

The impact of AI service failure on human employee behavior and customer service performance

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ABSTRACT

Purpose – This study investigates how and when AI service failure stimulates employees' differentiated work behaviors.

Design/methodology/approach – A multi-wave, multi-source survey involving 284 employee-supervisor pairs was conducted across 15 four-star and five-star hotels in Guangzhou, China. Hierarchical multiple regression analysis was employed to test the hypotheses.

Findings – Findings suggest that AI service failure induces schadenfreude toward the organization among employees with low perceived insider status, which then leads to procrastination behavior; however, it triggers sympathy toward the organization among employees with high perceived insider status, which further results in proactive customer service performance.

Originality – By incorporating perceived insider status as a moderator, and examining the mediating roles of schadenfreude and sympathy toward the organization, this research enhances the theoretical understanding of AI service failure from the employee perspective.

Practical implications – Our work offers practical insights for tourism and hospitality companies on promoting proactive customer service performance and reducing procrastination behaviors among service employees in response to AI service failures.

Keywords: AI service failure; perceived insider status; procrastination behavior; proactive

customer service performance

1 INTRODUCTION

Tourism and hospitality have made extensive use of artificial intelligence (AI) technology, offering opportunities to optimize service efficiency and quality (Fan *et al.*, 2020; Yu, 2020). Particularly, with the outbreak of the COVID-19 pandemic, the popularity of contactless service has accelerated the development of AI in these related industries (Kim *et al.*, 2021). Nevertheless, owing to the diverse nature of customer preference and the drawback of AI technology, AI-enabled devices may make mistakes that can negatively influence customers' evaluation of an organization (Leo and Huh, 2020; Meng *et al.*, 2025). Such performance of AI service delivery that fails to meet consumers' expectations is defined as AI service failure (Lv *et al.*, 2022; Newton *et al.*, 2018). For example, the Henn-Na Hotel in Japan experienced AI service failure when its robot, Churi, misinterpreted customers' snoring as commands, causing repeated nighttime wake-ups, and sometimes failed to answer basic questions (Choi *et al.*, 2021).

In the tourism and hospitality field, numerous researchers have explored the widespread utilization of AI, with a primary focus on customer acceptance of this new technology, including its causes and outcomes (e.g., Shumanov and Johnson, 2021; Song and Kim, 2022; Tojib *et al.*, 2022). In addition, there have been a few studies exploring the determinants of employee acceptance of AI (Sinha *et al.*, 2020). However, these studies heavily concentrate on individuals' (i.e., customers and employees) initial perceptions and attitudes toward AI, overlooking their interaction with AI-enabled devices during the service delivery process (Kim *et al.*, 2022; Liang *et al.*, 2022). Particularly, despite the inevitability of AI service

failure and the significance of related research in retaining customers and further promoting the survival and development of tourism and hospitality organizations (Lv *et al.*, 2021), limited investigations have been conducted regarding this topic.

The limited AI service failure research has mainly explored customer responses. For example, researchers found that AI assistants' cuteness enhances customers' tolerance of service failure (Lv *et al.*, 2021). Nonetheless, academia has not directed its attention toward understanding how employees, another significant party impacted by AI technology alongside customers (as highlighted by Lu *et al.*, 2020), might respond to AI service failures. On the one hand, AI-enabled devices and employees have a shared objective of creating value for an organization (Song *et al.*, 2022). AI service failures can potentially lead to detrimental consequences for the organization (Ostrom *et al.*, 2019), which, in turn, may encourage employees to exhibit behaviors aimed at mitigating the organization's losses. On the other hand, employees experience anxiety concerning the possibility of being replaced by AI technology (Koo *et al.*, 2021; Yam *et al.*, 2023). AI service failure underscores the inadequacies of AI capabilities and bolsters the positions of employees (Lv *et al.*, 2021). As a result, employees may view these failures favorably, leading them to engage in behaviors that further intensify their negative effects. However, even though employees' reactions to AI service failure significantly influence organizational development—either positively or negatively—it remains unclear what these reactions actually are.

To address these gaps, we employ cognitive appraisal theory to capture employees' responses to AI service failure. According to cognitive appraisal theory, employees' evaluation of AI service failure may depend on whether their personal goals align with

organizational goals (Lazarus, 1991). Since employees' alignment of organizational goals is found to be shaped by their perceived insider status (Sun *et al.*, 2023), the current research assumes that perceived insider status may affect how employees assess AI service failure, thus leading to different emotional and behavioral reactions. Specifically, AI service failure induces schadenfreude toward the organization among employees with low perceived insider status, which then leads to their procrastination behavior; however, it triggers sympathy toward the organization among employees whose perceived insider status is high, which further results in proactive customer service performance (PCSP).

This research offers several theoretical advancements. First, it brings new knowledge to the employee perspective within the AI service failure literature. Second, by uncovering employees' different emotional and subsequent behavioral responses when AI service failure occurs, it further extends the research on the consequences of AI service failure. Third, it advances the literature on schadenfreude and sympathy by shifting their targets from individuals to organizations. Practically, the findings offer insights for tourism and hospitality organizations on managing employees' reactions to AI service failures for organizational benefit.

2 LITERATURE REVIEW

A majority of the existing research on service failure was conducted within human service contexts, focusing on customer responses such as negative emotions (Xu *et al.*, 2019), reduced satisfaction (Hedrick *et al.*, 2007), and diminished customer value and loyalty (Sajtos *et al.*, 2010). Recently, the tourism and hospitality industry has progressively embraced AI-

powered devices to serve their customers. AI technology's imperfection makes AI service failures unavoidable and even more serious than employee-generated service failures (Ostrom *et al.*, 2019). Despite the distinctions between service failures caused by AI and human employees, research on AI service failure is still in its emergence.

