

Examining Employees' Attitudes towards the Use of Artificially Intelligent Systems in Luxury Hotels

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Abstract

The use of artificial intelligence in the tourism industry is currently at an early stage when compared to other industries like banking and healthcare. Therefore, it is essential for governments and enterprises to develop comprehensive regulations and plans pertaining to artificial intelligence in order to maintain a competitive edge in the tourism industry. The objective of this research was to get insights into the determinants influencing the probability of employees acceptance of artificial intelligence use in luxury hotels. The technique and method used in this study were as follows: This study aims to develop a theoretical framework and formulate hypotheses. Data will be collected by voluntary sampling using questionnaires. A two-step strategy will be used to assess the proposed model. The findings of this research show that perceived organisational support, social influence, perceived functional benefits, perceived strategic advantages, and perceived usefulness have a direct impact on the

intention to use. Initially, it is important to note that hotel personnel have ambivalent views towards artificial intelligence. Furthermore, it is essential for luxury hotel managers to recognise the significance of perceived organisational support as a crucial aspect.

Keywords: TAM, organizational support, luxury hotel, Perceived benefits, Jordan

Introduction

The hospitality sector has a substantial role in the overall world gross domestic product (GDP) and rate of employment (Yan et al., 2021). Nevertheless, empirical data indicates that the hotel industry exhibits a substantial voluntary turnover rate, estimated to range from 30% to 300% (Li & Bon, 2019). This rate surpasses that seen in many other sectors on a global scale. It has been observed that the hotel industry exhibits a turnover rate of 40%, which surpasses the average turnover rate of 20% across all sectors (Yanan, 2023). Within

the field of the human resources department, employee turnover is a serious topic that has to be addressed. In a comparable investigation, labour turnover was a significant difficulty for the hotel industry. According to Holston-Okae & Mushi (2018), the high personnel turnover rate at Okayh has resulted in a dearth of success, motivation, and appeal for exceptional people. In brief, the hotel business has seen advantageous outcomes as a result of global gross domestic product (GDP) and employment. Nevertheless, it is essential to acknowledge the significant impact of the elevated rates of employee attrition. In recent years, there has been a notable surge in scholarly investigations pertaining to the assessment of artificial intelligence (AI) applications, the societal presence of AI technology, and the ramifications of AI applications on both people and enterprises (Budhwar et al., 2022). In the contemporary work setting, employees are confronted with the customary demands of their everyday tasks, along with the repercussions stemming from the progress of technology. The erosion of workers' original professional expertise by developing technology elicits psychological threats, resulting in feelings of worry, melancholy, and maybe despair (Mantello et al., 2023). Research has shown a substantial correlation between knowledge of AI and behavioural intent (Li & Bon, 2019; Ouchchy et al., 2020). Furthermore, the growing prevalence of technology utilisation has resulted in increased job insecurity and a heightened inclination towards specific behaviours among workers. Nevertheless, the acceptance of robots has the potential to be regarded as a threat due to the potential consequences of increased unemployment. Moreover, it is expected that human workers would express resistance towards the implementation of service robots due to the fact that their

integration would require alterations to the existing operational procedures inside the organisation. The user's text is too short to be rewritten academically. Hence, the aforementioned resistance to change is a significant social determinant that warrants careful consideration and should not be undervalued. The crucial factor for the effective deployment of service robots is their acceptance by users. Acceptance has been conceptualised as a multifaceted construct, including attitudinal, deliberate, and behavioural dimensions. Hence, a pivotal aspect of human-robot cooperation lies in the need for people to embrace the presence and involvement of robots in their work environment (Akerkar, 2019; Pourhaji et al., 2022; Oscar, Dogan, & Christina, 2022). The identification of prospective elements that influence the adoption of robots may enhance user acceptance levels by ensuring that the relevant predictive variables are taken into account throughout the introduction of robots. AI applications in the travel and tourism industry have seen significant development and scrutiny across several domains (Bulchand-Gidumal, 2020). As a result, when workers are provided with organisational assistance, their responses entail the development of psychological connection and loyalty towards the organisation (Turja & Oksanen, 2019; Xu et al., 2020). Research findings indicated that the perception of support from an organisation has the ability to moderate the association between workers' perception of AI as a danger and their desire to leave the organisation (Gaur et al., 2021). The strength of this connection diminishes when workers encounter elevated levels of assistance from the organisation (Hannola et al., 2018). Another salient aspect that warrants attention is the perceived worth of artificial intelligence, which stands in stark contrast to its perceived menace. According to existing

research, it has been shown that enhancing consumers' perception of the value of AI in marketing may lead to a higher propensity to make purchases (Sadangharn, 2022). Similarly, augmenting workers' perceptions of the value of AI in human resources management can contribute to employee retention (Baldegger et al., 2020). There is a prevailing preference for AI over human decision-making due to the perceived fairness and demonstration of higher respect for workers in the judgements made by AI systems (Bankins et al., 2022). Therefore, it is essential to conduct a comprehensive examination of the use of AI in the tourism industry and its associated ramifications from several vantage points. The primary aim of the present study is to investigate the determinants influencing the probability of adopting AI within Jordanian luxury hotels. This study integrates perceived strategic benefits, organisational support, and social influence with the well-known TAM in the robot luxury hotel setting. This research combines the perceived benefits, organisational support, and social influence with the well-established TAM in the context of luxury hotels that use robots to make a valuable contribution to the current body of literature by doing empirical research on the worker's perspective within a theoretical framework. Specifically, it focuses on employee views of acceptance in the context of robot adoption in hotels.

