



## Unemployment risk perception and knowledge hiding under the disruption of artificial intelligence transformation

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Using social exchange theory, we proposed a moderated mediation model to explore the relationship between unemployment risk perception and employee knowledge hiding under the disruption of artificial intelligence transformation. We conducted an empirical analysis of data from 274 respondents who completed a two-stage survey with an interval of about 2 weeks. The results were as follows: First, unemployment risk perception was positively related to employee knowledge hiding. Second, psychological contract breach mediated the relationship between unemployment risk perception and employee knowledge hiding. Third, mindfulness negatively moderated the relationship between psychological contract breach and employee knowledge hiding. Fourth, mindfulness negatively moderated the strength of the mediated relationship between unemployment risk perception and employee knowledge hiding via psychological contract breach. The research conclusions can help companies formulate policies to guide employees to actively share knowledge in artificial intelligence transformation contexts.

### Keywords

artificial intelligence, unemployment risk perception, employee knowledge, knowledge hiding, psychological contract breach, mindfulness

### Article Highlights

- Unemployment risk perception was found to be positively related to employee knowledge hiding.
- Psychological contract breach mediated the relationship between unemployment risk perception and employee knowledge hiding.
- Mindfulness negatively moderated the relationship between psychological contract breach and employee knowledge hiding.
- Mindfulness negatively moderated the strength of the mediated relationship between unemployment risk perception and employee knowledge hiding via psychological contract breach.

As a general technology, *artificial intelligence* (AI) can infiltrate and be integrated across various industries, thus promoting industry upgrading and transformation (Zhang & Zhang, 2020). In this context, various organizations are undergoing AI technological transformation and utilizing AI technology to increase the efficiency of enterprise management and operation. However, in the process, many jobs will be replaced by AI (Chen & Xu, 2018). Fan and Tang (2020) reported that 55% of frontline jobs in the manufacturing industry in Guangdong, China, can be easily replaced by AI. Chen and Xu (2018) found that 76.76% of employed people in China will be impacted by AI in the next 20 years. This substantial unemployment risk will affect employees' psychology and behavior.

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*Knowledge hiding* refers to people's attempts to hide or conceal knowledge desired by other members of the organization (Connelly et al., 2012), such as information, ideas, and work experience (Bartol & Srivastava, 2002). Specifically, knowledge hiding, which encompasses not only a lack of knowledge sharing but also the purposeful concealment of knowledge demanded by others (Kang, 2016; Xiao & Cooke, 2018), has a significant detrimental impact on organizations and individuals. For example, it diminishes individual innovation behavior (Černe et al., 2017) and team creativity (Garg et al., 2022), thus impeding the effectiveness of organizational transformation (Xu & Wang, 2022). Therefore, it is vital to investigate the process of knowledge hiding in AI transformation to mitigate its negative impact and establish a solid theoretical foundation for enterprises to develop their policies to intervene in knowledge hiding and then encourage employees to share knowledge.

Scholars have described job insecurity as an important factor affecting the knowledge hiding of employees. For example, Ali et al. (2021) showed that when employees feel worried and anxious about the influence of certain organizational factors threatening their job security, they hide their knowledge to compete with colleagues and secure their jobs. Chhabra and Pandey (2022) observed that during the COVID-19 pandemic, job insecurity triggered knowledge hiding among employees. The perception of unemployment risk has been found to be positively correlated with job insecurity (De Witte, 2005). Therefore, we predicted that perceived unemployment risk would be positively correlated with employees' knowledge hiding under the disruption of AI. This relationship has not been examined in this setting in previous research.