Current relevant literature mainly concentrates on how AI service failure affects customers. Specifically, some studies have delved into how customers respond to AI service failure (Pavone *et al.*, 2023) and examined the attributes of AI-enabled devices, such as anthropomorphism (Fan *et al.*, 2020) and cuteness (Lv *et al.*, 2021), which enhance customer tolerance and alleviate their dissatisfaction. In addition, certain research has explored customers' diverse reactions to service failures when interacting with AI-powered applications versus human employees (Leo and Huh, 2020; Wang *et al.*, 2023). Both customers and employees play pivotal roles in a service failure scenario. Because of distinct viewpoints, these two stakeholders interpret and assess service failures differently (Chung-Herrera *et al.*, 2004). Since the way employees perceive service failure can shape their subsequent attitudes and behaviors, further affecting the performance of organizations, gaining insight into how employees react to AI service failures is crucial.

3 HYPOTHESES DEVELOPMENT

Cognitive appraisal theory posits that environmental events trigger individuals' cognitive process to evaluate the relevance and benefits of these events for their goal achievement, which in turn elicits an emotional response (Lazarus, 1991). In particular, when individuals perceive the event to be in line with their expectations or goals, they are likely to

view it favorably and express positive emotions such as pleasure and happiness. The opposite occurs when individuals evaluate the event as conflicting with their expectations or goals. They tend to deem it harmful or threatening, generating negative emotional experiences such as annoyance and sadness. AI service failure is a type of critical incident in service encounters, inevitably drawing the attention of human employees. Further, employees' cognitive evaluations depend on whether it is beneficial for the achievement of their goals. Considering that perceived insider status, reflecting employees' perception of the connection between them and their organization (Kim *et al.*, 2019), encourages them to adopt their organization's perspective and prioritize the organization's interests (Stamper and Masterson, 2002), we speculate that it moderates the link between AI service failure and employees' emotions.

Perceived insider status indicates how much employees value the organization's collective goals over their individual interests and are prepared to sacrifice personal gains for the organization's long-term growth (Wang *et al.*, 2017). The adoption of AI in organizations more or less brings about a sense of perceived substitute threat for employees (Koo *et al.*, 2021; Yam *et al.*, 2023; Vrontis *et al.*, 2022). Since those with low perceived insider status appear to separate their identity from that of the organization (Choi *et al.*, 2018), they may be more concerned with the menace that AI poses to their position than the potential benefits of AI to the organization. They may even feel that the organisation does not recognize and value their abilities, leading to a stronger sense of job insecurity. AI service failures, which highlight the limitations of AI, are therefore advantageous to these employees in terms of securing their positions and further advancing their career goals. Hence, they tend to assess

AI service failure positively, although it is detrimental to the organization. In addition, AI service failures cause trouble for the organization and, to some extent, challenge the organization's decision to adopt AI. Considering their strong animosity toward AI and the organization, they may consider such an incident to be the organization's misfortune and a result of its poor decision, resulting in a pleasant emotion known as *schadenfreude* (Van Dijk and Ouwerkerk, 2014).

H1: AI service failure and perceived insider status interact to influence employees' *schadenfreude*, such that the relationship between AI service failure and *schadenfreude* is strong and positive when perceived insider status is low.

Conversely, employees with high perceived insider status tend to have goals closely aligned with the organization's prosperity (Stamper and Masterson, 2002). Even though these employees may be anxious about being replaced by AI (Koo *et al.*, 2021; Yam *et al.*, 2023), they will try to understand and support their organization's adoption of AI. As such, they may believe that together with the organization and AI, they comprise a community of shared interests that is mutually dependent. When confronted with AI service failures, they tend to consider their organization's perspective and interpret this troubling situation as having a variety of detrimental effects on the organization, hindering their personal goals that align with the organization's ones. Consequently, they may regard the organization as a victim of AI service failure and demonstrate a proactive attitude towards taking accountability and making necessary endeavors—that is, the feeling of sympathy, an emotional response of being sad because of others' misfortune, and having the desire to help (Davis, 1983).

H2: AI service failure and perceived insider status interact to influence employees' sympathy, such that the relationship between AI service failure and sympathy is strong and positive when perceived insider status is high.

Frijda (1987) defined emotion as a person's readiness to make a behavioral decision. Cognitive appraisal theory also suggests that the emotions elicited by environmental stimuli motivate individuals to exhibit certain responsive behaviors (Lazarus, 1991). This study assumes that employees' schadenfreude stimulates their procrastination behavior, which refers to the act of delaying work-related tasks by involving oneself in non-work-related activities during working hours (Metin *et al.*, 2016). When individuals experience positive emotions because of the benefits of advancing their goal achievement, they may engage in behaviors that maintain or reinforce those emotions (Chen *et al.*, 2021). Accordingly, employees feeling schadenfreude toward the organization regarding AI service failure are likely to take certain actions to perpetuate, or even aggravate, the organization's misery, thereby prolonging their pleasant experience. Schadenfreude is more nuanced than other positive emotions like delight and gladness (Li *et al.*, 2019). It is a feeling of pleasure that arises from the organization's misfortune. Therefore, it is inappropriate to worsen the organization's plight by exhibiting very harmful behaviors, such as deviant behaviors, which may also be punished by the organization (Chen *et al.*, 2021). Instead, they could engage in procrastination behavior. Despite its link to decreased productivity and performance, it is more covert and innocuous, being less likely to be noticed by the organization.

H3: Employees' schadenfreude positively relates to procrastination behavior.