Literature review

Robots in hospitality and tourism

In contrast to the existing corpus of literature about human-robot interactions, there is a notable scarcity and limited development of research pertaining to the utilisation of robots in the domains of tourism (Yanan, 2023). The authors of the two primary literature reviews

in this field (Gajdos&Marcis 2019; Koo et al., 2021) provide a comprehensive examination of the latest research on the use of robotics in the tourist industry and propose a framework for future academic inquiry in this area. The prevailing focus of research in this field has a supply-side perspective, mostly consisting of conceptual and exploratory studies. These studies primarily investigate the potential utilisation of robots by the hospitality, tourism, and travel industries for service provision. Ivanov et al. (2017), and Samala et al., (2022) examined the current and potential future applications of robotics in the tourist sector. The study conducted by Ivanov et al. (2017) examines the need for hospitality establishments, such as pubs, restaurants, and hotels, to modify their physical environments in order to accommodate robots. The authors emphasise in their paper the potential benefits of incorporating robot-friendly features into buildings, suggesting that this might provide hospitality enterprises with a unique and advantageous position in the future. In a recent study conducted by Ivanov and Webster (2019), the authors analyse the benefits and drawbacks associated with the use of robots in the tourism, hospitality, and travel industries. The researchers acknowledge that the adoption of robots is impacted by several factors, such as the prices and availability of technology and manpower, consumer willingness and interest in using robots, cultural characteristics of customers and service providers, and the technical attributes of robots. There is a scarcity of empirical research undertaken in this field, especially when considering the demand-side perspective.

The perception of service robots by employees

Within the realm of psychology, the concept of "perception" encompasses the cognitive

evaluations made towards objects of cognition, which may be characterised as either positive or negative. Weiten (2004) posits that an individual's perception of an item might elicit emotional and behavioural responses, suggesting that the object itself can have an independent influence on these reactions. To provide more clarification, the notion of perception may be seen as individuals' observable capacity for affective recognition, self-adaptation, ethical discernment, and cognitive processing, as proposed by Rantanen et al. (2018) and Koo et al. (2021). In the field of robotics, perception refers to the cognitive processes that persons engage in while evaluating and deciding whether to accept or reject robotic entities in the context of service supply. The attitudes of service employees regarding the use of robots are influenced by their corresponding values and actions, as shown by studies conducted by Samala et al. (2022). In a recent study conducted by Omar et al. (2022), it was shown that the level of management's trust in the utilisation and integration of robots within an organisation is directly correlated with the perceptions of robots held by employees. The findings of his study also suggest that the level of motivation and self-assurance of individuals has an impact on their perception of robots. The findings of Van Looy (2020) and Luo et al. (2021) demonstrate a significant association between employees' views of their attitudes and job security regarding the incorporation of robots into the work environment. The aforementioned finding suggests that there is a negative relationship between an individual's perception of job security and their attitude towards the use of robots. According to Granulo et al. (2019), the communication patterns shown by employees during instances of human-robot collaboration provide insights into their perceptions of robots. Furthermore,

empirical evidence has shown that people tend to have a proclivity for participating in collaborative endeavours with their peers (Wang & Wang, 2020). This inclination may be attributed to the recognition of the significance of human connection and collaboration in many contexts. In the context of employment, employees often choose the use of robots as a replacement. In their study, Samala et al. (2022) did a comprehensive literature analysis to examine the use of robotic advances within the framework of the COVID-19 pandemic. The researchers have identified service robots as a potential substitute for face-to-face interactions in diverse environments such as restaurants, hotels, and airports. The purpose of this proposal was to implement and reinforce social distancing measures in order to protect both consumers and staff members from the risk of possible infection. According to the research conducted by Omar et al. (2022), the COVID-19 pandemic has had a notable influence on customer preferences within the hotel business. This effect has led to a discernible change in favour of robot service over human support. According to Kim et al. (2021), there exist two distinct categories of individuals who interact with robots: "robophobes" and "robophiles. Robophobes hold negative attitudes towards robots and experience discomfort and apprehension towards the advancements of robotic technology in the tourist sector. Conversely, robophiles exhibit favourable sentiments towards robots, expressing positive perceptions and embracing the progress made in robotic technology within these industries. Hence, while implementing service robots within the hotel sector, the perception of these robots might vary, ranging from positive to negative to neutral. The viewpoint of workers towards the implementation of robots in the hotel industry is of considerable significance

(Kazandzhieva&Filipova 2019; Zhao, 2022). In 2016, Travel Zoo conducted a global survey, including nine countries, to get insights into the perceptions and attitudes of people towards service robots. According to a study done by Huang, (2022), a substantial majority of 80% of the participants expressed the idea that there is probable growth in the provision of robotic services within the tourist, travel, and hotel sectors in the foreseeable future. The prevailing perception is that the advancement of technology and the prevailing public sentiment towards robots do not support the notion of substituting human work with automated equipment. However, as stated by Chen & Eyoun, (2021), it refers to the utilisation of technology to facilitate the accomplishment of tasks with the assistance of human support.

Technology acceptance model

In the past, robots have been used in several industrial applications characterised by large production volumes, including plastic processing and metal forging (Lin et al., 2019; Davenport et al., 2020). Nevertheless, with the progression of technology, both big and small businesses have been able to include robots in their operations, mostly owing to the affordability and user-friendly nature of these machines. The Technology Adoption Model (TAM) posits that the adoption of technology by employees is influenced by two key perception-related factors: perceived ease of use and perceived utility. The concept of perceived ease of use refers to the degree to which users maintain the notion that using a certain technology service is simple and demands little effort (Davis , 1989). In addition, the study done by Forgas-Coll et al. (2019) about robot service has shown that the impression of ease-of-use has a substantial role in shaping the perceived usefulness. Furthermore, it is worth noting that both

perceived utility and ease-of-use factors have a favourable impact on the intention to use a certain product or service. The TAM model conceptualises perceived advantage as flexibility, which is evaluated via a systematic approach and reflects the crucial motivation to adopt innovations. In order to facilitate the integration of robots in the service sector, it is necessary to consider the advantages that robots provide in this context (Candi et al., 2016; Akerkar, 2019; Samala et al., 2022; Omar et al., 2022). The potential advantages of using robots may become more apparent in situations of crises and disasters where there is a discernible risk to human life (Luo et al., 2021). The concept of quality in the tourism and hospitality sectors is closely associated with perceived value, as discussed by Zhong et al. (2020). The use of robotic technology in the tourist industry has gained considerable importance in the post-pandemic era, primarily owing to the highly transmissible nature of COVID-19, which may be readily spread via intimate contact with unknown persons (Driessen&Heutinck, 2015). In light of scientific recommendations, it is advisable to maintain social distance in this particular scenario while nevertheless providing exceptional service. The use of service robots is a potential approach for reducing the risk of virus transmission while also delivering essential services. Accordingly, industry experts exhibit a willingness to use robotic technology in several facets of the hospitality sector, including tasks such as check-in procedures, guest reception, navigation assistance, service provision, and check-out processes (Civelek&Pehlivanoglu, 2020). The deployment of robots in diverse contexts such as hotels, restaurants, transportation, recreational facilities, airports and scenic areas with the aim of carrying out duties connected to COVID-19 has seen a noticeable rise and has been firmly entrenched (Lin et al.,