In addition, regarding the mediating mechanism between job insecurity and knowledge hiding, some scholars believe that job insecurity will lead to the depletion of employee resources (Chen & Eyoum, 2021). As knowledge is an important resource, individuals tend to hide this to maintain an advantage and prevent resource depletion (Chang & Na, 2020; Chhabra & Pandey, 2022; Nguyen et al., 2022). However, according to social exchange theory (Blau, 1964), when an organization fails to fulfill the commitment of job security, employees will have the perception of psychological contract breach and then repay the organization with deviant behavior (Costa & Neves, 2017; Ma et al., 2019). The *psychological contract* refers to the belief of mutual responsibility between employees and the organization (Robinson & Morrison, 2000), and *psychological contract breach* means that employees think they are experiencing unfair investment and return (Costa & Neves, 2017). For organizations, knowledge hiding is a deviant behavior (Serenko & Bontis, 2016). Therefore, on the basis of social exchange theory, we predicted that psychological contract breach would mediate the relationship between the perception of unemployment risk and employee knowledge hiding. When the psychological contract is broken, the psychology of revenge and anger will induce deviant behavior (Bordia et al., 2008). In this process, positive psychological capital can weaken the relationship between the breach of psychological contract and deviant behavior (Costa & Neves, 2017). Mindfulness can facilitate one's positive psychological capital (Roche et al., 2014), helping individuals to focus on the present and reduce their revenge and anger (Wright et al., 2009). Meanwhile, Shaffakat et al. (2022) found that mindfulness can make individuals more receptive to the negative emotions caused by psychological contract breach and then lower their possibility of engaging in deviant behavior. Therefore, mindfulness may moderate the relationship between the perception of unemployment risk and knowledge hiding.

Using social exchange theory, we put forward a moderated mediation model to analyze the relationship between the perception of unemployment risk and employees' knowledge hiding under the disruption of AI, and the mediating role of psychological contract breach and the moderating role of mindfulness in this relationship. This study is expected to extend the interpretation perspective of the relationship between the perception of unemployment risk and employees' knowledge hiding, which will help to guide enterprises to formulate policies to intervene in employees' knowledge-hiding behavior in the process of AI transformation.

## **The Perception of Unemployment Risk and Knowledge Hiding**

*Risk perception* generally refers to people's intuitive judgment of the probability and severity of risk events (Slovic, 1987). Because of the disruption of AI, employees' perception of unemployment risk changes to reflect their judgment

of the probability and severity of unemployment in this context. According to social exchange theory, the individual's contribution to an organization depends on the rewards given by the organization (Guo et al., 2016). In an unfavorable or unsupportive work environment, employees may engage in deviant behavior (Bordia et al., 2008; Colbert et al., 2004). In other words, when organizations use AI technology to replace some jobs, employees may face unemployment risk and perceive that their personal career development goals are being threatened. This means when individuals think they are going to be replaced by AI, they feel slighted and like they are not part of the organization (Brougham & Haar, 2018; Meyer et al., 1993). Thus, according to social exchange theory, these employees will be reluctant to make extra effort for the development of their organization or may even show indifference to their work and organizational commitments (Brougham & Haar, 2018). In this case, when colleagues ask for assistance, although knowledge sharing would contribute to the organization's development, employees will feel indifferent and their possibility of hiding knowledge will be higher. Therefore, we put forward the following hypothesis:

**Hypothesis 1:** Unemployment risk perception will be positively related to employee knowledge hiding.

### **The Mediating Role of Psychological Contract Breach**

The psychological contract is composed of the belief of mutual responsibility between employees and the organization, and it is based on the relationship between these parties (Robinson & Morrison, 2000; Rousseau, 1989). When employees believe that there is a significant difference between what the organization has promised and what it is delivering, psychological contract breach occurs (Bordia et al., 2008). From the perspective of psychological contracts, the employee's commitment to the organization in terms of ability, effort, and loyalty can be rewarded by the organization through providing compensation, promotion, and job security (Conway & Briner, 2002; Cullinane & Dundon, 2006). In the view of employees, job stability and job security are the obligations of the organization (Ma et al., 2019; Piccoli & De Witte, 2015). However, the introduction of AI threatens the future career development and job security of employees, which leads to the perception of breach of their psychological contract.

To restore balance in the context of psychological contract breach, employees may take a series of new actions, such as reducing effort or implementing negative behaviors to increase the organization's cost (Ma et al., 2019). Bordia et al. (2008) showed that if an organization breaks its promise, employees can easily take actions to hurt the organization's interests in return, including participating in anticitizenship behaviors. Since knowledge hiding will bring losses to the enterprise, it can effectively compensate for psychological contract breach. Therefore, it can be inferred that psychological contract breach may relate to the knowledge-hiding behavior of employees. We put forward the following hypothesis:

**Hypothesis 2:** Psychological contract breach will mediate the relationship between unemployment risk perception and employee knowledge hiding.

