained:%76,482				
INTENT TO USE SERVICE ROBOTS				
SRI1-Given the opportunity, I will use robots in a service environment	0,791	-0,479	-0,584	3,35
SRI2- I will use robots in a service environment in the near future	0,841	-0,552	-0,476	3,31
SRI3- I intend to use robots more in a service environment in the future	0,903	-0,495	-0,637	3,35
SRI4- I intend to use service robots	0,869	-0,159	-0,823	3,04
SRI5- I will be willing to recommend service robots to others	0,77	0,055	-0,902	2,86
SRI6- I will use service robots frequently	0,901	-0,169	-0,754	3
SRI7- I will be willing to use service robots	0,852	-0,133	-0,86	3,2
KMO: 0,852 Approx. Chi-Square: 275,309 df: 21 sig.: 0,000 Total Variance Explained:%71,912				
MAJOR CHALLENGES FOR HOTEL MANAGERS TO FACE THE POTENTIAL BENEFITS OF SERVICE ROBOT TECHNOLOGIES				
SRMC1-I may have difficulty dealing with technical issues (maintenance, repair, malfunctions, etc.) of service robots	0,878	-0,776	-0,507	3,67
SRMC2- I may have difficulty covering the investment/maintenance costs of service robots	0,811	-0,809	0,037	3,52
SRMC3- I may have difficulty planning where/how to deploy service robots	0,831	0,116	-1,052	2,9
SRMC4- I may have difficulty understanding the level of service that guests desire from service robots	0,700	-0,539	-0,138	3,31
SRMC5-I may have difficulty planning how my employees can best work with service robots	0,538	-0,159	-1,023	3,16
SRMC6- I may have difficulty meeting guests' desire/need for "human touch" and social interaction with service robots	0,789	-1,085	0,41	3,86
SRMC7- I think guests will be afraid/distrustful of service robots	0,872	0,26	-0,931	2,94
SRMC8- I think service robots cannot handle guest complaints	0,62	-0,359	-0,699	3,49
SRMC9- I think there will be a negative impact on my brand due to employing service robots	0,655	0,526	-0,121	2,41
KMO: 0,677 Approx. Chi-Square: 113,727 df:36 sig.: 0,000 Total Variance Explained:%65,081				

The KMO values of the scales used to determine opinions regarding the use of service robots in accommodation businesses ranged from 0.677 to 0.852. This result indicates that the sample adequacy is moderate to fair, and the Bartlett test results revealed that the sample size for the scales is statistically

significant ($p < 0.05$). The results of the internal consistency analysis (Cronbach's alpha coefficient) used to assess the reliability of the scale are presented in Table 4.

Table 4: *Reliability test results of the scales*

Scale Name	Item	Cronbach Alfa
Advantages of service robots	12	0,825
Disadvantages of service robots	7	0,798
Perceived value from service robots	5	0,775
Intent to use service robots	7	0,934
Major challenges for hotel managers to face the potential benefits of service robot technologies	9	0,733

The Cronbach Alpha values for the scales "Disadvantages of service robots," "Perceived value from service robots," and "Major challenges for hotel managers to face the potential benefits of service robot technologies" ranged between $0.60 \leq \alpha \leq 0.80$, indicating they are "moderately reliable" (Altunışık et al., 2005). The Cronbach Alpha values for the scales "Advantages of service robots" and "Intent to use service robots" were found to be between $0.80 \leq \alpha \leq 1.00$, indicating they are "highly reliable."

After the validity and reliability analyses of the scales, a multiple linear regression analysis was conducted to establish a model explaining the relationship among the variables affecting the intention to use service robots. Before performing the multiple linear regression analysis, the tests for the assumptions of multiple linear regression were conducted. The results of the assumption tests are provided below.

Correlation Analysis

In the measurement study of various aspects of service robot usage by accommodation business managers, the descriptive statistical values of the scales are presented in Table 5 Additionally, the results of the correlation analysis of the scales are provided in Table 5.