2021). According to academic research, service robots have been shown to exhibit a potential advantage over human workers as a result of their capacity to rapidly, consistently, and effectively adjust their behaviour codes (Salimon et al., 2018). In consideration of the aforementioned circumstances, the following further potentialities are proposed:

H1.: *There is a substantial link between perceived ease of use and the perceived usefulness of luxury hotel service robots.*

H2.: *Perceived ease of use has a significant positive correlation with employees' acceptance in luxury hotels.*

H3.: *Perceived usefulness has a significant positive correlation with employees' acceptance in luxury hotels.*

Organizational support

The notion of organisational support is grounded in the principles of social exchange theory, which posits that the level of support provided by an organisation has a substantial influence on workers, leading to increased loyalty and more engagement in their job (Rhoades & Eisenberger, 2002). The influence of point-of-sale systems on employee technological integration has consistently been a prevalent subject of scholarly investigation. Multiple studies conducted in many disciplines have provided evidence to support this claim (Wang & Wang, 2020; Chung et al., 2021). The ability of a company to retain its employees is directly linked to the level of support and help supplied by the organisation. Research has shown a positive correlation between the degree of organisational support and employee retention, suggesting that an increase in organisational support is linked to a corresponding increase in staff retention. During the COVID-19 epidemic, workers have been shown to see organisational support

as a critical factor (Chen & Eyoun, 2021). The proliferation of AI technologies inside the hotel business presents a substantial risk to some personnel, akin to the impact of the COVID-19 pandemic (Presbitero & Teng-Calleja, 2022). In order to mitigate the effects of COVID-19 and the proliferation of AI on the workforce, it is essential for hotel management to provide a diverse range of support mechanisms to their staff. Employees who get assistance from their managers are able to prioritise the assessment of the usefulness of AI above concerns about its potential risks. Based on the theoretical framework of utilitarian value (Bankins et al., 2022), it may be argued that when a company provides its employees with AI management services in order to improve job productivity, convenience, and cost-effectiveness, workers are likely to perceive the utilitarian value linked with the use of AI technology.

H4.: *Organizational support has a significant positive correlation with employees' acceptance in luxury hotels.*

Social influence

The concept of social influence pertains to the extent to which individuals see the use of AI service devices as aligning with the norms of their social group (Gursoy et al., 2019). Existing research indicated that individuals' opinions towards hedonic items are more susceptible to being influenced by social factors (Lee et al., 2020; Candi et al., 2016). In contrast to the consumption of utilitarian items, the consumption of hedonic products is characterised by a heightened focus on the attitudes of one's social group, as people want to avoid the negative social repercussions that may arise from making an incorrect product selection (Chen & Eyoun, 2021). Given the existing literature on the subject (Omar et al., 2022), it is plausible to anticipate that the

impact of social influence on employees' attitudes towards the use of AI devices in hospitality services would be more significant compared to airline services. This is primarily due to the perception among tourists that hospitality services offer greater hedonic value, while airline services are perceived to be more utilitarian. Based on the previous discourse, the following hypotheses are posited:

H5. : *Social influence has a significant positive correlation with employees' acceptance in luxury hotels.*

Perceived benefits

AI has the capacity to enhance productivity and efficiency within the realm of business, thereby leading to improved customer service, expedited service delivery, and elevated service quality. Based on prior studies, organisations that use e-business strategies might potentially benefit from enhanced sales, expanded market reach, and cost efficiencies. Two separate forms of direct and indirect benefits were established by Iacovou et al. (1995) and Kuan and Chau (2001). The direct benefits include the practical advantages derived from the use of artificial intelligence, such as the augmentation of production and profitability. Simultaneously, the indirect benefits pertain to the strategic advantages associated with the use of artificial intelligence, namely in terms of enhancing organisational image and gaining a competitive edge. The advantages of AI in the field of tourism have been established through studies. According to Geisler(2018), the use of AI technology has the potential to provide tourist enterprises with a distinct advantage in terms of competition. In a similar vein, Zhang and Sun (2019) posited that this technology has the potential to enhance several aspects of

the tourism industry, including tourist forecasting, quality management of scenic spots, efficiency of tourism administrative administration, and intelligence in tourism route design. Moreover, the study conducted by Gaur et al. (2021) yielded the finding that AI is a robust analytical tool capable of delivering scalable and precise real-time analysis of extensive datasets, enhancing the decision-making process within the tourism industry. As a result, the following theories have been formulated:

H6. : *Perceived functional benefits has a significant positive correlation with employees' acceptance in luxury hotels.*

H7. : *Perceived strategic benefits has a significant positive correlation with employees' acceptance in luxury hotels.*

Research methodology

Sample and procedure

The objective of this research was to get insight into the determinants influencing the probability of workers' acceptance of AI use in luxury hotels. This research examines the relationship between a hotel's star rating and its capacity and financial feasibility to use AI technology. Hence, the primary emphasis of this research pertains to luxury hotels that have been rated four or five stars. This research utilises data from the web platform "Google Form" due to the geographical limitations and ease of the network. This study facilitated the provision of sample collection services to academic researchers and acquired data from a total of 17 administrative areas inside Jordan. Initially, a group of 25 workers was selected to participate in a pretest aimed at identifying and rectifying any deficiencies included in the questionnaire. Subsequently, under the supervision of three renowned university

professors, several questions were modified in order to enhance the comprehension of the respondents. The research included a total of 500 workers who were employed at luxury hotels in Jordan between the months of May and August 2023. The participants were chosen using the random sampling technique, with reference to the table of random numbers provided by Krejcie and Morgan (1970). Participants who had missing data were excluded from the analysis, resulting in a final effectiveness rate of 81%. In order to ensure the reliability of the findings, it is recommended that the number of samples be at least ten times greater than the number of independent variables. Hence, a sample size of 405 was deemed adequate for the present investigation. Table 1 displays the profile tables of the respondents.

