

Navigating the human-artificial intelligence collaboration landscape: Impact on quality of work life and work engagement

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ABSTRACT

Artificial intelligence (AI) systems are progressively exerting an influence on hotel employees. Drawing on self-determination theory, we proposed a model to explore how human-AI collaboration affects hotel employees' quality of work life and work engagement. To investigate research hypotheses, we analyzed two-wave data from 475 hotel employees who regularly collaborate with AI in their daily tasks. Our findings indicate that human-AI collaboration positively affected work engagement by meeting employees' basic needs of quality of work life and growth needs of quality of work life. Moreover, we discovered that person-job fit strengthened above relationship. Theoretical and practical implications are discussed to provide additional insights.

1. Introduction

The extensive implementation of artificial intelligence (AI) has brought about profound transformations to the global economy (Mo et al., 2024). As the integration of AI devices (such as virtual assistants, and automated hotel management systems) becomes increasingly prevalent, more and more hospitality and tourism industries are adopting the human-AI collaboration work model (Zhang, Chong, et al., 2023). Human-AI collaboration emphasizes the overall work results and comprehensive quality of the team composed of human workers and AI systems, rather than focusing solely on the accuracy of a single algorithm. In the hotel industry, human-AI collaboration involves the thoughtful integration of hotel employees' experience, knowledge, and judgment with AI capabilities (Li, Qin, et al., 2024), breaking down the barriers between hotel employees and AI algorithms. This integration facilitates knowledge transfer and maximizes the strengths of both humans and AI, ultimately enhancing the quality and efficiency of collaborative work outcomes (Li et al., 2023).

Researchers have delved into the discussion on the impacts of human-AI collaboration on employees. For example, existing research has highlighted the operational benefits of human-AI collaboration, such as freeing employees from repetitive tasks and improving overall work efficiency (Jia et al., 2023). However, there is a noticeable gap in understanding of how human-AI collaboration can prompt hotel employees' work- and life-related outcomes, especially the potential positive impacts (Mo et al., 2024). Most of the current literature has

focused on the negative impacts of AI interaction on employees, such as increased feelings of loneliness, job insecurity, and subsequent unhealthy behaviors like drinking and insomnia (Tang et al., 2023; Yam et al., 2022). The emphasis on these adverse outcomes has led to an oversight of how human-AI collaboration might positively influence employees' work and personal lives. However, it is crucial to explore how human-AI collaboration can positively affect employees' work and life, which may influence their service performance when collaborating with AI. The quality of work life is a key factor in achieving work-life balance, which positively impacts hotel employees' mental health and job satisfaction (Kim et al., 2020). To this end, the current research aims to explore the underexamined positive effects of human-AI collaboration on hotel employees' quality of work life, which in turn, affect their work engagement.

Sirgy et al. (2001) asserts that employees have needs that they seek to fulfill through work, such as health, safety, economy, family life, social life, esteem, self-actualization, knowledge, and aesthetic needs. If their needs through work are satisfied, they experience a favorable level of quality of work life. Sirgy et al. (2001) further divided the quality of work life into two dimensions: basic needs of quality of work life (such as health and safety needs, economic and family needs) and growth needs of quality of work life (such as social needs, esteem needs, self-actualization needs, knowledge needs, and aesthetic needs). In recent years, the quality of work life has gradually attracted researchers' attention. Previous studies have found that work environments, job demands, and leadership behavior can all impact employees' quality of

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work life (Kara et al., 2013; Sirgy et al., 2001). Nevertheless, the impact of human-AI collaboration on hotel employees' quality of work life remains unknown. The process of AI constantly feeding back results to hotel employees and then hotel employees applying their common sense, professional knowledge, and other higher cognitive skills to interact with AI has changed the way of work. Therefore, exploring how human-AI collaboration affects hotel employees' quality of work life has important academic and practical significance. Based on this, the current study explores the impact of human-AI collaboration on hotel employees through both the basic needs of quality of work life and the growth needs of quality of work life.

According to the self-determination theory, people must continue to meet three basic psychological needs throughout their lives: autonomy, competence, and relatedness needs (Gagné & Deci, 2005). Human-AI collaboration provides opportunities for employees to effectively manage their work tasks, enabling them to meet a wide range of needs (Bankins et al., 2024). Consequently, hotel employees are more likely to focus on their work. In light of this, this study posits that human-AI collaboration can affect hotel employees' quality of work life, which in turn affects their subsequent work attitudes. Work engagement, is deemed a direct determinant of employee performance (Schaufeli et al., 2002). Despite a series of explorations into the antecedents and consequences of employee work engagement in extant research (Rabiul & Yeau, 2021), the global landscape still witnesses a relatively modest level of employee work engagement within organizations (Stein et al., 2021). Therefore, this study provides a theoretical model whereby human-AI collaboration impact the basic needs of quality of work life and the growth needs of quality of work life of hotel employees, which in turn, influence their work engagement.

Despite the vital impact of human-AI collaboration on employees' work lives, previous studies have also shown that the extent to which different employees benefit from this collaboration can vary (Tang et al., 2022, 2023). For instance, highly conscientious employees may experience non-complementarity mismatches when working with intelligence machines (Tang et al., 2022). This can be attributed to the systematic, efficient and autonomous decision-making capability of these machines, which in turn, may make it less likely for these employees to benefit from such collaborations (Tang et al., 2022). Person-job fit is defined as the match between characteristics of the person and those of the job or task (Edwards, 1991; Kristof, 1996). When individuals can secure employment that aligns with their own characteristics and abilities, they are more likely to experience job satisfaction and fulfillment in their work (Tims et al., 2016), thereby increasing their likelihood of feeling higher levels of quality of work life. Thus, we expect that in the process of human-AI collaboration, hotel employees with different levels of person-job fit may also vary in their mastery and utilization of AI.

In summary, drawing from the self-determination theory, this study strives to investigate the influence of human-AI collaboration on hotel employees' quality of work life and subsequent work engagement. By focusing on these aspects, our research endeavors to provide a more balanced and comprehensive understanding of the impact of human-AI collaboration on employees, thus contributing to the ongoing discourse on human-AI collaboration in the hospitality industry. Moreover, this research also explores the moderating role of person-job fit in order to enrich research related to human-AI collaboration and hotel employees' quality of work life. In addition, this study provides valuable insights for both hotel employees and managers.