### **The Moderating Role of Mindfulness**

People's reactions are not consistent, which means that in the context of psychological contract breach some choose to forgive and others choose revenge (Bordia et al., 2008). *Mindfulness* refers to the awareness and attention of the individual to their present state in a nonjudgmental manner, accepting facts, and increasing attention to facts (Brown & Ryan, 2003). Psychological contract breach leads to individual disappointment, dissatisfaction, a sense of betrayal, anger, and resentment, which stimulate individuals to engage in revenge behaviors (Bordia et al., 2008; Morrison & Robinson, 1997; Robinson & Morrison, 2000). However, mindfulness helps individuals separate themselves from current thoughts and emotions (Shen et al., 2020), reducing the automatically generated negative emotions that follow psychological contract breach (Wright et al., 2009). Therefore, mindfulness can alleviate the impact of psychological contract breakage on knowledge hiding from the perspective of relieving emotions. As such, we proposed the following hypothesis:

**Hypothesis 3:** Mindfulness will negatively moderate the relationship between psychological contract breach and knowledge hiding.

Combining Hypotheses 2 and 3, we speculated that mindfulness would mitigate the strength of the mediated relationship between unemployment risk perception and employee knowledge hiding via psychological contract breach. Thus, we proposed the following hypothesis:

**Hypothesis 4:** Mindfulness will negatively moderate (weaken) the strength of the mediated relationship between unemployment risk perception and knowledge hiding via psychological contract breach.

The conceptual model we constructed based on the research hypotheses is shown in Figure 1.

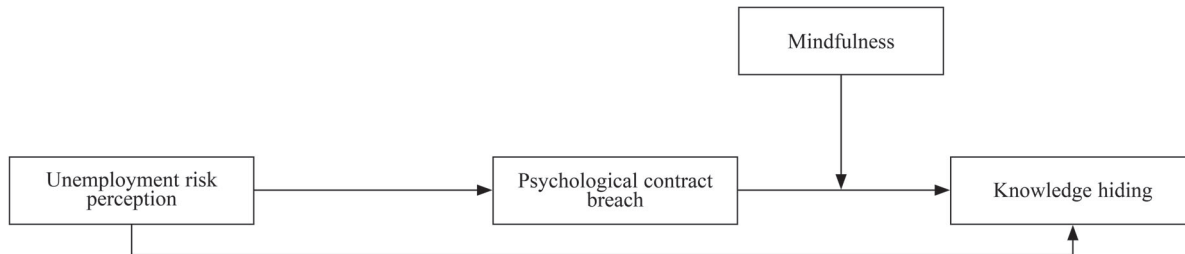


Figure 1. *Conceptual Model*

## Method

### Participants and Procedure

We collected data by distributing questionnaires to enterprise employees through the online research platform, Credamo ([www.credamo.com](http://www.credamo.com)), via a two-stage survey with an interval of about 2 weeks. At the first stage we measured employees' demographic variables, AI application, and perception of unemployment risk. We distributed 692 surveys and collected 447 valid responses. At the second stage we distributed 447 questionnaires to measure perceived psychological contract breach, mindfulness, and knowledge hiding. After excluding invalid questionnaires, 274 responses were matched across the two collection stages. Men accounted for 46% and women for 54% of the sample and their age distribution was between 20 and 58 years ( $M = 30.65$ ,  $SD = 5.39$ ), of whom 89% were aged between 25 and 40 years. In terms of level of education, candidates with a bachelor's degree accounted for 80.7% of the sample, 11.3% had an undergraduate degree or above, and 8.0% had a high school diploma or lower level of education. Their occupations included finance/auditing, management, human resources management, technology/research and development, production workers, and others.

### Measures

All the measures originally developed in English were translated into Chinese. To verify the accuracy of the content, we checked the scales' validity through back-translation before the start of the study. Unless otherwise indicated, participants rated the items on a 7-point Likert scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*.