Table 1. Sample characteristics.

Variables	Item	No	%
Gender	Male	332	82
	Female	73	18
Age Group	18-27	95	23.4
	28-37	185	45.6
	38-47	89	22
	48 and above	36	9
Marital Status	Married	261	64.4
	Single	144	35.5
Experience	1-5	81	20
	6-10	165	41
	11-20	91	22.4
	21 and above	68	17

Measures

All participants were provided with a set of questionnaire items that encompassed various aspects, such as respondents' perceptions of the advantages of accepting service robots, perceived support from the organisation, social influence, perceived functional benefits, perceived strategic benefits, perceived ease of use, and perceived usefulness. The scale items were assessed via a 5-point Likert scale, where 1 represented the highest level of disagreement and represented the highest

level of agreement 5. The questionnaire instruments utilised in this study were adapted from prior research to establish the credibility of the questionnaire items. Specifically, the questionnaire items pertaining to perceived usefulness, ease of use, perceived social influence, acceptance, organisational support, perceived functional benefits, and strategic benefits were derived from the works of Yanan (2023), Chi (2022), Seo and Lee (2021), Tung & Law (2017), and Ivanov et al. (2017).

Data cleaning

To ensure that the data satisfied the normalcy assumption for multivariate analysis, we examined the skewness and kurtosis statistics (Hair et al., 2017). Westland's (2010) sample adequacy assessment was used in conjunction with our suggested framework. The framework consisted of six latent components and twenty indicator factors. A significance level of 0.05 and a statistical power of 0.80 were used to assess the appropriateness of the sample size. According to Westland's technique, the minimum required sample size is 227. Based on Westland's (2010) findings, it can be concluded that our sample size of 401 is sufficient to fulfil the basic requirements for data adequacy. Given that the data was collected through the Amazon Mechanical Turk (Mturk) platform, it becomes challenging to ascertain the actual response rate under real-world conditions. According to Yanan (2023), in situations where calculating the response rate is unfeasible, it becomes imperative to provide a justification for the sufficiency of the data. The absolute values of skewness ranged from 0.665 to 0.457, whereas the absolute values of kurtosis ranged from 0.587 to 0.985. Based on the findings of Hair et al. (2017), the observed values fall within the acceptable range of

skewness (3) and kurtosis (8). Consequently, the data satisfied the normality assumption of the multivariate analysis. Furthermore, many methodologies were used to ensure the precision and reliability of the collected data. As per the proposal of Westland (2010), the survey included many attention-check measures. The research used a methodology that included excluding participants who had difficulties with the attention-check questions.

Common method variance.

In this study, a number of procedural preventive steps were used to mitigate the issue of method bias. To guarantee the quality and clarity of the questionnaires, preliminary research was conducted in the form of pilot testing. Furthermore, with the use of diverse cover stories for each section of the questionnaire, we successfully created and fostered a state of psychological isolation. Furthermore, there were no questions made pertaining to the participants' identities, and all individuals who took part in the study were provided with assurances of both anonymity and confidentiality. Finally, our data was subjected to statistical verification using Harman's single-variable technique. Consequently, the outcomes of our non-rotated factor analysis pertaining to all six variables indicated that each component explained 79% of the variance. Based on the results obtained, it can be concluded that the presence of a common technique variance does not pose a significant issue for the current study. In addition, the inter-construct correlation shown in Table 2 does not exhibit any correlation coefficients over 0.9. Based on the highest inter-correlation coefficient of .77, it can be concluded that the presence of common method bias does not pose a substantial concern for the present study.

Table 2. Correlations Estimates.

Variables	Square root of AVE	1	2	3	4	5	6	7
Robot acceptance	0.81	-	.40	.43	.47	.51	.55	
organizational support	0.79		-	.35	.59	.67	.49	
social influence	0.77			-	.78	.47	.25	
Perceived usefulness	0.88				-	.57	.75	
Ease of use	0.74					-	.71	.68
functional benefits	0.85						-	.60
strategic benefits	0.80							-

Measurement model

The research used Confirmatory Factor Analysis (CFA) as a method to examine the validity of the Moments of Structure (AMOS) version 21 scale. The primary focus was on evaluating its convergent and discriminant validity. The objective of the CFA was to consolidate a set of 22 elements into six constructs. The reliability of the six components employed in the study surpassed a threshold of 0.6, as seen in Table 2. The assessment of discriminant validity was conducted by Fornell and Larcker (1981) via the examination of correlations between constructs and the square root of average variance extracted (AVE). In order to ascertain the existence of discriminant validity, it is essential that the square root of the Average Variance Extracted (AVE) exceed the correlation estimates between the constructs. Table 2 demonstrates that the square root of Average Variance Extracted (AVEs) had a higher magnitude in comparison to the correlation estimations. The verification process was conducted to assess the correctness of our scale. The model fit statistics of the recommended model provide more evidence to demonstrate the suitability of our measurement model for structural

analysis. The result obtained suggests that the chi-square to degree of freedom ratio was 4.35, which is below the upper threshold value of 5. Furthermore, it was determined that the comparative fit index (CFI) exhibited an equivalence to the value of y . According to the findings of Kazandzhieva and Filipova (2019), the ratio of chi-square (x^2) to degree of freedom (df) was determined to be 4.36, a number that is lower than the maximum criterion of 5. Furthermore, the obtained values for the comparative fit index (CFI) (.95), the Tucker-Lewis fit index (TLI) (.89), the root mean square error of approximation (RMSEA) (.06), and the standardised root mean square residual (SRMR) (.07) all suggest that the model fit is deemed adequate.