Table 5: *Descriptive Statistics of the Scales*

	Mean	Std. Deviation	N
Intentserrob	3,1574	1,00180	49
Advanserrob	3,4657	,67322	49
Disadvanserrob	3,7395	,76421	49
Valueserrob	3,0367	,81514	49
Challenserrob	3,2506	,65121	49

Table 6: *Results of the Correlation Analysis of the Scales*

	Intentserrob	Advanserrob	Disadvanserrob	Valueserrob	Challenserrob
Intentserrob	1				
Advanserrob	,418**	1			
Disadvanserrob	-,222	-,185	1		
Valueserrob	,730**	,646**	-,233	1	
Challenserrob	-,084	-,118	,177	-,128	1

In the Pearson correlation test conducted to determine the relationship between hotel managers' intention to use service robots and the perceived value of using service robots, a strong positive linear relationship was found ($r= 0.730$; $p=0.000$) between the intention to use service robots and the perceived value of using service robots. Additionally, a moderate positive linear relationship ($r= 0.646$; $p=0.000$) was observed between the advantages of using service robots and the perceived value of using service robots, as well as a moderate positive linear relationship ($r= 0.418$; $p=0.000$) between the advantages of using service robots and the intention to use service robots.

Multiple Linear Regression Analysis

Before proceeding to the Multiple Linear Regression analysis, the assumptions were tested. All data related to the variables collected for the study are continuous (1st Assumption). To test the linearity of the relationship between the dependent and independent variables, scatter plots were obtained between the dependent and independent variables. The scatter plots are presented in Figure 2.