Conversely, when individuals experience emotional distress due to impediments to their goal achievement, they may engage in coping behaviors to relieve these emotions (Lazarus, 1991). Evidence shows that sympathy is linked to individuals' positive behaviors, such as helping behavior and prosocial behavior, which help alleviate victims' suffering (Hershcovis and Bhatnagar, 2017; Mroz and Allen, 2017). Accordingly, if employees feel sympathy for the organization affected by an AI service failure, they are likely to demonstrate concern for the organization. Such caring and empathy can serve as additional motivation for them to exhibit specific behaviors that contribute to supporting the organization (Allard *et al.*, 2020). Frontline employees in the tourism and hospitality sectors primarily generate value for their organizations through customer service. PCSP, referring to a self-driven, long-term, and forward-thinking service behavior that surpasses official performance expectations (Rank *et al.*, 2007), is crucial for enhancing the customer perception of service quality (Belschak and Den Hartog, 2010). Hence, employees' sympathy triggered by AI service failure may be subsequently transformed into their engagement in PCSP.

H4: Employees' sympathy positively relates to proactive customer service performance.

The complete logic of cognitive appraisal theory is “environmental stimuli → emotional response → behavioral reaction”; that is, individuals' assessment of whether an environmental event is beneficial or harmful arouses certain emotions, which further leads to specific behaviors (Lazarus, 1991). Extending the hypotheses already stated, we also propose a moderated-mediation model wherein perceived insider status moderates the indirect effect

of AI service failure on employees' behavioral reactions (procrastination behavior and PCSP) via their emotional responses (schadenfreude and sympathy).

The adoption of AI in the organization may trigger employees' concerns about potential marginalization and, finally, losing their jobs (Koo *et al.*, 2021). Perceived insider status describes how employees view themselves as integral members of the organization (Stamper and Masterson, 2002) and, to some extent, indicates employees' trust in their organization (Hui *et al.*, 2015). Hence, it can be inferred that the lower employees' perceived insider status, the stronger their sense of insecurity stimulated by AI. Since AI service failure serves as evidence of imperfections in AI, employees may positively evaluate it as beneficial for their job retainment. When faced with an AI service failure that can cause losses to the organization, they may perceive it as an unfortunate incident for the organization and experience pleasure, that is, schadenfreude (Smith and Kim, 2007; Sundie *et al.*, 2009). To sustain such pleasure, they will engage in behaviors that undermine the organization's operation. However, to avoid punishment from the organization, they will opt for less conspicuous actions, such as procrastination behavior rather than deviant behaviors.

On the contrary, even when the organization breaches its commitments to employees, those with a high perceived insider status can still understand the organization rather than interpret it as a malicious breach (Armstrong-Stassen and Schlosser, 2011). Thus, although they risk losing their jobs because the organization decides to adopt AI, they tend to understand and support the organization as always (Armstrong-Stassen and Schlosser, 2011). Service failures caused by AI lead to negative outcomes for the organization, which may induce these employees' sympathy toward the organization. To alleviate the organization's

suffering, they will exhibit behaviors that can contribute to the organization. As frontline employees in the tourism and hospitality industries, what they can do to share the organization's burden is to provide better service to customers, such as PCSP, which is crucial for improving customer-perceived service quality (Belschak and Den Hartog, 2010). Figure 1 depicts our conceptual framework.

H5: Schadenfreude mediates the link between AI service failure and procrastination behavior among employees whose perceived insider status is low.

H6: Sympathy mediates the link between AI service failure and proactive customer service performance among employees whose perceived insider status is high.

【Insert Figure 1】

4 METHODOLOGY

4.1 Methods

We randomly selected 30 hotels in Guangzhou, China, known for their widespread adoption of AI robots in daily operations. Guangzhou, one of the five key “national central cities” in China, is renowned for its widespread use of these technologies. Invitations were sent to these hotels, with 15 agreeing to participate—8 four-star hotels and 7 five-star hotels. To minimize short-term causal effects of organizational climate on employee behavior, data were collected in three waves, one month apart, following strategies recommended by prior studies (Yam *et al.*, 2021). Each participant received a unique code to ensure confidentiality. After completing the survey, participants were asked to place the completed survey in a folder provided by the research team. These employees work in the front office, concierge,

and call center departments. Each of these areas is equipped with an artificial intelligence service device (e.g., intelligent food delivery robots, intelligent check-in robots, intelligent call center robots) and is easily observable by their human colleagues.

In the survey, we asked employees to recall a specific instance of AI service failure to ensure contextual relevance. Respondents were first presented with a paragraph defining AI service failure and illustrating typical examples. They were then asked to recall an incident from the past months where they had observed such a failure. This recall process helped improve the accuracy and relevance of their responses when reporting feelings of *schadenfreude* and sympathy toward the organization. In the first wave conducted on July 18, 2022, we distributed questionnaires to 506 full-time employees, requesting them to provide information regarding their demographics, perceived insider status, and their perceptions of AI service failure. We subsequently received 417 valid responses. One month later, on August 20, 2022, Wave 2 was carried out to assess the 417 employees' feelings of *schadenfreude* and sympathy toward the organization, resulting in 349 valid responses. A month later, during the third wave on September 22, 2022, we extended invitations to the immediate supervisors of the participants to evaluate their behaviors, which encompassed procrastination behavior and PCSP. The aforementioned process yielded a total of 284 complete data samples across all three waves, culminating in an overall response rate of 57.84%. It is noteworthy that at the time of data collection, China had successfully brought the COVID-19 pandemic under control, leading to a substantial rebound in the hospitality sector. Therefore, the impact of the pandemic on the data quality in this study is relatively

minor. Table 1 summarizes the demographic details of the 284 successfully matched employees, including gender, age, education level, and tenure.

