

The Influencing Factors of Knowledge Hiding Among Employees in the Construction Industry: A Psychological Contract Perspective

Wei Lai, She Shengxiang*, Zhang Chugong

Institute of Science Innovation and Culture, Rajamangala University of Technology Krungthep, Bangkok, Thailand

*Corresponding Email: she.s@mail.rmutk.ac.th

Abstract. This study explores the factors influencing employee knowledge hiding in construction industry organizations. Utilizing quantitative methods, the research examines the impact of demographic factors, including gender, age, educational level, marital status, and duration of service, as well as psychological contract breaches on employee knowledge hiding. An independent samples t-test and multiple comparisons using the least significant difference (LSD) test were conducted to analyze the demographic factors. At the same time, a simple linear regression analysis was employed to assess the relationship between psychological contract breach and knowledge hiding. The results indicate that demographic factors significantly affect employee knowledge hiding, with females, older employees, those with lower educational levels, divorced or widowed individuals, and employees with longer service durations tending to hide knowledge more frequently. Furthermore, psychological contract breach is found to have a strong and positive relationship with employee knowledge hiding, suggesting that employees are more likely to engage in knowledge-hiding behaviors when they perceive a violation of their psychological contract. The findings have important managerial implications, emphasizing the need for tailored strategies to address knowledge hiding among different employee groups and maintaining a strong psychological contract with employees to foster a culture of knowledge sharing and innovation.

Keywords: Construction Industry, Knowledge Hiding, Psychological Contract, Psychological Contract Breach

1 Introduction

In the era of the knowledge economy, the core competitiveness of construction engineering firms lies in their proficiency to effectively create and utilize knowledge. However, mega-sized construction engineering enterprises in China encounter numerous obstacles. These challenges encompass economic downturn pressures, fierce industry competition, the imperative for technological advancements and upgrades, talent scarcity, and talent retention difficulties. Amidst this backdrop, employee knowledge hiding has emerged as a notable concern. The negative repercussions of this behavior cannot be underestimated, as it can diminish work efficiency and productivity, impede organizational learning and innovation, elevate employee turnover rates, affect job satisfaction and morale, weaken the organization's competitiveness, and potentially elevate organizational risks.

From a research perspective, prevailing studies have primarily delved into the factors influencing knowledge hiding, ranging from individual factors [1] to organizational ones [2]. Although some research has touched upon relational viewpoints, predominantly focusing on interpersonal interactions (Wang et al., 2019; [3], there exists a paucity of investigations that approach the matter from the vantage point of employee-organization relationships. This gap in research leaves unexplored the underlying motivations for employee knowledge hiding within the context of their engagement with the organization.

Regarding research subjects, past investigations have predominantly discussed knowledge-hiding occurrences in knowledge-intensive organizations, such as intellectual enterprises [4] and academic institutions [5]. These

organizations primarily comprise knowledge workers, possess concentrated knowledge resources, and rely on organizational support to transform knowledge into tangible outcomes. Conversely, the construction engineering sector exhibits significant disparities. It comprises fewer knowledge workers, dispersed knowledge resources, and less dependence on the organization. Consequently, this study focuses on Chinese construction engineering companies and delves into the mechanisms underlying employee knowledge-hiding behavior by examining psychological contract breaches. A psychological contract breach signifies a discernible disparity between an employee's perception of the psychological contract with the organization and the treatment received. This disparity can trigger employees to withhold and conceal their knowledge. This perspective remains relatively unexplored, and prior research has not extensively examined how psychological contract breaches might influence employee knowledge-hiding behavior, particularly in the domain of the construction engineering industry.

The primary objective of this research is to elucidate the correlation between psychological contract breaches and employee knowledge-hiding behavior. By comprehending how psychological contract breach leads to employees withholding and concealing their knowledge, this study aims to identify potential issues and challenges. Furthermore, it aspires to provide tailored solutions for organizational management within the construction engineering industry. This investigation not only aids in deepening our understanding of knowledge-hiding behavior but also offers valuable guidance and insights to practitioners in management roles.

2 Theory and Hypotheses

As defined by Morrison and Robinson (1997), a psychological contract breach transpires when employees perceive that their organization has fallen short of fulfilling its promises or meeting their expectations. This perception can arise from actual unfair treatment or a mismatch between anticipated and actual treatment [6]. Further noted that a perceived lack of fairness can violate the psychological contract, potentially triggering a spectrum of unfavorable behaviors, including knowledge hiding and shirking responsibilities. The consequences of such a breach often manifest in diminished job satisfaction, reduced organizational commitment, and other deleterious workplace behaviors. Meta-analysis offers corroborating evidence that breaches in the psychological contract negatively impact job satisfaction, commitment, trust, and overall performance. Moreover, Bal et al.'s (2010) investigation revealed age as a moderating factor between psychological contract breaches and job attitudes.

Knowledge hiding, as elaborated by Connelly [2], pertains to the intentional withholding or concealment of knowledge when requested by others. This behavior can be categorized into evasive hiding, playing dumb, and rationalized hiding. Specifically, evasive hiding involves deflecting or renegeing on promises, and playing dumb entails pretending ignorance about the requested knowledge. Rationalized hiding consists of providing seemingly justifiable excuses to avoid sharing knowledge. Employees might use such practices to maintain a competitive edge by retaining exclusive knowledge.