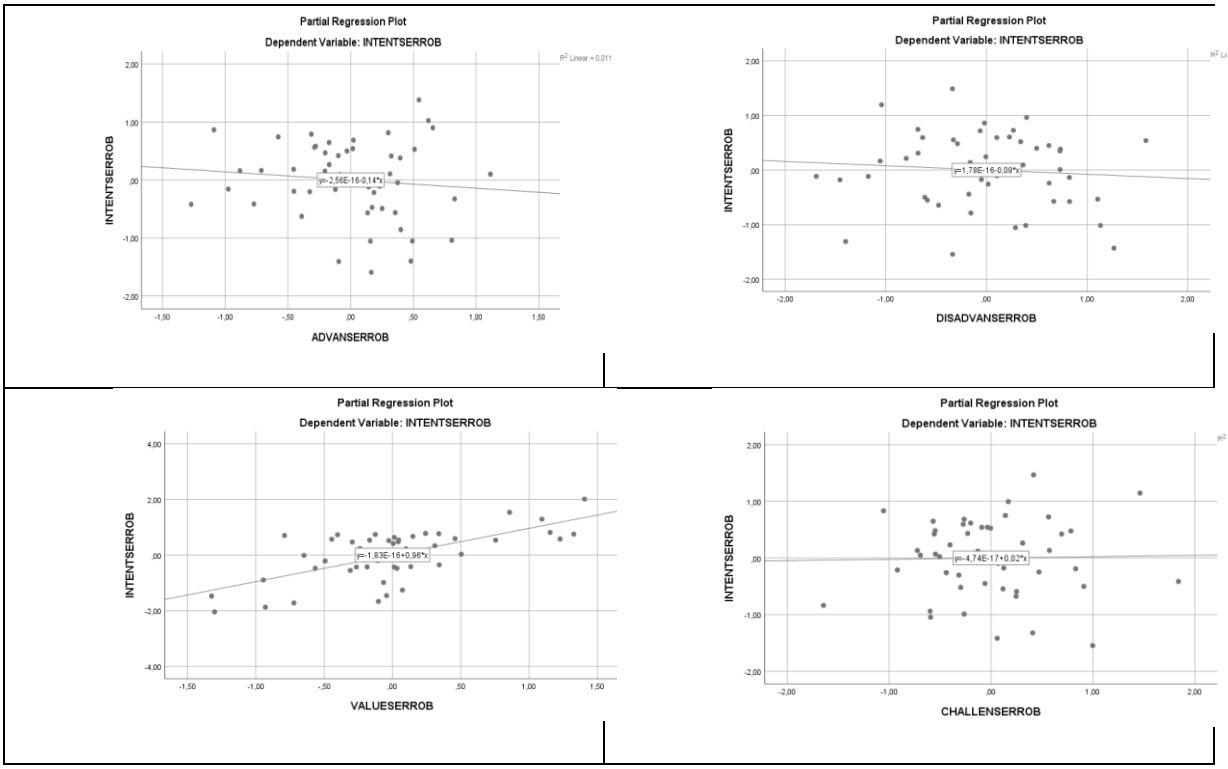

Figure 2. Scatter Plots between Dependent and Independent Variables

Upon examining the graphs presented in Figure 2, it is observed that there is a linear relationship between the dependent and independent variables. For the 3rd assumption, it was checked whether there are any outliers in the data sets. It was observed that there are no outliers for any of the variables in the data set. To test the 4th assumption, which states that there is no relationship between the residual values and the independent variables, the Durbin-Watson test was conducted. The test results are presented in Table 7.

Table 7: *Relationship Test Between Residual Values and Independent Variables*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	736	,542	,500	,708	1,734

Since the Durbin-Watson value is 1.734, which is within the range 1.5 < 1.734 < 2.5, there is no relationship between the residual values and the independent variables. To check whether there is homoscedasticity (equal variance) between the dependent and independent variables, the scatter plot of the standardized values is examined. The scatter plot is shown in Figure 3.

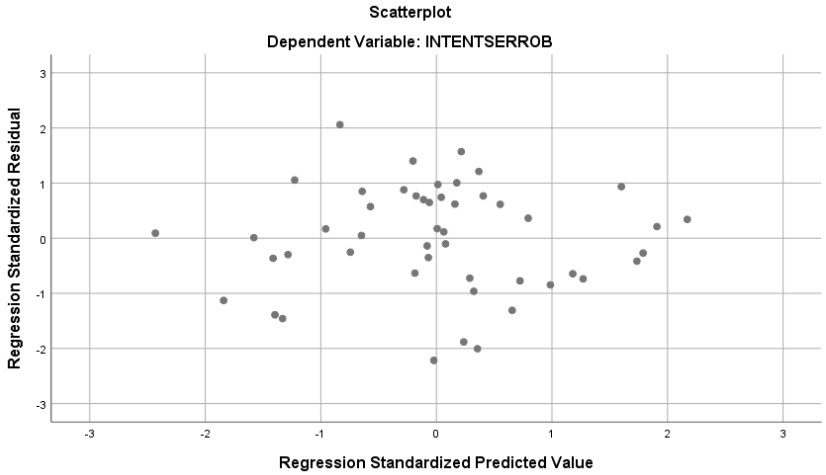

Figure 3. Scatter plot of standardized values

The presence of scatter in Figure 3 indicates that the variance is equally distributed. To test whether the residual values are approximately normally distributed, the Shapiro-Wilk values are examined. The results of the normality test are presented in Table 8.

Table 8: *Results of the normality test*

	Kolmogorov-Smirnov			**Shapiro-Wilk**		
	Statistic	df	Sig.	Statistic	df	Sig.
Studentized Residual	,093	49	,200*	,982	49	,664

According to the analysis results in Table 8 ($p < 0.05$), the residual values are normally distributed. The absence of multicollinearity among the independent variables is the final assumption. To check this, the VIF (Variance Inflation Factor) and Tolerance values are examined. The results of the multicollinearity test concerning the dependent and independent variables are presented in Table 9.