The results shown in Table 3 demonstrate a statistically significant relationship between perceived ease of use and perceived usefulness. The obtained correlation coefficient ($r = 0.19$, $p = 0.017$) and the regression coefficient ($\beta = 0.077$, $t = 0.879$, $p = 0.000$) together indicate a significant influence. Thus, the evidence supports hypothesis 1. The perceived ease of use of hotel service robots does not have a significant impact on their adoption (correlation coefficient $r = 0.31$, p -value = 0.016; standardised regression coefficient $\beta = 0.078$, t -value = 0.699, p -value = 0.347). Thus, the evidence does not support Hypothesis 2. The acceptability of hotel service robots is significantly impacted by an individual's perception of their utility ($r = 0.29$, $P = 0.358$; $\beta = 0.088$, $t = 0.707$, $p = 0.000$). Therefore, hypothesis 3 is supported. The results of the empirical study demonstrate that there is a significant and positive relationship between organisational support and workers' acceptance in luxury hotels ($r = 0.41$, $p = 0.000$) ($\beta = 0.447$, $t = .501$, $p = 0.000$). Therefore, hypothesis 4 is supported.

The adoption of hotel service robots by staff is influenced by social factors, as supported by the acceptance of hypothesis 5 ($r = 0.45$, $p = 0.000$) ($\beta = 0.157$, $t = 1.457$, $p = 0.000$).

The results of the empirical study demonstrate that there is a significant and positive relationship between functional benefits and workers' acceptance in luxury hotels ($r = 0.25$, $p = 0.000$) ($\beta = 0.412$, $t = .801$, $p = 0.000$). Therefore, hypothesis 6 is supported. Hypothesis 7 has been supported since there is a significant positive correlation between strategic benefits and workers' opinions of the acceptance of hotel service robots ($r = 0.38$, $p = 0.000$; $\beta = 0.066$, $t = 0.877$, $p = 0.000$). The research used CFA as a method to examine the validity of the Moments of Structure (AMOS) version 21 scale. The primary focus was to evaluate the scale's convergent and discriminant validity. The objective of the CFA was to consolidate a set of 22 elements into six constructs. The reliability of the six components employed in the study surpassed a threshold of 0.6, as seen in Table 2. The assessment of discriminant validity was conducted by Fornell and Larcker (1981) via the examination of the correlations between the constructs and the square root of average variance extracted (AVE). In order to ascertain the existence of discriminant validity, it is vital for the square root of the AVE to exceed the correlation values between the constructs. Table 2 demonstrates that the square root of AVEs had a higher magnitude in comparison to the correlation estimations. The verification process was conducted to assess the correctness of our scale. The model fit statistics of the recommended model provide more evidence to demonstrate the suitability of our measurement model for structural analysis. The result obtained suggests that the chi-square to degree of freedom ratio was 4.35, which is below the

upper threshold value of 5. Furthermore, it was determined that the comparative fit index (CFI) exhibited an equivalence to the value of y. According to the findings of Kazandzhieva and Filipova (2019), the ratio of chi-square (χ^2) to degree of freedom (df) was determined to be 4.36, a number that is below the established upper criterion of 5. Furthermore, the comparative fit index (CFI) yielded a value of .95, the Tucker-Lewis fit index (TLI)

yielded a value of .89, the root mean square error of approximation (RMSEA) yielded a value of .06, and the standardised root mean square residual (SRMR) yielded a value of .07. These results together suggest that the model exhibits a reasonable level of fit. The results shown in Table 3 demonstrate a statistically significant relationship between individuals' perceptions of ease of use and their perceptions of utility.

Table 3. Factor analysis.

Variable	SL	CR	AVE	α
Acceptance		.68	.52	0.91
1A	.72			
2A	.79			
3A	.75			
4A	.71			
5A	.68			
Organizational support		.76	.77	.90
1OS	.86			
2OS	.83			
3OS	.70			
4OS	.74			
Social influence		.74	.79	.92
1SI	.83			
2SI	.73			
3SI	.79			
Perceived usefulness		.79	.69	.92
1PU	.77			
2PU	.70			
3PU	.79			
4PU	.84			
5PU	.86			
Ease of use		.70	.53	.93
1EOU	.74			
2EOU	.82			
3EOU	.75			
4EOU	.82			
Functional benefits		.79	.58	.89
1FB	.66			
2FB	.69			
3FB	.79			
4FB	0.81			
Strategic benefits		.75	.66	.88
1SB	.88			
2SB	.78			
3SB	.75			
4SB	.73			

Table 4. Result of hypotheses testing.

	Std. Beta	Std. Error	T-values	P-values	Decision
H1	0.077	0.051	0.811	0.000	Supported
H2	0.071	0.062	0.810	0.435	Not-supported
H3	0.066	0.053	0.809	0.000	supported
H4	0.039	0.058	3.401	0.000	Supported
H5	0.050	0.045	1.336	0.000	Supported
H6	0.040	0.053	3.517	0.000	Supported
H7	0.091	0.067	0.766	0.000	Supported

Discussion and conclusion

This study examines the predictive ability of antecedents in determining employees' intentions to utilise IA robot service in luxury hotels. It also introduces an extended TAM that incorporates critical variables such as perceived organisational support, social influence, perceived functional benefits, and perceived strategic benefits. By integrating these variables with the original technology acceptance constructs, this model aims to enhance our comprehension of the distinct nature of robot service in the context of luxury hotels. Recent research has yielded novel insights pertaining to the pivotal factors linked to the behavioural patterns of personnel in luxury hotels that utilise robot service. The presence of a favourable effect of perceived usefulness (PU) on the desire to use robot services in luxury hotels has been verified. The findings suggest a positive correlation between workers' perceptions of service robots' utility and their inclination towards the use of robotic technology in luxury hotels. This observation is consistent with the results reported in the work on the TAM (Baldegger et al., 2020; Bankins et al., 2022; Yanan, 2023). Furthermore, the current research reveals a favourable indirect impact of PEOU on intention via PU. Workers have the perception that the ease of using a robot

directly correlates with its usefulness. Consequently, this perception fosters a favourable inclination among workers towards the use of robots in luxury hotels. According to Bowen and Morosan (2018), there is a consistent propensity among elderly adults to use technology. This discovery suggests that the influence of modern technology, such as robots, on the daily lives of older individuals is continuously growing, and the likelihood of incorporating these technologies into their regular activities is also rising. In order to effectively tackle the difficulties arising from a scarcity of labour caused by demographic changes, it is imperative for the hospitality service industry, particularly hotels, to modify its technical infrastructure and service delivery frameworks (Parvez et al., 2022). The use of social robots has emerged as a feasible alternative for providing assistance or perhaps substituting human involvement in service provision during uncertain global health emergencies such as the COVID-19 pandemic. The integration of service robots into the hotel and hospitality service industry has undeniably progressed consistently, establishing itself as an emergent technological advancement aimed at delivering services to clients. According to Koo et al. (2021), there is a decreased tendency among users to include robots in the