【Insert Table 1】

4.2 Measures

Questionnaires were administered in China; however, the original language in which these scales were developed was English. Thus, we conducted back-translation to achieve translation accuracy. In terms of measurement scale, the five-point scale was employed as the measurement basis. All the scales were internally consistent as all the Cronbach's α values exceeded 0.78.

AI service failure was measured using the three-item scale developed by Yam *et al.* (2021), perceived insider status was assessed with the six-item scale from Stamper and Masterson (2002), and schadenfreude was estimated with a five-item scale from Van Dijk *et al.* (2006). Sympathy was measured using a three-item scale from Van Dijk *et al.* (2008), procrastination behavior was assessed with the 12-item scale developed by Metin *et al.* (2016), and PCSP was evaluated using the seven-item scale from Rank *et al.* (2007). All measurement items are detailed in Supplementary Materials.

To rule out alternative explanations for the theoretical model, we controlled for gender, age, education, and tenure, as these factors might affect respondents' perceptions and behaviors toward AI service failures (Leo and Huh, 2020). Following best practice guidelines (Becker *et al.*, 2016; Bernerth *et al.*, 2018), we tested the model without control variables and excluded those unrelated to the dependent variables. The results remained robust. To enhance

the rigor of hypothesis testing, we reported the analyses incorporating these control variables (Li et al., 2021).

5 RESULTS

5.1 Non-response Bias and Common Method Bias

Since this study collected data through three waves, non-response bias was unavoidable. Then, the procedure suggested by Goodman and Blum (1996) was followed to investigate whether non-response bias was serious. First, we adopted logistic regression to investigate the effect of survey times on AI service failure and control variables. The results confirmed a non-significant relationship ($p > 0.05$) between survey time and AI service failure. Further, we adopted t -tests to evaluate whether control variables and AI service failure showed statistically significant change with time. The results did not find significant differences in these variables across the three waves. These results demonstrated that participants dropped out randomly.

Moreover, we combined the common method factor (CMF) as a latent variable into the six-factor model and allowed all the measurement items to load onto it. The results demonstrated that the fit indices of seven-factor model (baseline model + CMF, see first row of Table 2) didn't exhibit better than the baseline six-factor model [$\Delta\chi^2(1) = 30.001, p < 0.01, \Delta CFI = -0.006, \Delta TLI = -0.006, \Delta SRMR = 0.007, \Delta RMSEA = 0.002$], which indicated common method bias was acceptable in this study (Williams and McGonagle, 2016).

5.2 Discriminant validity and convergent validity

As presented in Table 2, the hypothesized six-factor model fitted the data reasonably well ($\chi^2 = 907.158$, $df = 579$; IFI = 0.942; TLI = 0.936; CFI = 0.941; RMSEA = 0.045) and was better than any other alternative models. Moreover, the construct reliability (CR) was well above 0.78, factor loadings in the range of 0.62–0.87 were acceptable for all items, and there were also values beyond 0.50 for the average variance extracted (AVE) (see Supplementary Materials). All this signaled the convergent validity. Further, the square root value of AVE beat their corresponding correlation coefficient between constructing. Thus, discriminant validity was demonstrated.

【Insert Table 2】

5.3 Descriptive statistics

Considering that procrastination and PCSP were reported by leaders and the data was nested in nature, we did extra analyses to examine whether multilevel analyses should be conducted. First, a one-way analysis of variance (ANOVA) with procrastination and PCSP using sampling from all teams was conducted. The results indicated that no significant differences were observed in the ratings of procrastination [$F(34, 249) = 1.28$, $p = 0.15$, *n.s.*] or PCSP [$F(34, 249) = 1.35$, $p = 0.11$, *n.s.*] among different teams. Furthermore, we ran two null models with no predictors at either the employee-level nor the team-level for procrastination and PCSP, which were treated as dependent variables. The results revealed that the intraclass correlation (ICC) of employee procrastination was 0.03, indicating that only 3% of the variance of employee procrastination could be sorted into team differences. In addition, the ICC of PCSP was 0.037, indicating that the 3.7% variance of employee PCSP could be sorted into team differences. Both the ICC of procrastination and PCSP were lower

than the cut-off value of 0.2, which did not support a multilevel analysis. Thus, although the data was nested in nature, no significant differences were observed among teams, and it was reasonable to do a single-level analysis. Hence, we can conduct all the analyses at the individual level.

As anticipated (Table 3), there was a positive association between schadenfreude and procrastination behavior ($r = 0.29, p < 0.01$). A positive association between sympathy and PCSP ($r = 0.27, p < 0.01$) was also evident.

【Insert Table 3】

5.4 Hypothesis testing

The results of all hypothesis tests in this study are shown in Tables 4, 5, and 6; and Figures 2, 3. The interaction term (AI service failure $\times$ perceived insider status) was negatively associated with schadenfreude ($\beta = -0.130, p < 0.05$), and a positive correlation was observed between the interaction term and sympathy ($\beta = 0.198, p < 0.01$). Moreover, simple slope tests were used to analyze the moderation effects. As shown in Figure 2, AI service failure was more positively correlated with schadenfreude with low perceived insider status ($\beta = 0.221, p < 0.01$). The correlation was not significant ($\beta = -0.025, n.s.$) with a high perceived insider status. Thus, supporting H1. Similarly, as shown in Figure 3, AI service failure had a more positive impact on sympathy with a high perceived insider status ($\beta = 0.202, p < 0.01$). The correlation was not significant ($\beta = -0.096, n.s.$) with a low perceived insider status. Thus, H2 was confirmed.