#### **Perception of Unemployment Risk**

We measured perceived unemployment risk with the Risk Perception Scale developed by Hovick et al. (2011), with the item wording revised to fit the research background of this paper. There are three items: "I'm very likely to be unemployed due to the development of artificial intelligence," "I'm worried about losing my job because of the development of artificial intelligence," and "Compared with other people in the same profession, the development of artificial intelligence is more likely to cause me to lose my job." In this study Cronbach's alpha was .89.

### **Psychological Contract Breach**

We used the scale developed by Robinson and Morrison (2000) to measure psychological contract breach. It includes five items, such as “My employer has broken many promises to me even though I’ve upheld my side of the deal.” In this study Cronbach’s alpha was .89. This scale has been previously demonstrated to be valid and reliable (Xie & Chen, 2021).

### **Knowledge Hiding**

We measured knowledge hiding with the scale developed by Rhee and Choi (2016). It includes four items, such as “I said that I did not know something even though I did.” In this study Cronbach’s alpha was .75. This scale has been previously demonstrated to be valid and reliable (Shi et al., 2021).

### **Mindfulness**

We assessed mindfulness with the scale developed by Brown and Ryan (2003), which has five items, such as “I find it difficult to stay focused on what is happening in the present.” Items are reverse scored. Participants rate the items on a 7-point Likert scale ranging from 1 = *never* to 7 = *often*. In this study Cronbach’s alpha was .84. The scale has been previously demonstrated to be valid and reliable (Ni et al., 2021).

### **Control Variables**

We controlled for employees’ gender, age, and education level (Yang & Tang, 2018). Studies have shown that AI application affects employees’ work attitudes and behaviors (Zhou & Wang, 2021). Therefore, we controlled for AI application with the scale developed by Wang et al. (2019). It comprises four items, such as “The application scope of AI will become wider and wider.” In this study Cronbach’s alpha was .75. The scale has been previously demonstrated to be valid and reliable (Wang et al., 2019).

## **Results**

### **Confirmatory Factor Analysis**

Using Mplus 8.3 we ran a confirmatory factor analysis to test for discriminant validity among the variables of AI application, unemployment risk perception, psychological contract breach, mindfulness, and knowledge hiding. Results indicated that the five-factor model fit the data best, comparative fit index = .97, Tucker–Lewis index = .97, root mean square error of approximation = .04, standardized root mean square residual = .05, and had a significantly better fit than any other combined models,  $\Delta\chi^2$  range = 389.40–1185.87,  $ps < .01$ . This indicated acceptable discriminant validity among the five key variables in this study.

### **Descriptive Statistics and Correlations**

The means, standard deviations, and correlations of the variables are shown in Table 1. AI application was not significantly correlated with the perception of unemployment risk. A reason for this result may be that AI application has both positive and negative effects on employees. The main negative impact is the substitution of employees’ positions, which increases perceived unemployment risk. However, the concept of AI application measures the positive side of AI perceived by employees, so it has no significant relationship with the perception of unemployment risk. AI application was negatively correlated with breach of psychological contract and knowledge hiding, whereas perception of unemployment risk was positively correlated with knowledge hiding. Further, unemployment risk perception was positively correlated with psychological contract breach, psychological contract breach was positively correlated with knowledge hiding, and mindfulness and knowledge hiding were negatively correlated. These results provided initial support for the hypotheses.

**Table 1. Descriptive Statistics and Correlation Coefficients**

	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Artificial intelligence application	6.00	0.82	—				
2. Unemployment risk perception	2.46	1.22	.04	—			
3. Psychological contract breach	2.33	0.78	-.26**	.22**	—		
4. Mindfulness	5.50	0.85	.80	-.29**	-.46**	—	
5. Knowledge hiding	2.12	0.73	-.17**	.12*	.66**	-.42**	—

Note. \*  $p < .05$  (two-tailed). \*\*  $p < .01$  (two-tailed).

### Total and Mediating Effects Tests

We used SPSS 25.0 software to run a multiple regression analysis to test Hypothesis 1. As shown in Table 2, unemployment risk perception was positively related to knowledge hiding (Model 1,  $\beta = .13$ ,  $p < .05$ ). Thus, Hypothesis 1 was supported. We tested Hypothesis 2 using Model 4 of the PROCESS macro in SPSS 25.0, with 5,000 bootstrapped resamples and 95% confidence intervals (CIs). Results indicated that the indirect relationship between unemployment risk perception and knowledge hiding via psychological contract breach was .10, 95% CI [0.05, 0.15]. Thus, Hypothesis 2 was supported.