2. Theoretical background and hypotheses

2.1. Self-determination theory

The self-determination theory focuses on the degree to which an individual's behavior is self-motivated or self-determined (Deci & Ryan, 1985). Self-determination theory points out three innate psychological

needs—competence, autonomy, and relatedness—which when satisfied yield enhanced self-motivation and mental health and when thwarted lead to diminished motivation and well-being. Self-determination theory also explores the difference between internal and external motivation. Internal motivation (also known as intrinsic motivation) refers to an individual's engagement in an activity because the activity itself is interesting and can continuously satisfy their needs (White, 1959). When an individual derives positive emotions from the act of completing a task, they are driven by intrinsic motivation. In contrast, extrinsic motivation is characterized by an individual's actions taken to achieve outcomes distinct from the activity itself, such as gaining rewards or avoiding punishment (Deci & Ryan, 2013).

Research grounded in self-determination theory has explored the social and contextual factors that either support or hinder the natural processes of self-motivation and healthy psychological development (Ryan & Deci, 2000). For example, based on self-determination theory, Gip et al. (2023) revealed that organizational dehumanization had a negative effect on employees' psychological well-being, which in turn can be detrimental to hospitality employees service recovery performance. Zhang et al. (2024) explored the effects of resilient leadership on tourism and hospitality employees' resilience via their motivations. AI can already help hotel employees complete a considerable part of the work and is changing the tourism and hospitality sector by empowering employees to boost their work efficiency through its advanced capabilities (Sigala et al., 2024), which undoubtedly has impacts on employees' work and life (Zhao et al., 2024).

2.2. Human-AI collaboration and the quality of work life

Based on self-determination theory, this study posits that hotel employees can enhance the satisfaction of basic and growth needs of quality of work life through human-AI collaboration. The basic needs of quality of work life includes employee satisfaction of health, safety, economy, and family life needs through the utilization of organizational resources (Kim et al., 2020). Specifically, health and safety needs concern with having a sense of well-being and safety within employees through safe working conditions and health benefits; economic needs relate to providing appropriate compensation, job security, and fitting rewards; family needs concern the balance between work lives.

The introduction of AI has changed the workflow, job content, and work methods of hotel employees (Wilson & Daugherty, 2018; Xu et al., 2023). Excessive workloads can lead to employee stress and work-life imbalance (Pluut et al., 2018). Human-AI collaboration, however, can alleviate these pressures by automating repetitive and time-consuming tasks (Jia et al., 2023), thus improving work efficiency and reducing employee workload (Dennis et al., 2023; Li, Qin, et al., 2024). For example, AI in housekeeping management can monitor room cleanliness and identify maintenance needs, reducing the need for manual inspections and communication while significantly lowering labor input. These AI-driven solutions not only streamline operations but also help hotel employees reclaim more time for their personal lives and families. Therefore, we propose the following hypothesis:

H1a. Human-AI collaboration has a positive effect on hotel employees' basic needs of quality of work life.

In addition to basic needs of quality of work life, employees also have growth needs of quality of work life (Sirgy et al., 2001). Growth needs of quality of work life involve fulfilling employees' satisfaction with social, esteem, self-actualization, knowledge, and aesthetic needs through organizational resources (Kim et al., 2020). Specifically, social needs involve employees' desires to interact with others in work; esteem needs involve employees being accepted and valued by others within or representing the organization; self-actualization needs involve employees realizing their potential through work; knowledge needs refer to employees' desires to learn in order to better perform their jobs; and aesthetic needs represent the development of employees' creativity in

work.

Human-AI collaboration can significantly address these needs by fostering cooperation and providing opportunities for employees to engage in meaningful interactions and joint projects. Additionally, rather than replacing human employees, the human-AI collaboration model maximizes the strengths of both employees and AI, improving efficiency and creating a more dynamic work environment (Dennis et al., 2023). This collaboration allows hotel employees to focus on higher-level tasks, which can support the fulfillment of their esteem and self-actualization needs. For example, AI devices that assist in guest service personalization enable employees to focus on more complex decision-making processes by providing them with the ability to analyze more data and draw more accurate conclusions (Jerez-Jerez, 2025). Moreover, human-AI collaboration provides employees with opportunities for learning and development, enabling them to acquire new skills, knowledge, and experience (Jia et al., 2023). Additionally, human-AI collaboration helps hotel employees break free from mundane and intricate tasks, enabling them to concentrate on more complex and creativity-demanding work tasks, thereby addressing their knowledge and aesthetic needs. Therefore, we propose the following hypothesis:

H1b. Human-AI collaboration has a positive effect on hotel employees' growth needs of quality of work life.

2.3. The quality of work life and work engagement

The performance of hotel employees significantly influences the overall performance of hospitality industry. Sirgy et al. (2001) points that employees have various needs that they seek to fulfill through their work. According to the definition of basic needs of quality of work life, employees' basic needs of quality of work life are primarily material and extrinsic in nature. The fulfillment of these needs helps employees feel that their efforts are recognized and rewarded. This form of extrinsic needs is connected from the satisfaction of the action itself, such as job security (i.e., health and safety needs) and welfare (i.e., economic and family needs) (Ryan & Deci, 2000). In the context of human-AI collaboration, the fulfillment of these basic needs can be viewed as an external motivation that drives employees to better invest in their work.

On the other hand, growth needs of quality of work life are more intrinsically motivated and relate to the personal and professional development of employees. According to self-determination theory, intrinsic needs are highly autonomous and self-determined (Deci & Ryan, 2013). Previous studies have shown that employees are more interested and committed to work that is challenging and provides development opportunities (Sun et al., 2020). Human-AI collaboration introduces new challenges and learning opportunities for hotel employees, enabling them to acquire new skills and knowledge. Furthermore, human-AI collaboration empowers hotel employees to fully leverage their full potential by automating routine tasks and freeing them to focus on more creative, complex, and strategic activities (Jerez-Jerez, 2025). This shift enables hotel employees to feel a greater sense of self-worth and personal achievement. Therefore, the satisfaction brought by human-AI collaboration to hotel employees' growth needs of quality of work life can be regarded as an internal motivation. According to self-determination theory, when work inherently fulfills an individual's needs for recognition (esteem), involvement (social needs), and personal growth (knowledge and aesthetic needs), employees are more likely to experience intrinsic motivation, leading to increased work engagement. As such, we propose the following hypotheses:

H2a. The basic needs of quality of work life have a positive impact on employee work engagement.