【Insert Table 4】

【Insert Figures 2 and 3】

From Table 5, schadenfreude had significant effects on procrastination behavior ($\beta = 0.247, p < 0.01$); sympathy exhibited a positive relationship with PCSP ($\beta = 0.194, p < 0.01$). Therefore, H3 and H4 were confirmed.

【Insert Table 5】

The indirect effect of AI service failure on procrastination behavior via schadenfreude is shown in Table 6. In distinct levels of perceived insider status, the indirect effect of AI service failure differs significantly ($\Delta\beta = 0.136, p < 0.01$). With lower levels of perceived insider status (-1 SD), the indirect effects of AI service failure on procrastination behavior through schadenfreude ($\beta = 0.127, p < 0.01$) were significant. However, this indirect impact was not significant ($\beta = -0.009, n.s.$) when the perceived insider status level was high ($+1$ SD). Thus, the moderated-mediation hypothesis (H5) was supported. Similarly, the indirect effect of AI service failure on PCSP via sympathy was significantly different in distinct levels of perceived insider status ($\Delta\beta = 0.122, p < 0.01$). With higher levels of perceived insider status ($+1$ SD), the indirect impact of AI service failure on PCSP via sympathy ($\beta = 0.099, p < 0.01$) was significant. However, this indirect impact was not significant ($\beta = -0.023, n.s.$) when the perceived insider status level was low (-1 SD). Thus, the moderated-mediation hypothesis (H6) was supported.

【Insert Table 6】

6 DISCUSSION AND CONCLUSIONS

6.1 Conclusions

Drawing on cognitive appraisal theory, this study examines how and when AI service

failure stimulates employees' differentiated working behaviors, namely procrastination behavior and PCSP. Existing research has yielded inconsistent results in terms of whether AI adoption in organizations leads to positive or negative employee consequences. For example, Kong *et al.* (2021) argued that organizational adoption of AI leads to employees' decreased career competency and enhanced job burnout. Koo *et al.* (2021) proved that the threat dimension of job insecurity caused by AI adoption could enhance employees' job engagement, while perceived powerlessness could decrease their job engagement. As suggested by Cheng *et al.* (2023) and Vrontis *et al.* (2022), the influences of AI advancement on employees are multifaceted and warrant further research endeavors. The findings of this research show that AI service failures can lead employees to exhibit either unfavorable work behavior (i.e., procrastination behavior) or beneficial one (i.e., PCSP). This is contingent upon the employees' perceived insider status.

Specifically, results show that AI service failure induces *schadenfreude* among employees who possess low perceived insider status, resulting in procrastination behavior. Such reactions may arise from their greater concern for their position within the organization than for the organization's interests, leading them to perceive AI as a potential competitor that could replace them. In the workplace, when competitors encounter negative events, employees may experience emotions different from those of their competitors, such as *schadenfreude*, driven by their self-interested perspectives (Chen *et al.*, 2021; Li *et al.*, 2019).

In addition, this study reveals that AI service failure triggers sympathy among employees whose perceived insider status is high, leading to PCSP. This result is consistent with prior studies suggesting that when employees observe negative situations affecting their

coworkers, they often respond with deontic reactions (Priesemuth and Schminke, 2019). Nevertheless, this is not universally applicable. Observers' responses to negative events affecting others largely depend on their evaluation of the situation, specifically how they perceive its impact on their own goal attainment (Chen *et al.*, 2021). In this study, employees high in perceived insider status tend to prioritize the organization's interests, prompting them to feel sympathy for the organization during harmful events such as AI service failures. This sympathy, in turn, drives them to take actions that contribute to the organization's success. This finding also reaffirms the argument made by Kim, Moon, and Shin (2019) that employees with high perceived insider status tend to have positive evaluations of and generate desirable actions for their organization.

6.2 Theoretical implications

First, this work enriches the AI service failure literature by transitioning the emphasis from the customer's viewpoint to that of the employee. Prior limited research mainly concentrates on customers' attitudes toward AI service failures and subsequent recovery, as well as the factors influencing them (e.g., Chang *et al.*, 2024; Meng *et al.*, 2025). However, despite the significance of employees' attitudes and behaviors in shaping the organization's performance, it remains unclear how employees respond to AI service failures. This shift aligns with the increasing necessity for greater consideration of employees' emotions and perspectives in the age of AI (Gursoy and Cai, 2025; Lu *et al.*, 2020; Song *et al.*, 2022).

Second, our research reveals the complex mechanisms through which AI service failures influence employees, indicating that such failures can lead to either negative work behavior

(i.e., procrastination behavior) or positive behavior (i.e., PCSP) through the mediating effects of schadenfreude and sympathy for the organization. Such efforts not only enhance our understanding of the outcomes of AI service failures but also shed light on the antecedent research related to procrastination behavior and PCSP in the context of AI. Meanwhile, this study advances the research on perceived insider status by validating its influence on how employees respond to AI service failures.

Third, drawing on cognitive appraisal theory, our findings demonstrate that schadenfreude and sympathy toward an organization mediate the connections between AI service failure and employees' work behaviors. Research on employee behavior in the tourism and hospitality industry frequently draws on social cognitive theory, conservation of resources theory, etc. (Hoang *et al.*, 2023; Zhao *et al.*, 2023). This study, however, uses cognitive appraisal theory to explore employees' responses to AI service failures from an emotional perspective, offering a fresh theoretical lens for future investigations in this area. Our effort also contributes to cognitive appraisal theory by applying it within a new research context, thereby broadening its applicability. Furthermore, prior literature has explored a range of employee emotions in response to events that negatively impact the organization, including anger and contentment (Mitchell *et al.*, 2015). Our effort adds to this body of work by emphasizing the roles of schadenfreude and sympathy. Additionally, in previous research, schadenfreude and sympathy have always been directed toward human targets. However, despite the emphasis on individuals' empathy toward organizations (Kirmani *et al.*, 2017), few studies have examined this aspect in the context of service failures. An exception is Wei *et al.*'s (2020) study, which identified customer empathy toward a firm as a mediator linking

service recovery and customer forgiveness. Arguably, this study advances the schadenfreude and sympathy literature by investigating the mediating effect of employees' schadenfreude and sympathy toward the organization in the context of AI service failure, redirecting the target from individuals to the organization.