**Table 2. Empirical Test Results**

	Model 1	Model 2	Model 3
Gender	-.01	-.06	-.05
Age	-.06	-.03	-.02
Educational level	-.06	.02	.02
Artificial intelligence application	-.16**	.01	-.03
Unemployment risk perception	.13*		
Psychological contract breach		.60**	.48**
Mindfulness		-.14**	-.07
Psychological contract breach $\times$ Mindfulness			-.25**
$R^2$	.05*	.46**	.50**
$\Delta R^2$			.04**
$F$	3.05	38.11	37.92

Note.  $N = 274$ .

\*  $p < .05$  (two-tailed). \*\*  $p < .01$  (two-tailed).

### Test of the Moderating Effect

We used SPSS 25.0 software to run a multiple regression analysis to test Hypothesis 3. As shown in Table 2, the interaction term of psychological contract breach  $\times$  mindfulness had a significant effect on knowledge hiding (Model 3,  $\beta = -.25$ ,  $p < .01$ ). This suggests that mindfulness moderated the relationship between psychological contract breach and knowledge hiding. This provided initial support for Hypothesis 3. Next, we used PROCESS Model 1 in SPSS 25.0 to conduct a bootstrapping analysis with 5,000 resamples and 95% CIs. For low levels of mindfulness ( $M - 1 SD$ ), psychological contract breach was positively associated with knowledge hiding and the relationship was strong ( $\beta = .60$ , 95% CI [0.50, 0.70]); for high levels of mindfulness ( $M + 1 SD$ ), psychological contract breach was also positively associated with knowledge hiding; however, the relationship strength was weaker ( $\beta = .37$ , 95% CI [0.23, 0.51]). These results show that greater mindfulness decreased the relationship between psychological contract breach and knowledge hiding. Thus, mindfulness negatively moderated the relationship between psychological contract breach and knowledge hiding, providing further support for Hypothesis 3.

Following Hayes (2013), we used PROCESS Model 15 in SPSS 25.0 to test Hypothesis 4. For low levels of mindfulness ( $M - 1 SD$ ), the indirect effect of unemployment risk perception on knowledge hiding through psychological contract breach was significant and the effect size was greater ( $\beta = .09$ , 95% CI [0.05, 0.14]). For high levels of mindfulness ( $M + 1 SD$ ), the indirect effect of unemployment risk perception on knowledge hiding through psychological contract breach was still significant but the effect size was smaller ( $\beta = .06$ , 95% CI [0.02, 0.10]). Thus, the mediated relationship between unemployment risk perception and knowledge hiding via psychological contract breach was weaker under the condition of high mindfulness. The difference in the indirect effect of unemployment risk perception on knowledge hiding through psychological contract breach was  $-.03$ , 95% CI [-0.06, -0.01], indicating that the indirect effect was significantly different and there was a significant moderated mediating effect. Thus, Hypothesis 4 was supported.

## Discussion

We explored the relationship between perception of unemployment risk and employee knowledge hiding under the disruption of AI. Previous studies have confirmed the relationship between job insecurity and knowledge hiding from the perspective of conservation of resources theory (Chang & Na, 2020; Chhabra & Pandey, 2022; Nguyen et al., 2022). Our findings, which are based on social exchange theory, are consistent with those of previous studies and confirm that employees' perception of unemployment risk is also positively associated with their knowledge hiding in the uncertain scenario of AI transformation. This conclusion shows that in the situation of potential job loss, individuals hide knowledge both to save resources and to address their dissatisfaction with their organization's failure to provide job stability and job security. We also found that psychological contract breach plays a mediating role in the relationship between the perception of unemployment risk and employee knowledge hiding. This conclusion is consistent with those of previous studies demonstrating that psychological contract breach mediates the relationship between job insecurity and deviant behavior (Costa & Neves, 2017; Ma et al., 2019).