H2b. The growth needs of quality of work life have a positive impact on employee work engagement.

Based on the aforementioned hypotheses and drawing from the overall framework of self-determination theory, this study proposes that

the satisfaction of basic and growth needs of quality of work life is an important mechanism by which human-AI collaboration affects employee work engagement. Human-AI collaboration has a significant impact on work lives of hotel employees, and can potentially enhance their basic and growth needs of quality of work life, thereby stimulating hotel employees to be more focused in their work and promoting their work engagement. Thus, we propose the following hypotheses:

H3a. Human-AI collaboration has a positive effect on work engagement by satisfying hotel employees' basic needs of quality of work life.

H3b. Human-AI collaboration has a positive effect on work engagement by satisfying hotel employees' growth needs of quality of work life.

2.4. The moderating role of person-job fit

Person-job fit refers to the alignment between job demands and an individual's skills, knowledge, and abilities. It can be used to predict an employee's job proficiency, technical understanding, and job innovation (Edwards, 1991). Person-job fit emphasizes the relationship between individual characteristics, abilities, values, and job demands (Debus et al., 2023). When their abilities, skills, interests, and values align with job demands, individuals are more likely to adapt to the work environment and achieve higher levels of satisfaction and performance. (Edwards, 1991). Person-job fit comprises two key components: the alignment between job demands and employees' capabilities, reflecting the correspondence between an employee's knowledge, skills, abilities and job demands; and the alignment between employees' needs and supplies, indicating to what extent an employee's needs are satisfied by their job (Cable & DeRue, 2002). The former emphasizes whether employees can meet job requirements, while the latter focuses on whether the job can satisfy employees' needs. Previous research has found that employees are happier (in terms of well-being) and more successful (in terms of performance) when they are in jobs that better fit their personal attributes (Kristof et al., 2005).

In the context of human-AI collaboration, if there is a high level of person-job fit, hotel employees will possess the necessary knowledge and skills for their tasks (Li, Qin, et al., 2024). This optimal alignment enables employees to effectively leverage the benefits of human-AI collaboration, consequently improving their work efficiency and showcasing outstanding performance. As a result, this alignment better satisfies their basic and growth needs of quality of work life. Additionally, when person-job fit is high, there is a greater match between employee needs and job demands, meaning that human-AI collaboration can better satisfy hotel employees' basic and growth needs of quality of work life. In contrast, when there is a mismatch or incompatibility between hotel employees and their job roles, adverse consequences such as dissatisfaction and stress might emerge. This misalignment can result in various negative outcomes, including dissatisfaction, stress, and other adverse consequences, ultimately weakening the positive impact of human-AI collaboration on hotel employees' basic and growth needs of quality of work life. Therefore, we propose the following hypotheses:

H4a. Person-job fit moderates the relationship between human-AI collaboration and hotel employees' basic needs of quality of work life, such that the relationship is stronger among hotel employees with higher levels of person-job fit.

H4b. Person-job fit moderates the relationship between human-AI collaboration and hotel employees' growth needs of quality of work life, such that the relationship is stronger among hotel employees with higher levels of person-job fit.

Furthermore, integrating the above reasoning, we propose a moderated mediation model where person-job fit promotes the indirect effect of human-AI collaboration on work engagement via basic and growth needs of quality of work life. Previous research indicates that person-job fit has a favorable impact on employees' job involvement,

attitudes and job performance (Goodman & Svyantek, 1999; Leung & Chaturvedi, 2011). When there is a higher level of person-job fit, hotel employees are more likely to adapt to the work environment, collaborate with AI more smoothly, and better leverage their potential and abilities. This results in an improved quality of work life and a greater likelihood of demonstrating higher work engagement. Conversely, if the degree of person-job fit is low, hotel employees may feel dissatisfied or unable to fully utilize their abilities, weakening the positive impact of human-AI collaboration on work engagement through the mediation of basic and growth needs of quality of work life. Thus, we propose the following hypotheses:

H5a. The indirect relationship between human-AI collaboration and work engagement via basic needs of quality of work life is stronger among hotel employees with higher levels of person-job fit.

H5b. The indirect relationship between human-AI collaboration and work engagement via growth needs of quality of work life is stronger among hotel employees with higher levels of person-job fit.

The research model of this study is shown in Fig. 1.

3. Methodology

3.1. Participants and procedure

Data for the present study were obtained from 17 hotels in north of China that have implemented AI devices in January 2023. These were 5 four-star and 12 three-star hotels. Surveys were distributed to employees who were working with AI-empowered devices (e.g., service robots, chatbots, virtual assistants). These employees were employed in departments such as reservation, restaurant, and room service. Before the survey started, employees were told that the study was for academic purposes only. The researcher assistants assure employees who are willing to participate in the survey that the data they fill in the questionnaire will be presented anonymously.

We collected data at two time points to rule out the common method bias (Podsakoff et al., 2003). Specifically, gender, age, education, job tenure, human-AI collaboration, person-job fit, basic and growth needs of quality of work life were surveyed at Time 1. Two weeks later, we measured work engagement. At Time 1, we sent questionnaires to 672 participants and received 558 completed questionnaires (83.03 % response rate). Participants who complete the questionnaire will receive 6 RMB compensation (about \$ 0.83 U.S.). At Time 2, we sent questionnaires to participants who completed the Time 1 survey and received 475 responses (a final response rate of 70.68 %). Participants who complete the questionnaire will receive another 2 RMB compensation (about \$ 0.28 U.S.). Among the 475 respondents, 60.63% were male; the average age was 33.77 years (SD = 7.75); the majority held an

associate's degree (78.74%); and the average job tenure was 9.21 years (SD = 5.86).

3.2. Measurements

Because we administered the surveys in China, we followed the translation-back-translation principle recommended by Brislin (1970). First, the first and the second authors who are fluent in both English and Chinese translated the English items into Chinese. The third author and two professional translators then translated the Chinese items back into English. The five translators then reviewed and resolved the differences between two English versions to ensure the original items' meanings remained unchanged. All variables were measured using a 7-point Likert scale ranging from (1) strongly disagree to (7) strongly agree.

Human-AI collaboration. We assessed human-AI collaboration with a three-item measure from Tang et al. (2022). A sample item was "I worked with AI in making major work decisions." Cronbach's α for human-AI collaboration was 0.90.