6.3 Practical implications

Our empirical findings offer fresh insights into how tourism and hospitality companies can manage employees' responses to AI service failures. First, this study finds that employees with high perceived insider status may develop sympathy toward the organization when facing AI service failures. This leads to their PCSP, which functions to offset the adverse effects of AI service failure on the organization. Nevertheless, those with low perceived insider status may experience schadenfreude toward the organization when an AI service failure occurs. This subsequently results in their engagement in procrastination behavior, which is a secondary harm to the organization. Therefore, tourism and hospitality companies need to prevent their employees from exhibiting schadenfreude. As discussed earlier, it is the AI adoption within organizations that evokes a sense of job insecurity among employees, subsequently leading them to feel schadenfreude toward the organization when AI service failures take place. Thus, organizations should implement certain measures to reassure their employees that the goal of adopting AI is to enhance their ability to better serve customers rather than replace them. For instance, involving employees in the decision-making process for AI implementation by asking for their input and feedback can make a big difference. This can be achieved through focus groups or surveys, ensuring they feel heard

and valued. Additionally, holding regular training sessions, like workshops, to help employees understand how AI works can clarify the distinctions between AI and human roles, which may ease their fears of being replaced. Organizations should also consider offering psychological support and counseling services to help employees manage any anxiety or insecurity related to AI adoption. Furthermore, it's important to implement clear penalties for employees who deliberately hinder service recovery efforts.

Second, the results also suggest that perceived insider status is a salient moderator that affects the link between AI service failure and employees' responses. Accordingly, tourism and hospitality companies are advised to consider perceived insider status as a selection criterion when assessing candidates during the recruitment process. By employing employees with a high degree of perceived insider status, organizations can minimize the potential detrimental influence of AI service failures. In the meantime, managers need to implement specific human resource management measures to improve employees' perceived insider status. For example, actions like offering skill training, empowering employees with greater autonomy over their work, and promoting employee engagement in the decision-making process can convey positive and validating messages to employees. This, in turn, helps them perceive that the organization values and acknowledges them, ultimately nurturing a feeling of being an integral part of the organization. Additionally, managers should impartially enforce policies and regulations within the organization, treat each employee equitably, and provide just rewards and penalties, to ensure employees feel recognized as valued "insiders" by their organization.

Third, given the positive impact of sympathy toward the organization on employees'

PCSP, it is essential to cultivate this sympathy among employees. Organizations should ensure that employees understand and connect with the organization's goals and principles. This can be communicated through employee meetings, internal communications, and team activities. For instance, organizations can regularly hold "Mission Days", where employees share personal stories that reflect the organization's values. Additionally, encouraging employee participation in social responsibility initiatives, such as volunteer work or charitable donations, can help them recognize the organization's impact and responsibility toward society. This may boost their sympathy for the organization, further promoting their engagement in PCSP.

6.4 Limitations and future research

First, the data were collected from the Chinese hospitality industry. Given that cultural differences can significantly influence employees' emotional and behavioral responses to technological failures, we recommend that future research incorporate data from diverse cultural contexts and even from different service sectors, to enhance the model's applicability. Second, the time-lagged design of this study may not establish definitive causal inferences. Therefore, future research is encouraged to be structured as longitudinal or experimental studies to reassess the research model. Third, the current study solely identifies one boundary condition; that is, employees' perceived insider status. Future studies are encouraged to explore whether other moderators, such as organizational attachment, identification, and commitment, moderate the relationship between AI service failure and employees' emotional reactions. Fourth, future research could adopt a mixed-methods

approach, integrating qualitative interviews to examine employees' other emotional and behavioral reactions to AI service failure with quantitative research to validate causal relationships. Finally, the explanatory mechanisms in this study are relatively limited. Future research should consider exploring additional moderating or mediating variables to further enrich this area of knowledge. For instance, challenge appraisal and hindrance appraisal may serve as mediators. Additionally, goal interdependence (cooperative goals and competitive goals) could act as moderators.

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Tables

Table 1 Respondents' profiles in this study

Variables	Number	Percentage (%)
Age		
1. Under 25	47	16.5
2. 25 to 29	103	36.3
3. 30 to 34	50	17.6
4. 35 to 39	45	15.8
5. 40 or older	39	13.7
Gender		
0. Male	187	65.8
1. Female	97	34.2
Education		
1. High school or below	167	58.8
2. Associate degree	73	25.7
3. Bachelor degree	31	10.9
4. Master's or even higher	13	4.6
Tenure		
1. Less than 1 year	53	18.7
2. 1 to 3 years	101	35.6
3. 3 to 5 years	58	20.4
4. 5 to 7 years	56	19.7
5. 7 years or above	16	5.6

Note: $N = 284$.

Source: Developed by authors.