customer care process. This study aims to construct and validate a model for the acceptability of hotel service robots while also seeking to ascertain the factors that impact the intention of older individuals to use such robots in hotel settings. The results suggest that older employees' willingness to use robot services in hotels is positively influenced by their perception of organisational support, social influence, functional benefits, strategic benefits, ease of use, and usefulness in the cognitive dimension. Perceived organisational support, social influence, perceived functional benefits, perceived strategic advantages, and perceived usefulness factors were shown to have a significant impact on the intention to use. Furthermore, the perception of simplicity of use had a positive impact on the perceived usefulness, which subsequently had an indirect effect on the intention to use. The study's results will enhance our understanding of the interactions between senior people and hotel service robots, further developing the theory of user behaviour among this demographic.

Theoretical implementations

Additionally, these findings will provide theoretical guidance for the development, management, and marketing of hotel service robots. The future of travel, tourism, and hospitality is heavily reliant on the integration of technology, the implementation of sustainable practices, and the strategic foresight of management. In order to maintain competitiveness within a fiercely competitive economic landscape, the tourism industry must consistently use robotic technologies to cater to the diverse needs and preferences of clients. Furthermore, in the present context, there is a need to utilise robots for the purposes of providing information assistance (such as via chatbots and robot assistants),

carrying out sanitization processes (including the eradication of germs and viruses), and delivering various services (such as food and drinks). To effectively rebuild the image of the tourist business in the aftermath of the coronavirus crisis, it is imperative for the hospitality and tourism industries to focus on addressing the challenges posed by robots. Moreover, the use of service robots has the potential to enhance the capabilities of employees, allowing them to acquire higher levels of expertise and do duties often reserved for operators. The aforementioned rising trend has the capacity to attain enduring success and sustainability while establishing a novel identity for the hotel and tourism industries. The findings of this research have significant significance for the field of luxury hotel management. Initially, it is important to note that hotel personnel have ambivalent views towards AI. Employees have varying opinions about AI due to the diverse range of life events they have encountered. Assuming that hotel managers prioritise the augmentation of workers' perceived value of AI and want to alleviate apprehensions about the potential risks associated with AI technology, they may do this by implementing comprehensive educational programmes and training initiatives. In this particular instance, there was a shift in the workers' intent to accept. Furthermore, it is essential for luxury hotel management to see point of sale (POS) as a crucial factor. Furthermore, it is crucial to note that the point of sale (POS) system has a direct and substantial impact on the acceptability of robots in luxury hotels, respectively. Hence, the provision of comprehensive assistance by hotel managers in terms of adapting management policies and leadership approaches in response to the challenges posed by AI may significantly enhance employee satisfaction and loyalty towards their respective hotels.

Practical implications

The practical importance of this phenomenon is particularly relevant within the context of luxury hotels and their workforce. This study offers recommendations for hotel management to effectively address the acceptance of AI technology in luxury hotels. Specifically, it suggests providing employees with substantial organisational support to mitigate their inclination to leave luxury hotels as a result of significant changes in the work environment and concerns about future career prospects stemming from the adoption of artificial intelligence. The primary advantage seen in luxury hotels was a significant improvement in staff retention rates. The indirect benefits include several advantages, such as cost savings in recruiting and education, enhancement of service quality, and stimulation of innovation. The primary advantage for hotel personnel is the potential for substantial career advancement, although there are also secondary advantages such as the acquisition of new skills related to AI and an enhanced feeling of accomplishment, among others. The present research is subject to many limitations. This research used cross-sectional data, perhaps introducing limitations to the observed associations. In further investigations, the use of panel data, which integrates cross-sectional data with time series data, will be employed to enhance the persuasiveness of the data analysis outcomes. Furthermore, it should have been taken into account if the participants' organisational contexts had already implemented AI technologies. In future studies, it will be essential to categorise whether luxury hotels have used artificial AI technologies in order to more precisely capture the sentiments of respondents. In future investigations, it will be essential to validate this association in order to enhance

the comprehensiveness of the current model. Verifying this association in future research is crucial to enhancing the overall comprehensiveness of this framework.

References

- Akerkar, R. (2019). Introduction to artificial intelligence, *Artif. Intell. Bus.* 1–18, https://doi.org/10.1007/978-3-319-97436-1_1.
- Baldegger, R., Caon, M., & Sadiku, K. (2020). Correlation between entrepreneurial orientation and implementation of AI in human resources management (HRM), *Tech. Innov. Manag. Rev.* 10 (4) 72–79, <https://doi.org/10.22215/timreview/1348>.
- Bankins, S., Formosa, P., Griep, Y., & Richards, D. (2022). AI decision making with dignity? Contrasting workers' justice perceptions of human and AI decision making in a human resource management context, *Inf. Syst. Front* 24 857–875, <https://doi.org/10.1007/s1>.
- Bowen, B., & Morosan, C. (2018). Beware hospitality industry: The robots are coming. *Worldwide Hospitality and Tourism Themes*, 10(6), 726–733.
- Brougham, D., & Haar, J. (2017). Smart technology, artificial intelligence, robotics, and algorithms (STARA): employees' perceptions of our future workplace, *J. Manag. Organ.* 1–19, <https://doi.org/10.1017/jmo.2016.55>.
- Budhwar, P., Malik, A., & Silva, P. (2022). Thevisuthan, Artificial intelligence-challenges and opportunities for international HRM: a review and research agenda, *Int. J. Hum. Resour. Manag.* 33 (6) 1065–1097, <https://doi.org/10.1080/09585192.2022.203516>.
- Bulchand-Gidumal, J. (2020). Impact of Artificial Intelligence in Travel, Tourism, and Hospitality. In: Xiang Z., Fuchs M., Gretzel U., Höpken W. (eds) *Handbook of e-Tourism*. Springer, Cham.
- Candi, M., Ende, N., & Gemser, A. (2016). Benefits of Customer Codevelopment of New Products: The Moderating Effects of Utilitarian and Hedonic Radicalness. *Journal of Product Innovation Management* 33 (4): 418–34.