The basic needs of quality of work life. We adapted six items from Sirgy et al. (2001) to measure hotel employees' basic needs of quality of work life. A sample item was "Collaborating with AI does well for my family." Cronbach's α for basic needs of quality of work life was 0.93.

The growth needs of quality of work life. We adapted ten items from Sirgy et al. (2001) to measure hotel employees' growth needs of quality of work life. A sample item was "I feel that collaborating with AI allows me to realize my full potential." Cronbach's α for growth needs of quality of work life was 0.93.

Work engagement. We assessed work engagement with a nine-item measure from Venz et al. (2018). A sample item was "In the process of collaborating with AI, I am enthusiastic about my job." Cronbach's α for work engagement was 0.93.

Person-job fit. We assessed person-job fit with a three-item scale from Cable and Judge (1997). A sample item was "The job provides a total fit for me." Cronbach's α for person-job fit was 0.83.

Control variables. Based on previous research, gender, age, education, and job tenure might influence employee work engagement (Kim & Kang, 2017). Thus, we controlled for these variables. Gender was coded as "1" for male and "2" for female. Age was used as the actual age of the participant. Education was coded as "1" for high school or below, "2" for associate's degree, "3" for bachelor's degree, and "4" for graduate degree or above. Job tenure was measured based on participants' actual work experience.

4. Results

4.1. Preliminary analyses

Since all variables (i.e., human-AI collaboration, person-job fit, basic

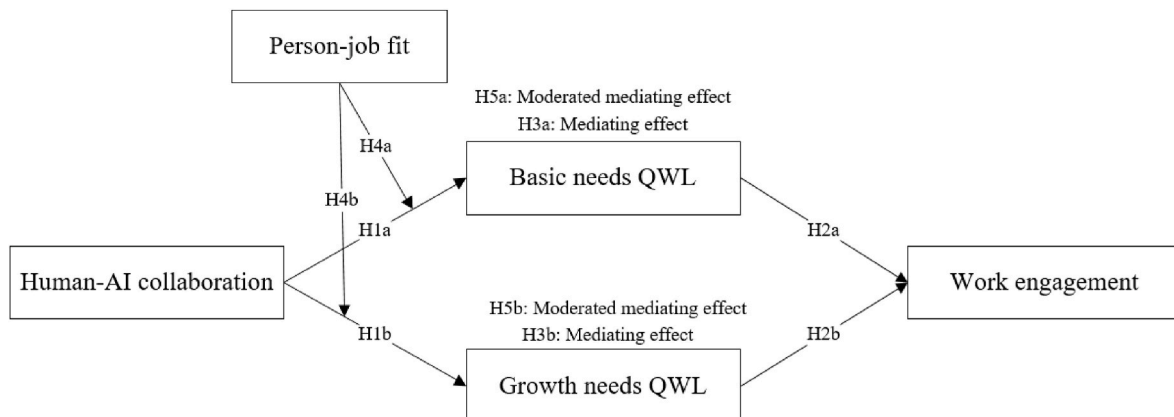


Fig. 1. Research model.

needs of quality of work life, growth needs of quality of work life, work engagement) were self-reported, confirmatory factor analysis (CFA) was performed through Amos 24.0 to guarantee the discrimination of variables before hypothesis testing. Discriminant validity was assessed by comparing the fit indices of the baseline model (five-factor model) with those of alternative competing models. The results are presented in Table 1. As shown in Table 1, the fit indices of the five-factor model were optimal: $\chi^2/df = 1.385$, RMSEA = 0.029, CFI = 0.984, TLI = 0.982, SRMR = 0.031. These results indicate that the variables in the research model have good discriminant validity.

To evaluate the potential issue of common method bias in the data, following the recommendation of Podsakoff et al. (2003), a sixth common method factor was added to the baseline five-factor model. The fit indices of the six-factor model with the added common method factor did not show a significant improvement compared to the five-factor model. This suggests that common method bias should not be a concern in this study. The mean, standard deviation and correlations among variables are shown in Table 2.

4.2. Hypothesis test

We tested all proposed hypotheses using Mplus 8.3. Mediation and moderated mediation were tested with a bootstrap analysis (with 10000 replications to form 95% bias-corrected confidence intervals). Our results showed that human-AI collaboration was positively correlated with basic needs of quality of work life ($B = 0.15$, $SE = 0.05$, $p < .01$) and growth needs of quality of work life ($B = 0.13$, $SE = 0.03$, $p < .001$), thus supporting Hypothesis 1a and 1b. Basic needs quality of work life was positively correlated with work engagement ($B = 0.16$, $SE = 0.04$, $p < .001$), and growth needs of quality of work life was also positively correlated with work engagement ($B = 0.12$, $SE = 0.05$, $p < .05$). Thus, Hypothesis 2a and 2b were supported. Moreover, we examined the mediating effects of basic and growth needs of quality of work life. The results of mediation analysis showed that the indirect effect of human-AI collaboration on work engagement through basic needs of quality of work life was significant ($B = 0.02$, $SE = 0.01$, 95 % confidence intervals = [0.008, 0.050]). The indirect effect of human-AI collaboration on work engagement through growth needs of quality of work life was also significant ($B = 0.02$, $SE = 0.01$, 95 % confidence intervals = [0.002, 0.033]). Therefore, Hypothesis 3a and 3b were supported.

Hypothesis 4a and 4b hold that person-job fit strengthens the positive impacts of human-AI collaboration on basic and growth needs of quality of work life. The interaction between human-AI collaboration and person-job fit was positively correlated with basic needs of quality of work life ($B = 0.12$, $SE = 0.03$, 95 % confidence intervals = [0.053, 0.187]). To be more intuitive, we plot the moderation effect of person-job fit (Fig. 2). Thus, Hypothesis 4a was supported. However, Hypothesis 4b was not supported due to the interaction between human-AI collaboration and person-job fit was non-significant correlated with growth needs of quality of work life ($B = 0.01$, $SE = 0.03$, 95 % confidence intervals = [-0.047, 0.064]).