Table 9: *Results of the multicollinearity test concerning the dependent and independent variables*

Model		**Unstandardized Coefficients**		**Standardized Coefficients**			**95,0% Confidence Interval for B**		**Collinearity Statistics**	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	,955	,960		,994	,325	-,980	2,889		
	Advanserrob	-,141	,199	-,095	-,708	,483	-,543	,261	,581	1,722
	Disadvanserrob	-,078	,139	-,060	-,562	,577	-,359	,203	,922	1,085
	Valueserrob	,958	,166	,780	5,758	,000	,623	1,294	,568	1,760
	Challenserrob	,023	,160	,015	,143	,887	-,300	,346	,959	1,043

a. Dependent Variable: Intentserrob

In Table 9, all variables have VIF values less than 10, and the tolerance values are also less than the VIF values. Therefore, there is no multicollinearity among the independent variables. Since all assumptions have been met, a multiple linear regression analysis was conducted. The results of the multiple linear regression analysis are presented in Table 10.

Table 10: *Results of the multiple linear regression analysis conducted to explain the intention to purchase robots based on advantages, disadvantages, perception, and challenges*

	B	**Std. Error**	**Beta**	**t**	**sig.**	**R**	**R^2**	**F**	**P**
Advantage	-0,141	0,199	-0,095	-0,708	0,483				
Disadvantage	-0,078	0,139	-0,06	-0,562	0,577	0,736	0,542	13,007	0,000
Perception	0,958	0,166	0,78	5,758	0				
Challenges	0,023	0,16	0,015	0,143	0,887				

According to the results of the multiple linear regression analysis conducted to explain the intention to purchase robots based on advantages, disadvantages, perception, and challenges, the perceived value of service robot usage among the independent variables is a significant predictor of the level of robot usage (F (4,44)=13.007, p<0.001). This independent variable explains 54.2% of the variance in the intention to use robots. Only the perceived value of service robot usage explains the intention to use service robots (p<0.05).

As a result of the analysis, the equation explaining the intention to purchase service robots is: Intention to Use Service Robots = 0.955 + (0.958 * Perception) The advantages, disadvantages, and challenges arising from the usage of service robots do not explain the intention to purchase service robots (p>0.05). To examine whether there are differences in the intention to purchase service robots among demographic groups, variance analyses were conducted. Table 11 presents the mean and standard deviation values of the intention to use service robots concerning demographic factors.

Table 11: *Mean and standard deviation values of the intention to use service robots concerning demographic factors*

Intention to buy a Service Robot			
Gender	N	Mean	Std. Deviation
Female	12	2,7976	0,9679
Male	37	3,2741	0,9974
Marital Status			
Married	17	3,4370	0,7293
Single	29	3,0049	1,1336
Other	2	2,7857	1,1112
Age			
18-24 years	6	3,3095	1,3444
25-31 years	13	3,1648	0,8509
32-38 years	14	3,0816	0,8211
39 years and above	16	3,1607	1,1962
Education			
High school and below	13	2,9780	1,0398
Associate degree	8	2,9286	0,9507
Bachelor's degree	22	3,4935	0,8715
Master's degree	4	3,1429	1,1838
Business type			
Apart Hotel	3	4,0000	0,7143
Boutique Hotel	7	3,4898	1,0781
Hotel	39	3,0330	0,9824
Hotel star count			
No stars	11	3,3506	1,1417
2 and 3 stars	21	2,9456	0,8421
4 and 5 stars	17	3,2941	1,0979
Employee experience			
1-2 years of employees	5	3,0286	0,9225
3-6 years of employees	5	3,3143	0,8476
7-9 years of employees	3	2,1429	0,7559
10-20 years of employees	6	3,5476	0,4555
Employee position			
Manager	17	3,2605	1,0765
Employee	30	3,0524	0,9844

As a result of the variance analyses, no statistically significant differences were observed between the means of the intention to use robots across the demographic subgroups.

Results

In this study, the perceptions, advantages, disadvantages, perceived value, and intention to use service robots in accommodation businesses in Çanakkale province were comprehensively examined. The data were obtained through the analysis of various factors influencing the intention to use service robots in the accommodation sector.