Table 2 Comparisons of measurement models

Models	χ^2	df	χ^2/df	CFI	TLI	SRMR	RMSEA
Six-factor model + CMF	940.364	578	1.627	0.935	0.929	0.057	0.047
Six-factor Model	910.363	579	1.572	0.941	0.935	0.050	0.045
Five-factor Model ^a	1175.260	584	2.012	0.894	0.886	0.063	0.060
Five-factor Model ^b	1185.251	584	2.030	0.892	0.884	0.078	0.060
Five-factor Model ^c	1179.282	584	2.019	0.893	0.885	0.064	0.060
Five-factor Model ^d	1759.190	584	3.012	0.790	0.773	0.131	0.084
Five-factor Model ^e	1683.246	584	2.882	0.803	0.788	0.087	0.081
Five-factor Model ^f	1141.127	584	1.954	0.900	0.892	0.063	0.058
One-factor Model ^g	3437.294	594	5.787	0.491	0.460	0.140	0.130

Notes: ^a Combining AI service failure with schadenfreude; ^b Combining AI service failure with sympathy; ^c Combining AI service failure with procrastination behavior; ^d Combining AI service failure with PCSP; ^e Combining schadenfreude with procrastination behavior; ^f Combining sympathy with PCSP; ^g Combining all variables into one factor.

Source: Developed by authors.

Table 3 Descriptive statistics and correlations

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Gender	0.66	—										
2. Age	2.74	1.29	0.11									
3. Education	1.61	0.86	0.03	0.09								
4. Tenure	2.58	1.16	-0.16**	0.47**	0.21**							
5. AI service failure	2.71	0.60	-0.20**	0.10	0.11	0.04	<i>0.793</i>					
6. Perceived insider status	3.21	0.64	0.02	0.14*	0.08	0.13*	0.07	<i>0.858</i>				
7. Schadenfreude	2.20	0.77	0.08	-0.10	0.09	-0.02	0.13*	0.02	<i>0.902</i>			
8. Sympathy	3.58	0.61	0.07	0.20**	0.05	0.08	0.13*	0.11	-0.24**	<i>0.786</i>		
9. Procrastination behavior	1.77	0.81	-0.04	-0.17**	0.12*	-0.08	0.13*	-0.08	0.29*	-0.11	<i>0.947</i>	
10. PCSP	3.70	0.65	-0.06	0.27**	0.04	0.14*	-0.02	0.13*	-0.08**	0.27**	-0.34**	<i>0.875</i>

Notes: $N = 284$; * $p < 0.05$; ** $p < 0.01$; This diagonal shows Cronbach's alpha values in bold italics.

Source: Developed by authors.

Table 4 Regression results

	Schadenfreude			Sympathy		
Control variables						
Gender	0.099	0.076	0.088	0.043	0.022	0.003
Age	-0.134	-0.143*	-0.136*	0.199**	0.186**	0.175**
Education	0.087	0.075	0.068	0.034	0.020	0.031
Organizational tenure	0.041	0.037	0.046	-0.017	-0.025	-0.038
Independent variable						
AI service failure		0.119	0.127*		0.100	0.087
Moderator						
Perceived insider status		0.017	-0.003		0.074	0.105
Interaction						
AI service failure × perceived insider status			-0.130*			0.198**
<i>F</i>	1.979	1.995	2.407	3.136	2.869	4.187
ΔF	1.979	2.000	4.716*	3.136*	2.277	11.445**
<i>R</i> ²	0.028	0.041	0.058	0.043	0.059	0.096
ΔR^2	0.028	0.014	0.016*	0.043*	0.015	0.037**

Notes: *N* = 284; **p* < 0.05; ***p* < 0.01.

Source: Developed by authors.

Table 5 Results of hypothesis testing

	Procrastination behavior		PCSP	
Control variables				
Gender	-0.049	-0.071	-0.096	-0.088
Age	-0.166*	-0.128	0.274**	0.227**
Education	0.129*	0.113	0.019	0.020
Organizational tenure	-0.025	-0.037	-0.023	-0.011
Independent variable				
AI service failure	0.152*	0.123*	-0.047	-0.052
Moderator				
Perceived insider status	-0.087	-0.084	0.109	0.088
Interaction				
AI service failure × perceived insider status	-0.087	-0.051	0.093	0.042
Mediator				
Schadenfreude		0.247**		-0.099
Sympathy		-0.022		0.194**
<i>F</i>	3.542	5.068	4.397	5.448
ΔF	3.542**	9.632**	4.397**	8.313**
<i>R</i> ²	0.082	0.143	0.100	0.152
ΔR^2	0.082**	0.060**	0.100**	0.051**

Notes: *N* = 284; **p* < 0.05; ***p* < 0.01.

Source: Developed by authors.

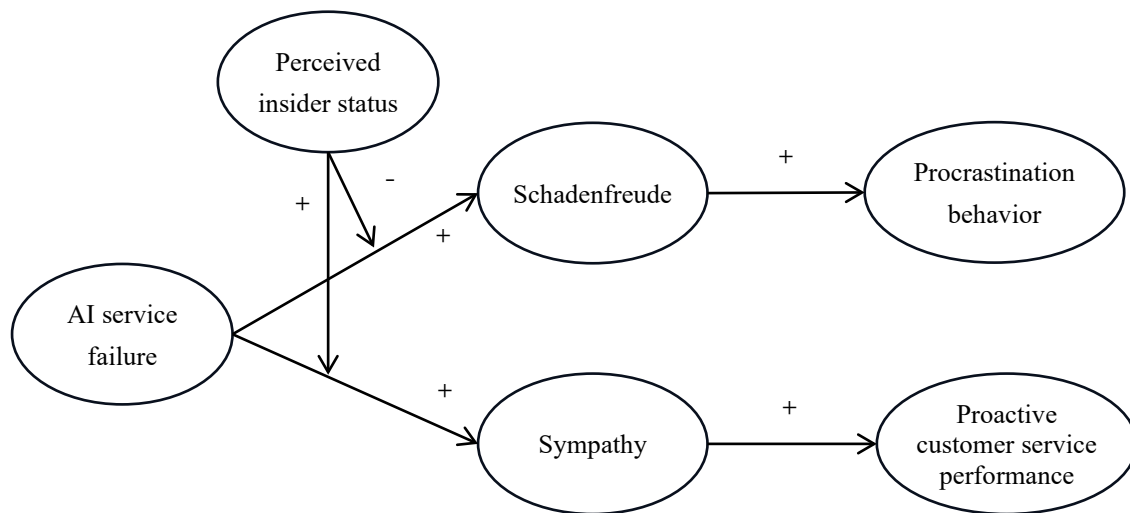
Table 6 Results of the moderated path analysis