Hypothesis 5a refers to the moderated mediation effect, in which the indirect effect of human-AI collaboration on work engagement via basic needs of quality of work life is moderated by person-job fit. Results

showed that the indirect effect was 0.05 ($SE = 0.02$, 95 % confidence intervals = [0.021, 0.085]) when person-job fit was high (+1 SD) versus 0.01 ($SE = 0.01$, 95 % confidence intervals = [-0.013, 0.025]) when person-job fit was low (-1 SD) (Table 3). The difference in indirect effect between high and low person-job fit was 0.04, 95 % confidence intervals = [0.015, 0.083]. Thus, Hypothesis 5a was supported. Hypothesis 5b refers to the moderated mediation effect, in which the indirect effect of human-AI collaboration on work engagement via growth needs of quality of work life is moderated by person-job fit. Results showed that the indirect effect was 0.02 ($SE = 0.01$, 95 % confidence intervals = [0.003, 0.039]) when person-job fit was high (+1 SD) versus 0.01 ($SE = 0.01$, 95 % confidence intervals = [0.002, 0.036]) when person-job fit was low (-1 SD). The difference in indirect effect between high and low person-job fit was 0.002, 95 % confidence intervals = [-0.012, 0.022]. Thus, Hypothesis 5b was not supported.

5. Discussion

An increasing number of hotels are embracing the human-AI collaboration working approach, which is significantly influencing hotel employees' work lives. It is of vital importance to understand the mechanisms of human-AI collaboration on hotel employees' quality of work life and work engagement, and how hotels could help employees collaborate with AI well. Drawing on self-determination theory, we found that human-AI collaboration was positively related to hotel employees' basic and growth needs of quality of work life, which in turn was positively related to their work engagement. Moreover, person-job fit strengthened the effect of human-AI collaboration on hotel employees' basic needs of quality of work life, and the indirect effect of human-AI collaboration on hotel employees' work engagement via basic needs of quality of work life. However, our results also showed that person-job fit could not moderate the relationship between human-AI collaboration and growth needs of quality of work life as well as the indirect effect of human-AI collaboration on work engagement through growth needs. The possible reason is that growth needs, which are more intrinsically motivated and tied to personal development (Kim et al., 2020), may not be as easily influenced by the external alignment between the person and the job. Growth needs may require more complex, individualized processes of self-development that go beyond the job fit and may not be as strongly shaped by external technological factors. Our study thus offers important and timely implications for both theories and practices.

5.1. Theoretical implications

The current research contributes to the existing literature in several ways. Firstly, this study investigated the underexamined consequences of human-AI collaboration related to hotel employees' quality of work life and subsequent work engagement. The literature attends carefully to the factors that influence an employees' work engagement as well as the effects of interaction with AI in the workplace. Previous research has shown that employees' psychological capital, job control, and role clarity can affect their work engagement (Paek et al., 2015; Venz et al., 2018). As a new working model, human-AI collaboration has brought

Table 1
The results of confirmatory factor analysis.

Model	χ^2	df	χ^2/df	RMSEA	CFI	TLI	SRMR
Five-factor model (HAIC, BQWL, GQWL, WE, PJF)	587.244	424	1.385	0.029	0.984	0.982	0.031
Four-factor model(HAIC, BQWL, GQWL, WE + PJF)	1117.845	428	2.612	0.058	0.932	0.926	0.061
Three-factor model(HAIC + BQWL, GQWL, WE + PJF)	1992.369	431	4.623	0.087	0.845	0.833	0.095
Two-factor model(HAIC + BQWL + GQWL, WE + PJF)	3714.111	433	8.578	0.126	0.675	0.651	0.118
One-factor model(HAIC + BQWL + GQWL + WE + PJF)	5187.265	434	11.952	0.152	0.529	0.495	0.129
Six-factor model(HAIC, BQWL, GQWL, WE, PJF, common method factor)	585.971	423	1.385	0.029	0.984	0.982	0.031

Note. N = 475; HAIC = Human-AI collaboration; BQWL= Basic needs of quality of work life; GQWL = Growth needs of quality of work life; WE = Work engagement; PJF = Person-job fit.

Table 2
Descriptive statistics and correlations among variables.

Variable	Mean	SD	CR	α	1	2	3	4	5	6	7	8	9
1	1.39	0.49											
2	33.77	7.75			0.54**								
3	2.55	0.82			0.49**	0.55**							
4	9.21	5.86			0.29**	0.63**	0.19**						
5	4.84	1.73	0.94	0.90	0.52**	0.59**	0.53**	0.30**	(0.91)				
6	5.23	1.50	0.95	0.93	0.46**	0.46**	0.45**	0.27**	0.46**	(0.86)			
7	5.57	1.09	0.94	0.93	0.46**	0.51**	0.40**	0.27**	0.48**	0.42**	(0.78)		
8	5.33	1.22	0.94	0.93	0.43**	0.51**	0.49**	0.29**	0.50**	0.49**	0.43**	(0.80)	
9	5.81	1.11	0.90	0.83	0.40**	0.42**	0.37**	0.22**	0.35**	0.35**	0.28**	0.34**	(0.86)

Note. N = 475; *p < 0.05, **p < 0.01. SD = Standard deviation, CR = Composite reliability, 1 = Gender, 2 = Age, 3 = Education, 4 = Job tenure, 5 = Human-AI collaboration, 6 = Basic needs of quality of work life, 7 = Growth needs of quality of work life, 8 = Work engagement, 9 = Person-job fit. The square roots of average variance extracted (AVE) are reported in parentheses along the diagonal.

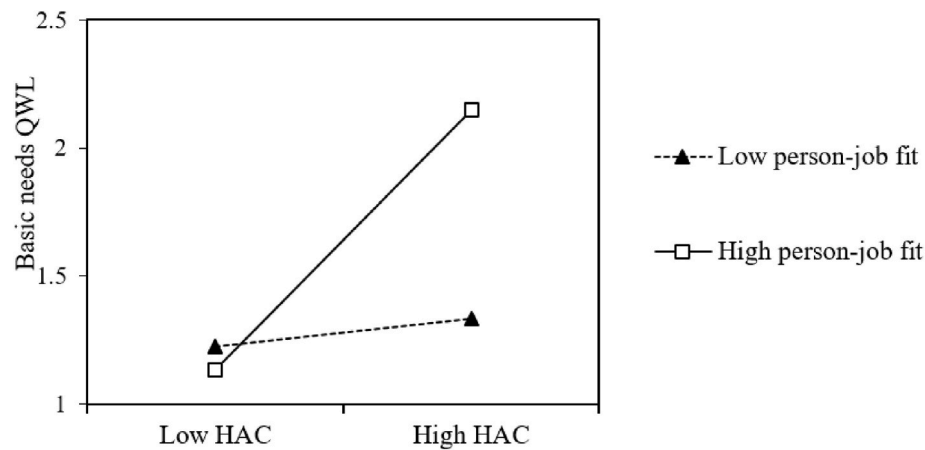


Fig. 2. Person-job fit moderates the relationship between human-AI collaboration and basic needs of quality of work life.