Perceived Value of Service Robots and Intention to Use The findings of the study revealed a strong and positive relationship between the perceived value of service robots and the intention to use them. Participants perceive the potential of service robots to accelerate business processes, enhance customer satisfaction, and provide cost advantages highly. In particular, the robots' ability to provide more accurate and consistent information to customers has emerged as a factor that could enhance business efficiency. According to the results of the correlation analysis, the perceived value of service robots explains 73% of the intention to use robots. This finding indicates that investment in technology and the quality of service provided to customers are critical factors in the adoption process of robots.

The advantages of service robots particularly stand out in factors such as speed, accuracy, and the potential to minimize human errors. The survey results indicate that the majority of participants have a positive view regarding the robots' ability to provide quick service and reduce the need for personal interaction. However, it was found that the advantages do not directly explain the intention to use robots. This situation suggests that advantages alone may not be sufficient to create an impact; rather, the combined effect of perceived value with these advantages is more decisive.

Regarding disadvantages, participants noted that the lack of human interaction from robots could negatively affect the customer experience and that technological failures might disrupt the flow of service. However, it was determined that disadvantages do not have a significant effect on the intention to use robots. This result shows that even though participants recognize the negative aspects of robots, they generally believe that the innovations and conveniences brought by technology outweigh these concerns.

Effects of Service Robots on Managers From the perspective of managers, the challenges faced in achieving the potential benefits of service robots emerge as one of the significant factors affecting the adoption of this technology in businesses. Some participants expressed that the maintenance and repair costs of robots could be high and that there might be uncertainties regarding guests' interactions with robots. However, it was determined that these challenges do not have a direct impact on the intention to use robots. This situation suggests that the challenges managers face in adapting to technological innovations can be tolerated in line with the overall strategy and vision of the business.

Demographic Factors Demographic analyses examined the effects of factors such as gender, age, education level, and marital status on the intention to use service robots. From a gender perspective, it was observed that male participants showed a higher intention to use service robots. However, no statistically significant difference was found among age groups. Education level emerged as an effective factor in the adoption of service robots; participants with master's and bachelor's degrees tend to view robot usage more positively, while those with lower education levels approach this technology more cautiously.

Future of Service Robots The overall findings of the study suggest that the widespread adoption of service robots in the tourism sector is inevitable. The advantages offered by robots, especially in reducing labor costs and providing more consistent and rapid service, will play a significant role in enhancing businesses' competitive advantages. However, for these innovations to be effectively implemented, businesses must invest in their technological infrastructure and develop strategic plans regarding the use of robots.

Strategic Recommendations, In this context, several strategic recommendations can be developed for tourism businesses: Training and Technological Adaptation: Training programs should be organized for

employees and managers to adapt to technological innovations, and awareness should be raised on how robots can be used more effectively.

Enhancing Customer Experience: Considering how the use of service robots affects the customer experience, robots should be enabled to better meet customer needs. Particularly, technological innovations aimed at compensating for the lack of human interaction from robots should be emphasized.

Investment and Cost Analysis: The long-term cost advantages that robots can provide to the business should be carefully calculated, and investments in technological infrastructure should be planned. *In summary, the general conclusions can be stated as follows:*

There is a medium-level positive linear relationship between the advantages of using service robots and the perceived value of service robot usage.
There is a medium-level positive linear relationship between the advantages of using service robots and the intention to use service robots.
The advantages, disadvantages, and challenges arising from the use of service robots do not explain the intention to use service robots.
The perceived value of service robots is important in explaining the intention to use them.
No statistically significant differences were observed between the means of intention to use robots across the demographic subgroups.

This study presents significant findings regarding the adoption of service robots in accommodation businesses in Çanakkale province. Service robots have the potential to trigger a significant transformation in the tourism sector. In cases where perceived value is high, the intention to use robots also increases, strengthening the competitive advantage of businesses. However, for the full adoption of these technologies, both managers and employees need to adapt to technological changes, and customer experience should be considered in this process.

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