- Chau, P. Y., & Hu, P. J.-H. (2001). Information technology acceptance by individual professionals: A model comparison approach," *Decis. Sci.*, vol. 32, no. 4, pp. 699_719.
- Chen, H., & Eyoun, K. (2021). Do mindfulness and perceived organizational support work? Fear of COVID-19 on restaurant frontline employees' job insecurity and emotional exhaustion, *Int. J. Hospit. Manag.* 94 , e102850, <https://doi.org/10.1016/j.ijhm.2020.102850>.
- Chung, H., Quan, W., & Koo, B. (2021). A threat of customer incivility and job stress to hotel employee retention: do supervisor and Co-worker supports reduce turnover rates? *Int. J. Environ. Res. Publ. Health* 18 (12) 6616, <https://doi.org/10.3390/ijerph18126616>.
- Civelek, M., & Pehlivanoglu, C. (2020). Technological unemployment anxiety scale development.
- Collins, R., Cobanoglu, C., Bilgihan, A., & Berezi, K. (2017). *Hospitality Information Technology: Learning How to Use it*, eighth ed., Kendall/Hunt Publishing Co, Dubuque, IA, pp. 413–449 (Chapter 12): Automation and Robotics in the Hospitality Industry.
- Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *J. Acad. Mark. Sci.* 48 (1), 24–42. <https://doi.org/10.1007/s11747-019-00696-0>.
- Davis, D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Q*;13(3):319–40. <https://doi.org/10.2307/249008>.
- Driessen, C., & Heutinck, A. (2015). Cows desiring to be milked? Milking robots and the co-evolution of ethics and technology on Dutch dairy farms, *Agric. Hum. Val.* 32 (1) 3–20.
- Forgas-Col et al. (2019). User Acceptance of Mobile Apps for Restaurants: An Expanded and Extended UTAUT-2. *Sustainability* , 11, 1210.
- Gajdos, I., & Marcis, M. (2019). Artificial intelligence tools for smart tourism development, *Computer Science On-line Conference*, Springer.
- Gaur, L., Afaq, A., Singh, G., & Dwivedi, Y. (2021). Role of artificial intelligence and robotics to foster controlling operational risks. *European Business & Management*, 4(2), 55-66.
- Geisler, R. (2018). Artificial intelligence in the travel & tourism industry adoption and impact (Doctoral dissertation). Nova School of Business and Economics, Portugal.
- Granulo, A., Fuchs, C., & Puntoni, S. (2019). Psychological reactions to human versus robotic job replacement. *Nat. Hum. Behav.* 3 (10), 1062–1069.
- Gursoy, D., Chi, H., Lu, L., & Nunko, R. (2019). Consumers Acceptance of Artificially Intelligent (AI) Device Use in Service Delivery." *International Journal of Information Management* 49:157–69.
- Hair. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Thousand Oaks: Sage. <https://doi.org/10.1016/j.lrp.2013.01.002>.
- Hannola, L., Richter, R., & Richter, A. (2018). Empowering production workers with digitally facilitated knowledge processes – a conceptual framework. *Int J Prod Res* ;56: 4729–4743.
- Holston-Okae, R., & Mushi, A. (2018). Employee turnover in the hospitality industry using Herzberg's two-factor motivation-hygiene theory, *Int. J. Acad. Res. Bus. Soc. Sci.* 8 (1) (2018) 218–248, <https://doi.org/10.6007/IJARBS/v8-i1/3805>.
- Huang, T. (2022). What Affects the Acceptance and Use of Hotel Service Robots by Elderly Customers? *Sustainability*, 14, 16102. <https://doi.org/10.3390/su142316102>.
- Iacovou et al. (1995). Electronic Data Interchange and Small Organizations: Adoption and Impact of Technology. *MIS Quarterly*,19(4), 465-485.
- Ivanov, S., & Webster, C. (2019). Perceived appropriateness and intention to use service robots in tourism, *Information and Communication Technologies in Tourism*, Springer, Cham, pp. 237-248.
- Ivanov, S., Webster, S., & Berezina, K. (2017). Adoption of robots and service automation by tourism and hospitality companies, *Rev. Tur. Desenvolv.* 27/28 1501–1517.
- Kazak, A., Chetyrbok, P., & Oleinikov, N. (n.d.). Artificial intelligence in the tourism sphere. In *IOP Conference Series: Earth and*