We found that mindfulness negatively moderates the relationship between psychological contract breach and employee knowledge hiding, which also negatively moderates the indirect effect of perceived unemployment risk on employee knowledge hiding through psychological contract breach. Previous research has shown that mindfulness can mitigate the impact of psychological contract breach on employees' negative behavior. For example, Shaffakat et al. (2022) found that mindfulness can make individuals accept a negative emotion and diffuse it quickly, and then reduce their emotional reactions (e.g., organizational deviation behavior) to arousing stimuli (e.g., psychological contract breach), which is consistent with the conclusions of this study.

## Theoretical Contributions

First, previous studies mainly explored the factors influencing employee knowledge hiding from the perspective of knowledge attributes, personal factors, interpersonal factors, and organizational factors (Xiao & Cooke, 2018). We are the first to explore the impact of employee unemployment risk perception on employee knowledge hiding in the context of AI transformation, which expands the literature on the antecedent variables of employee knowledge hiding.

Second, this paper has discussed the impact mechanism of the perception of unemployment risk on employees' knowledge hiding from the perspective of psychological contract breach based on social exchange theory. While previous studies have also explored employee knowledge-hiding behavior from the perspective of social exchange theory, most have examined negative reciprocity between knowledge requesters and knowledge owners (Xiao & Cooke, 2018). Our conclusion shows that negative reciprocity between the knowledge requester and the knowledge owner leads to knowledge hiding, and also that the negative reciprocity between employees and their organization will cause employees to hide knowledge when colleagues ask for help. This conclusion expands the application scope of social exchange theory to the formation mechanism of knowledge hiding, therefore enhancing the explanatory power of social exchange theory.

Third, previous studies mainly examined the boundary conditions in the formation process of knowledge hiding from the perspective of team task dependency (Huo et al., 2016), individualistic cultural contexts (Boz Semerci, 2019), competitive traits, and public self-perception (Yang & Tang, 2018). However, this study found that mindfulness can help individuals focus on the present moment and effectively isolate the threat of negative events to themselves, thereby reducing the possibility of implementing knowledge hiding. This conclusion expands understanding of the boundary conditions in the formation of employees' knowledge hiding and also broadens awareness of the role of mindfulness in the field of knowledge hiding.

### **Practical Implications**

First, we found that unemployment risk perception positively affects employee knowledge hiding. Therefore, reducing employees' unemployment risk perception is an important way to intervene in knowledge-hiding behavior. For example, organizations can strengthen the publicity of AI technology, guide employees to actively recognize the opportunities and benefits to career development that are brought by AI technology, and reduce the unemployment risk perception of employees.

Second, the study confirmed that psychological contract breach is a mediating mechanism through which the perception of unemployment risk affects employees' knowledge hiding. In the process of implementing AI reform, organizations should take measures to improve employees' job security and ensure that the interests of employees are protected, so as to reduce the perception of psychological contract breaking.

Third, we found that mindfulness can alleviate both the impact of psychological contract breach on knowledge hiding and the impact of unemployment risk perception on employee knowledge hiding through psychological contract breach. Therefore, organizations could improve the level of mindfulness of employees by carrying out mindfulness meditation training.

### **Limitations and Directions for Future Research**

First, as all variables in this study were reported by the same respondents, the results may be influenced by common method bias. Multiple viewpoint data evaluation methods could be considered in the future to control for this bias. Second, although this paper explored the mediating role of psychological contract breach in the impact of unemployment risk perception on knowledge hiding, there may be other mediating mechanisms in this process. A job is a conditional resource and being at risk of losing it can trigger emotional exhaustion (Chen & Eyoum, 2021; Hobfoll, 1989; Ünal-Karagüven, 2009). Emotional exhaustion promotes employees' knowledge hiding from coworkers (Wang et al., 2021). Therefore, future studies could explore the mediating role of emotional exhaustion. Third, the effects of the perception of unemployment risk and psychological contract breach on knowledge-hiding behavior may be moderated by other factors in addition to mindfulness. Some studies have found that individuals who hold negative reciprocity beliefs are more inclined to respond to negative treatment in a negative way (Cropanzano & Mitchell, 2005; Mitchell & Ambrose, 2007), so that negative reciprocity may be a moderator between how unemployment risk perception and psychological contract breach affect knowledge hiding. In future studies the moderating role of negative reciprocity could be considered.

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