Table 3
Results of conditional indirect effects.

The moderated mediation model	Path	B	SE	95%CI	
Basic needs of quality of work life	High person-job fit	0.05	0.02	0.021	0.085
	Low person-job fit	0.01	0.01	−0.013	0.025
	Difference	0.04	0.02	0.015	0.083
	High person-job fit	0.02	0.01	0.003	0.039
Growth needs of quality of work life	Low person-job fit	0.01	0.01	0.002	0.036
	Difference	0.002	0.01	−0.012	0.022

Note. N = 475; 95 % CI = 95 % confidence intervals; Bootstrap = 10000.

changes to employees’ working methods and job content. However, existing research cannot provide reasonable evidence and explanation for the impacts of human-AI collaboration on employee work engagement and how it affects hotel employees. Based on the self-determination theory, our research complements the existing literature, revealing that human-AI collaboration may promoting hotel employees’ work engagement. Given the importance of hotel employees’ work engagement for hotel industry’s operation (Rabiul et al., 2023), we suggest that understanding these dynamics can help hotel managers leverage the potential of human-AI collaboration and create a supportive environment that keeps employees engaged and motivated.

Secondly, our research contributes to the existing literature by revealing that the basic needs and growth needs of quality of work life are two distinct, yet complementary processes that mediated the positive effects of human-AI collaboration on hotel employees’ work

engagement. This dual-process model adds a nuanced understanding of how AI integration in the workplace can impact hotel employees’ overall well-being and engagement. Specifically, it highlights how human-AI collaboration meets hotel employees’ fundamental needs, while simultaneously fostering personal growth and development, ultimately leading to higher levels of work engagement. This study enriches the research on the relationship between human-AI collaboration and quality of work life. While hotel employees play a critical role in maintaining the day-to-day operations of hotels (Wu et al., 2024), much of the existing AI research has primarily focused on external outcomes such as customer satisfaction, technological maturity, and the application of AI technologies (Fan et al., 2023; Yanit et al., 2023; Zhu et al., 2022). Even recent studies that address AI’s influence on employee attitudes and behaviors (Li et al., 2024; Zhang et al., 2023; Zhao et al., 2024), the direct effects of human-AI collaboration on employees’ quality of work life have been neglected. Our research provides new insights into the complex interplay between AI, employee well-being, and work engagement, offering a more comprehensive theoretical framework for understanding how human-AI collaboration can enhance employees’ quality of work life. This not only extends the scope of AI research in hotel contexts but also underscores the importance of considering employees’ holistic needs when designing AI-enabled workplaces.

Lastly, our research reveals that the consequence of human-AI collaboration on hotel employees’ work engagement through basic needs of quality of work life was moderated by person-job fit. Specifically, we demonstrate that the impact of human-AI collaboration on hotel employees’ fulfillment of basic needs and their subsequent work engagement is contingent upon the degree of fit between the employee and the job. Our study reveals that for hotel employees with a higher person-job fit, human-AI collaboration more effectively satisfies their

basic needs, leading to increased work engagement. In contrast, employees with a lower person-job fit may struggle to leverage the benefits of human-AI collaboration, potentially resulting in diminished motivation and engagement. This nuanced finding highlights the critical role of person-job fit in enabling hotel employees to fully capitalize on the potential advantages of AI integration in the hotel. Moreover, the study underscores the importance of considering the organizational triad of employees, AI, and person-job fit in order to gain a comprehensive understanding of how human-AI collaboration affects employees' quality of work life and work engagement. This integrated approach opens up new avenues for research that explores not only the interaction between employees and AI technologies but also the individual characteristics (like person-job fit) that can shape these interactions.

5.2. Practical implications

In addition to the theoretical implications, this study also provides practical implications for hotel and managers to optimize their strategies in promoting hotel employees' quality of work life and work engagement through effective utilization of human-AI collaboration. Firstly, hotels and managers should pay attention to the impacts of human-AI collaboration on hotel employees' basic and growth needs of quality of work life. To fully leverage the potential of human-AI collaboration, it is essential for managers to ensure that organizational resources and external conditions are adequately aligned with the fulfillment of hotel employees' basic and growth needs of quality of work life. Given that employees dedicate significant time and energy to their work, these factors directly affect not only their physical well-being but also their psychological and mental health (Chan & Wyatt, 2007). By addressing these needs, managers can create an environment where employees feel supported and empowered, enabling them to maximize the benefits of AI technology. This, in turn, facilitates a win-win situation, enhancing both individual well-being and organizational performance.

Secondly, the findings of this study suggest that when human-AI collaboration fulfills hotel employees' basic and growth needs of quality of work life, they are more willing to engage in their work. Employee work engagement is crucial for organizations as it directly impacts performance outcomes (Knight et al., 2017). This research contributes to our understanding by highlighting the dual role of employee motivations in the context of human-AI collaboration. Specifically, hotel employees' pursuit of basic needs of quality of work life is linked to external motivational factors, while the pursuit of growth needs of quality of work life represents internal motivational factors. When both internal and external motivations are fulfilled, employees are more likely to engage in their work. From a practical perspective, this study provides actionable insights for managers in the hospitality industry. To foster better collaboration with AI, hotel managers should focus on the human-AI collaboration process itself. For example, AI can be used to streamline routine tasks, fulfilling employees' basic needs by reducing workload and allowing more time for meaningful work. At the same time, offering personalized development opportunities or AI-related skills training can address employees' growth needs, enhancing their intrinsic motivation. By strategically leveraging AI to meet these motivational needs, hotels can not only improve work engagement but also foster a more harmonious and productive human-AI collaboration environment.

Lastly, person-job fit not only fulfills hotel employees' pursuit of quality of work life, but also enables them to fully leverage their potential in the process of human-AI collaboration, maximizing the self-value of hotel employees. Organizations and managers should pay attention to the alignment between employees and job positions, fully uncovering each employee's characteristics and strengths. This ensures that hotel employees' work skills, knowledge, and abilities are aligned with their job demands. For example, hotels can incorporate scientific selection and deployment methods in their human resource management processes to ensure a match between hotel employees and job

positions, emphasizing the combination of employees' strengths and AI advantages to maximize both employee' quality of work life and organizational performance.