- Environmental Science (Vol. 421, No. 4, p. 042020). IOP Publishing.
- Kazandzhieva, V., & Filipova, H. (2019). Customer attitudes toward robots in travel, tourism, and hospitality: a conceptual framework. Robots, artificial intelligence, and service automation in travel, tourism and hospitality. Emerald Publishing Limited,.
 - Kim, S., Kim, J., Badu-Baiden, F., Giroux, M., & Choi, Y. (2021). Preference for robot service or human service in hotels? Impacts of the COVID-19 pandemic. *Int. J. Hosp. Manag.* 93, 102795.
 - Koo, B., Curtis, C., & Ryan, B. (2021). Examining the impact of artificial intelligence on hotel employees through job insecurity perspectives. *Int. J. Hosp. Manag.* 95, 102763.
 - Krejcie, R., & Morgan, D. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607–610. <https://doi.org/10.1177/001316447003000308>.
 - Lee, J. (2020). Over the half of the adults in Korea have experienced Corona Blue. April 14, 2020. <https://biz.chosun.com/site/>.
 - Li, J., & Bon, B. (2019). Hotel employee's artificial intelligence and robotics awareness and its impact on turnover intention: the moderating roles of perceived organizational support and competitive psychological climate, *Tourism Manag.* 73 172–181, <https://doi.org/10.1016/j.tour>.
 - Lin, H., Chi, O., & Gursoy, D. (2019). Antecedents of customers' acceptance of artificially intelligent robotic device use in hospitality services. *J. Hosp. Mark. Manag.* 29, 530–549.
 - Lin, T., Wu, K., Chen, Y., Huang, W., & Chen, Y. (2021). Takeout Service Automation With Trained Robots in the Pandemic-Transformed Catering Business. *IEEE Robot. Autom. Lett.* 6 (2), 903–910.
 - Luo, J., Vu, Q., Li, G., & Law, R. (2021). Understanding service attributes of robot hotels: A sentiment analysis of customer online reviews. *Int. J. Hosp. Manag.* 98, 103032.
 - Mantello, P., Ho, M., Nguyen, M., & Vuong, Q. (2023). Bosses without a heart: socio-demographic and cross-cultural determinants of attitude toward Emotional AI in the workplace, *AI Soc.* 38 (1) 97–119, <https://doi.org/10.1007/s00146-021-01290-1>.
 - Omar, M., Ali, A., Cihan, C., Arasli, H., & Kayode, K. (2022). Employees' perception of robots and robot-induced unemployment in hospitality industry under COVID-19 pandemic. *International Journal of Hospitality Management* 107 103336, 25(1), 2-11. doi:<https://doi.org/10.1016/j.ijhm.2022.103336>
 - Oscar, H., Dogan, G., & Christina, G. (2022). Tourists' Attitudes toward the Use of Artificially Intelligent (AI) Devices in Tourism Service Delivery: Moderating Role of Service Value Seeking. *Travel Research Vol.* 61(1) 170–. doi:10.1177/0047287520971054
 - Ouchchy, L., Coin, A., & Dubljevi, C. (2020). AI in the headlines: the portrayal of the ethical issues of artificial intelligence in the media, *AI Soc.* 35 927–936,.
 - Parvez, M., Arasli, a., Oztüren, A., Lodhi, R., & Oongsakul, V. (2022). Antecedents of human-robot collaboration: theoretical extension of the technology acceptance model. *J. Hosp. Tour. Technol.*
 - Pornrat, S. (2022). Acceptance of robots as co-workers: Hotel employees' perspective. *Engineering Business Management Volume* 14: 1–12 DOI: 10.1177/18479790221113621, 1-12.
 - Pourhaji, F., Tehrani, H., Talebi, M., & Peyman, N. (2022). Perceived threat and stress responses in the face of Covid-19 based on health belief model, *J. Heal. Liter.* 7 (1) 17–25, <https://doi.org/10.22038/JHL.2021.59580.1174>.
 - Presbitero, A., & Teng-Calleja, A. (2022). Job attitudes and career behaviors relating to employees' perceived incorporation of artificial intelligence in the workplace: a career self-management perspective, *Person. Rev.*, <https://doi.org/10.1108/PR-02-2021-0103> (ahead-of-print).
 - Rantanen, T., Lehto, P., Vuorinen, P., & Coco, K. (2018). The adoption of care robots in home care—A survey on the attitudes of Finnish home care personnel. *J. Clin. Nurs.* 27 (9–10), 1846–1859.
 - Rhoades, L., & Eisenberger, R. (2002). Perceived organizational support: a review of

- the literature, *J. Appl. Psychol.* 87 (4) 698–714, <https://doi.org/10.1037//>.
- Sadangharn, P. (2022). analysis of robotic deployment in Thai hotels. *Int J Soc Robot* ; 14, 859–873. DOI:10.1007/s12369-021-00833-2.
 - Salimon, M., Goronduste, H., & Abdullah, H. (2018). ‘User adoption of smart homes technology in Malaysia: Integration TAM 3, TPB, UTAUT 2 and extension of their constructs for a better prediction,’ *J. Bus. Manag.*, vol. 20, no. 4, pp. 60–69.
 - Samala, N., Katkam, B., Raja, S., & Raul, V. (2022). Impact of AI and robotics in the tourism sector: a critical insight. VOL. 8 NO. 1 , pp. 73-87, Emerald Publishing Limited, ISSN 2055-5911, DOI 10.1108/JTF-07-2019-0065.
 - Seo, K., & Lee, J. (2021). The Emergence of Service Robots at Restaurants: Integrating Trust, Perceived Risk, and Satisfaction. *Sustainability*, 13, 4431. <https://doi.org/10.3390/su13084431>.
 - Tung, W., & Law, R. (2017). The potential for tourism and hospitality experience research in human–robot interactions, *Int. J. Contemp. Hospit. Manag.* 29 (10) 2498–2513.
 - Turja, T., & Oksanen, A. (2019). Robot acceptance at work: a multilevel analysis based on 27 EU countries. *Int J Soc Robot* ; 11: 679–689.
 - Van, L., Schaufeli, W., & Van, W. (2020). The satisfaction and frustration of basic psychological needs in engaging leadership. *Journal of Leadership Studies*, 14(2), 6-23.
 - Wang, Q., & Wang, Q. (2020). Reducing turnover intention: perceived organizational support for frontline employees, *Front. Bus. Res. China* 14 (1) 1–16, <https://>.
 - Weiten, W. (2004). *Psychology: themes and variations*, 6th edn. Thomson Wadsworth, California.
 - Xu, S., Stienmetz, J., & Ashton, J. (2020). How will service robots redefine leadership in hotel management? A Delphi approach. *Int J Contemp Hosp Manag* ; 32: 2217–2237.
 - Yan, Z., Mansor, Z., Choo, W., Abdullah, A., & Abdullah, A. (2021). How to reduce employees' turnover intention from the psychological perspective: a mediated moderation model, *Psychol. Res. Behav. Manag.* 14 (2021) 185–197, <https://doi.org/10.2147/PRBM.S293839>.
 - Yanan, L. (2023). Relationship between perceived threat of artificial intelligence. *Heliyon*, 19(5), 1-12. doi:<https://doi.org/10.1016/j.heliyon.2023.e18520>
 - Zhao, J., Li, X., Yu, C., Chen, S., & Lee, C. (2022). Riding the FinTech innovation wave: FinTech, patents and bank performance. *Journal of International Money and Finance*, 122, 102552.
 - Zhong, L., Sun, S., Law, R., & Zhang, X. (2020). Impact of robot hotel service on consumers' purchase intention: a control experiment. *Asia Pac. J. Tour. Res.* 1–19.