Moderator	AI service failure (X) $\rightarrow$ Schadenfreude (M) $\rightarrow$ Procrastination behavior (Y)				
	P_{MX}	P_{YM}	P_{YX}	$P_{YM}P_{MX}$	$P_{YX}+P_{YM}P_{MX}$
Perceived insider status (-1 SD)	0.367**	0.346**	0.232*	0.127**	0.359**
Perceived insider status (+1 SD)	-0.041	0.208**	0.068	-0.009	0.059
Differences	-0.408**	-0.137	-0.164	-0.136**	-0.300*
	AI service failure (X) $\rightarrow$ Sympathy (M) $\rightarrow$ PCSP (Y)				
	P_{MX}	P_{YM}	P_{YX}	$P_{YM}P_{MX}$	$P_{YX}+P_{YM}P_{MX}$
Perceived insider status (-1 SD)	-0.159**	0.143	-0.149	-0.023	-0.171
Perceived insider status (+1 SD)	0.335**	0.295**	-0.021	0.099**	0.078
Differences	0.494**	0.153	0.127	0.122**	0.249

Notes: $N = 284$; * $p < 0.05$; ** $p < 0.01$.

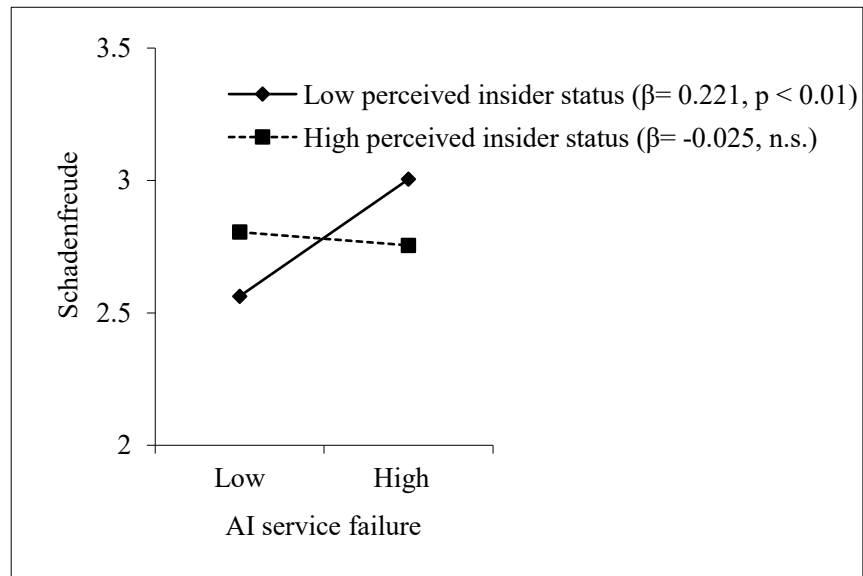
Source: Developed by authors.

Figures



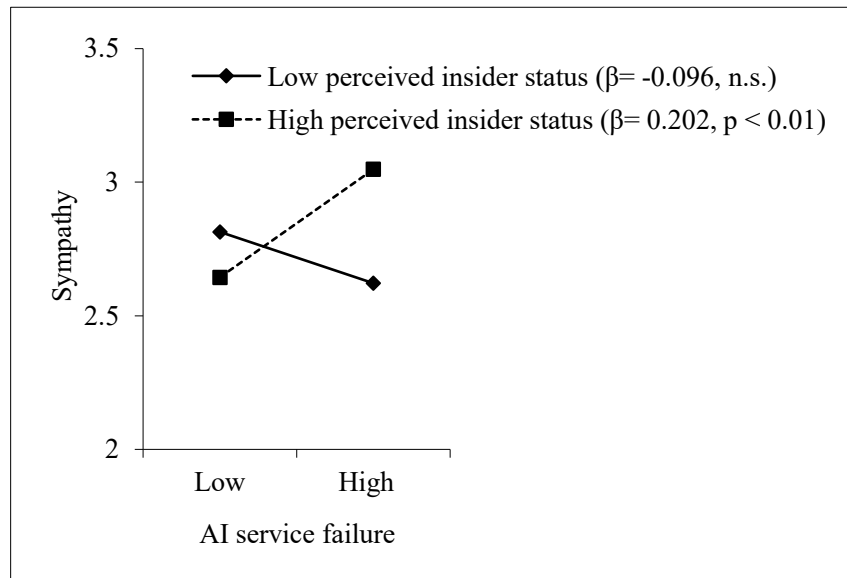
Source: Developed by authors.

Figure 1 Conceptual framework



Source: Developed by authors.

Figure 2. Moderating effect of perceived insider status on the impact of AI service failure on Schadenfreude



Source: Developed by authors.

Figure 3. Moderating effect of perceived insider status on the impact of AI service failure on sympathy



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The impact of AI service failure on human employee behavior and customer service performance

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