5.3. Limitations and future directions

Our research still has some limitations to address. Firstly, while this study collected data at two time points and employed statistical analyses to address common method bias, there is still a possibility of common method bias. Future research could collect data from multiple sources. Secondly, this research examines the general effects of AI technologies on employee outcomes, without differentiating between various types or categories of AI technologies. Different AI devices may have distinct impacts on employee quality of work life and work engagement, and future studies could explore these differences in more depth. Lastly, the participants of this study are employees working in three-star and four-star hotels. The work environment in hotels of varying grades may influence employees' quality of work life. Future research should consider the specific impacts of different hotel type on employee outcomes. It would be valuable to explore how the level of AI adoption and its integration into the working environment might vary by hotel type and how these differences could influence quality of work life and work engagement.

6. Conclusion

An increasing number of organizations are adopting the human-AI collaboration work model, wherein various AI devices are integrated into hotel employees' work and lives. There is growing concern about hotel employees' quality of work life and their level of work engagement. Our research findings provide evidence for these concerns by demonstrating that human-AI collaboration has the potential to enhance employee work engagement by meeting both their basic needs of quality of work life and their growth needs of quality of work life. Furthermore, we illustrate that this phenomenon may be even more pronounced among hotel employees with higher levels of person-job fit. Taken together, our research extends our understanding of how human-AI collaboration can impact hotel employees' quality of work life and work engagement, as well as to whom the effect is more beneficial.

CRediT authorship contribution statement

Tung-Ju Wu: Writing – review & editing, Supervision, Project administration, Funding acquisition, Conceptualization. **Ruo-Xi Zhang:** Writing – review & editing, Writing – original draft, Software, Methodology, Formal analysis, Conceptualization. **Ziqiong Zhang:** Supervision, Resources, Conceptualization.

Conflict of interest

None.

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References

- Bankins, S., Ocampo, A. C., Marrone, M., Restubog, S. L. D., & Woo, S. E. (2024). A multilevel review of artificial intelligence in organizations: Implications for organizational behavior research and practice. *Journal of Organizational Behavior*, 45 (2), 159–182.

- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, 1(3), 185–216.
- Cable, D. M., & DeRue, D. S. (2002). The convergent and discriminant validity of subjective fit perceptions. *Journal of Applied Psychology*, 87(5), 875–884.
- Cable, D. M., & Judge, T. A. (1997). Interviewers' perceptions of person-organization fit and organizational selection decisions. *Journal of Applied Psychology*, 82(4), 546–561.
- Chan, K. W., & Wyatt, T. A. (2007). Quality of work life: A study of employees in Shanghai, China. *Asia Pacific Business Review*, 13(4), 501–517.
- Debus, M. E., Körner, B., Wang, M., & Kleinmann, M. (2023). Reacting to perceived overqualification: Uniting strain-based and self-regulatory adjustment reactions and the moderating role of formal work arrangements. *Journal of Business and Psychology*, 38(2), 411–435.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, E. L., & Ryan, R. M. (2013). *Intrinsic motivation and self-determination in human behavior*. Springer Science & Business Media.
- Dennis, A. R., Lakhiwal, A., & Sachdeva, A. (2023). AI agents as team members: Effects on satisfaction, conflict, trustworthiness, and willingness to work with. *Journal of Management Information Systems*, 40(2), 307–337.
- Edwards, J. R. (1991). *Person-job fit: A conceptual integration, literature review, and methodological critique*. John Wiley & Sons.
- Fan, J., Sun, T., Liu, J., Zhao, T., Zhang, B., Chen, Z., Glorioso, M., & Hack, E. (2023). How well can an AI chatbot infer personality? Examining psychometric properties of machine-inferred personality scores. *Journal of Applied Psychology*, 108(8), 1277–1299.
- Gagné, M., & Deci, E. L. (2005). Self-determination theory and work motivation. *Journal of Organizational Behavior*, 26(4), 331–362.
- Gip, H., Guchait, P., Paşamehmetoğlu, A., & Khoa, D. T. (2023). How organizational dehumanization impacts hospitality employees service recovery performance and sabotage behaviors: The role of psychological well-being and tenure. *International Journal of Contemporary Hospitality Management*, 35(1), 64–91.
- Goodman, S. A., & Svyantek, D. J. (1999). Person-organization fit and contextual performance: Do shared values matter. *Journal of Vocational Behavior*, 55(2), 254–275.
- Jerez-Jerez, M. J. (2025). A study of employee attitudes towards AI, its effect on sustainable development goals and non-financial performance in independent hotels. *International Journal of Hospitality Management*, 124. Article 103987.
- Jia, N., Luo, X., Fang, Z., & Liao, C. (2023). When and how artificial intelligence augments employee creativity. *Academy of Management Journal*, 67(1), 5–32.
- Kara, D., Uysal, M., Sirgy, M. J., & Lee, G. (2013). The effects of leadership style on employee well-being in hospitality. *International Journal of Hospitality Management*, 34, 9–18.
- Kim, N., & Kang, S. W. (2017). Older and more engaged: The mediating role of age-linked resources on work engagement. *Human Resource Management*, 56(5), 731–746.
- Kim, H., Rhou, Y., Topcuoglu, E., & Kim, Y. G. (2020). Why hotel employees care about Corporate Social Responsibility (CSR): Using need satisfaction theory. *International Journal of Hospitality Management*, 87, Article 102505.
- Knight, C., Patterson, M., & Dawson, J. (2017). Building work engagement: A systematic review and meta-analysis investigating the effectiveness of work engagement interventions. *Journal of Organizational Behavior*, 38(6), 792–812.
- Kristof, A. L. (1996). Person-organization fit: An integrative review of its conceptualizations, measurement, and implications. *Personnel Psychology*, 49(1), 1–49.
- Kristof, A. L., Zimmerman, R. D., & Johnson, E. C. (2005). Consequences of individuals' fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology*, 58(2), 281–342.
- Leung, A., & Chaturvedi, S. (2011). Linking the fits, fitting the links: Connecting different types of PO fit to attitudinal outcomes. *Journal of Vocational Behavior*, 79(2), 391–402.
- Li, W., Qin, X., Yam, K. C., Deng, H., Chen, C., Dong, X., Jiang, L., & Tang, W. (2024). Embracing artificial intelligence (AI) with job crafting: Exploring trickle-down effect and employees' outcomes. *Tourism Management*, 104. Article 104935.
- Li, J. M., Wu, T. J., Wu, Y. J., & Goh, M. (2023). Systematic literature review of human-machine collaboration in organizations using bibliometric analysis. *Management Decision*, 61(10), 2920–2944.
- Li, J. M., Zhang, R. X., Wu, T. J., & Mao, M. (2024). How does work autonomy in human-robot collaboration affect hotel employees' work and health outcomes? Role of job insecurity and person-job fit. *International Journal of Hospitality Management*, 117. Article 103654.
- Mo, Z., Liu, M. T., & Ma, Y. (2024). How AI awareness can prompt service performance adaptivity and technologically-environmental mastery. *Tourism Management*, 105. Article 104971.
- Paek, S., Schuckert, M., Kim, T. T., & Lee, G. (2015). Why is hospitality employees' psychological capital important? The effects of psychological capital on work engagement and employee morale. *International Journal of Hospitality Management*, 50, 9–26.
- Pluut, H., Ilies, R., Cîrşeu, P. L., & Liu, Y. (2018). Social support at work and at home: Dual-buffering effects in the work-family conflict process. *Organizational Behavior and Human Decision Processes*, 146, 1–13.
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903.
- Rabiul, M. K., Karatepe, O. M., Al Karim, R., & Panha, I. M. (2023). An investigation of the interrelationships of leadership styles, psychological safety, thriving at work, and work engagement in the hotel industry: A sequential mediation model. *International Journal of Hospitality Management*, 113, Article 103508.
- Rabiul, M. K., & Yean, T. F. (2021). Leadership styles, motivating language, and work engagement: An empirical investigation of the hotel industry. *International Journal of Hospitality Management*, 92, Article 102712.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78.
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies*, 3, 71–92.
- Sigala, M., Ooi, K. B., Tan, G. W. H., Aw, E. C. X., Buhalis, D., Cham, T. H., et al. (2024). Understanding the impact of ChatGPT on tourism and hospitality: Trends, prospects and research agenda. *Journal of Hospitality and Tourism Management*, 60, 384–390.
- Sirgy, M. J., Efraty, D., Siegel, P., & Lee, D.-J. (2001). A new measure of quality of work life (QWL) based on need satisfaction and spillover theories. *Social Indicators Research*, 55(3), 241–302.
- Stein, D., Hobson, N., Jachimowicz, J. M., & Whillans, A. (2021). How companies can improve employee engagement right now. *Harvard Business Review*, 1–10.
- Sun, S., Wang, N., Zhu, J., & Song, Z. (2020). Crafting job demands and employee creativity: A diary study. *Human Resource Management*, 59(6), 569–583.
- Tang, P. M., Koopman, J., Mai, K. M., De Cremer, D., Zhang, J. H., Reyniers, P., Ng, C. T. S., & Chen, I.-H. (2023). No person is an island: Unpacking the work and after-work consequences of interacting with artificial intelligence. *Journal of Applied Psychology*, 108(11), 1766–1789.
- Tang, P. M., Koopman, J., McClean, S. T., Zhang, J. H., Li, C. H., De Cremer, D., Lu, Y. Z., & Ng, C. T. S. (2022). When conscientious employees meet intelligent machines: An integrative approach inspired by complementarity theory and role theory. *Academy of Management Journal*, 65(3), 1019–1054.
- Tims, M., Derks, D., & Bakker, A. B. (2016). Job crafting and its relationships with person-job fit and meaningfulness: A three-wave study. *Journal of Vocational Behavior*, 92, 44–53.
- Venz, L., Pundt, A., & Sonnentag, S. (2018). What matters for work engagement? A diary study on resources and the benefits of selective optimization with compensation for state work engagement. *Journal of Organizational Behavior*, 39(1), 26–38.
- White, R. W. (1959). Motivation reconsidered: The concept of competence. *Psychological Review*, 66(5), 297–333.
- Wilson, H. J., & Daugherty, P. R. (2018). Collaborative intelligence: Humans and AI are joining forces. *Harvard Business Review*, 96(4), 114–123.
- Wu, T. J., Zhang, R. X., & Li, J. M. (2024). How does emotional labor influence restaurant employees' service quality during COVID-19? The roles of work fatigue and supervisor-subordinate guanxi. *International Journal of Contemporary Hospitality Management*, 36(1), 136–154.
- Xu, J., Hsiao, A., Reid, S., & Ma, E. (2023). Working with service robots? A systematic literature review of hospitality employees' perspectives. *International Journal of Hospitality Management*, 113, Article 103523.
- Yam, K. C., Tang, P. M., Jackson, J. C., Su, R., & Gray, K. (2022). The rise of robots increases job insecurity and maladaptive workplace behaviors: Multimethod evidence. *Journal of Applied Psychology*, 108(5), 850–870.
- Yanit, M., Yanit, M., & Wan, F. (2023). Right agent, wrong level of hedonism: How high (vs low) hedonic values in AI-performed tasks lead to decreased perceptions of humanlikeness, warmth, and less consumer support. *Computers in Human Behavior*, 147. Article 107870.
- Zhang, G., Chong, L., Kotovsky, K., & Cagan, J. (2023). Trust in an AI versus a Human teammate: The effects of teammate identity and performance on Human-AI cooperation. *Computers in Human Behavior*, 139. Article 107536.
- Zhang, L. X., Li, J. M., Wang, L. L., Mao, M. Y., & Zhang, R. X. (2023). How does the usage of robots in hotels affect employees' turnover intention? A double-edged sword study. *Journal of Hospitality and Tourism Management*, 57, 74–83.
- Zhang, J., Xie, C., & Huang, S. S. (2024). The effect of resilient leadership on employee resilience during a crisis in tourism & hospitality firms: A self-determination perspective. *International Journal of Hospitality Management*, 122, Article 103886.
- Zhao, H., Yuan, B., & Song, Y. (2024). Employees' perception of generative artificial intelligence and the dark side of work outcomes. *Journal of Hospitality and Tourism Management*, 61, 191–199.
- Zhu, Y., Zhang, J., Wu, J., & Liu, Y. (2022). AI is better when I'm sure: The influence of certainty of needs on consumers' acceptance of AI chatbots. *Journal of Business Research*, 150, 642–652.