Although research on knowledge hiding can be traced back to the 1960s in organizational behavior and anthropology, early studies were often fragmented and intermingled with concepts like deception or concealment. It was only in 2012 that Connelly et al. clearly defined knowledge hiding as "the intentional concealment or withholding of knowledge sought by knowledge seekers," thereby establishing it as a distinct and emerging academic concept [2].

In engineering enterprises, for instance, employees' skill proficiency constitutes a vital component of their competitiveness, cultivated over time through work experience. In such settings, knowledge-hiding behaviors are prevalent. Recruits acquire skill knowledge through gradual accumulation, mentorship, organized training, and peer learning. However, the most expedient methods of knowledge acquisition often involve some degree of knowledge hiding, leading to challenges in job performance, skill gaps, productivity declines, increased employee turnover, and management complexities.

Drawing from psychologist Erich Fromm's theory, humans inherently possess a self-protective instinct. To avert excessive responsibility, individuals tend to conceal their shortcomings. This tendency is pronounced in professional environments, where employees might withhold knowledge and skills to avoid potential performance evaluations, providing a theoretical foundation for understanding how psychological contract breaches influence employee knowledge hiding.

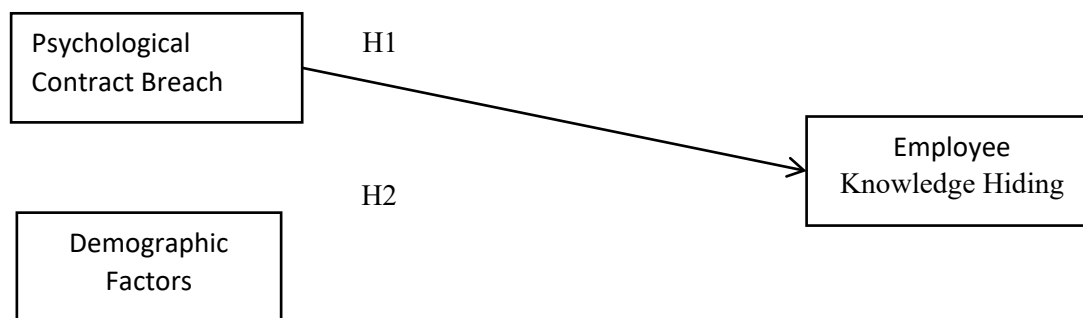
Numerous scholars have examined the impact of psychological contract breaches on employee knowledge, hiding from various perspectives. Empirical study revealed that psychological contract breaches decrease employee engagement and satisfaction, exacerbating knowledge hiding. Similarly, Li (2019) analyzed the mechanistic impact of psychological contract breaches on employee knowledge hiding through an organizational behavior lens.

These findings underscore the intrinsic correlation between psychological contract breaches and employee knowledge hiding, leading to the following hypothesis:

H1: Psychological contract breaches positively influence employee knowledge hiding.

Considering the potential influence of demographic variables such as gender, age, marital status, educational background, and length of service, we propose the following hypothesis:

H2: Demographic factors, including gender, age, marital status, educational background, and duration of service, influence employee knowledge hiding.



3 Methodology

3.1 Sample Selection and Data Gathering

This study employed a snowball sampling technique. The researcher chose easily accessible samples, predominantly staff from the target company. Potential participants were contacted and invited to participate in the study through various face-to-face interactions, social media platforms, telephone calls, and emails.

Upon obtaining consent from the participants, data collection commenced. This study gathered data via online electronic questionnaires administered through Credamo (<https://www.credamo.cn>). The survey link was distributed to the target respondents.

The study surveyed 557 China Construction Engineering Group employees, revealing a detailed demographic and professional profile. The sample comprised 347 males (62.3%) and 210 females (37.7%). The age distribution was as follows: 257 employees (46.1%) aged 22-35, 190 employees (34.1%) aged 36-45, and 110 employees (19.8%) over 45 years old. Marital status was predominantly married (320 employees, 57.4%), with 150 singles (26.9%) and 87 either divorced or widowed (15.6%). Regarding educational attainment, 390 employees (70.0%) held a bachelor's degree, 67 (12%) had postgraduate qualifications, and 100 (18%) had completed high school. Service duration was diverse, with 200 employees (35.9%) serving less than 3 years, 227 (40.8%) between 3 and 8 years, and 130 (23.3%) with over 9 years of service, reflecting a mix of both new and seasoned staff within the organization.

Table 1. Analysis of Demographic Factors

Gender	Frequency	Percent
Male	347	62.3
Female	210	37.7
Total	557	100.0
Marital status	Frequency	Percent
Married	320	57.4
Single	150	26.9
Divorced or widowed	87	15.6
Total	557	100.0
Age	Frequency	Percent
22-35 years old	257	46.1
36-45 years old	190	34.1
More than 45 years old	110	19.8
Total	557	100
Educational level	Frequency	Percent

High school	100	18.0
Bachelor's degree	390	70.1
Postgraduate qualifications	67	11.9
Total	557	100.0
Duration of service	Frequency	Percent
Less than 3 year	200	35.9
3-8 year	227	40.8
More than 9 years	130	23.3
Total	557	100

3.2 Measurement Scales

The measurement scales utilized in this study were adapted from well-established scales in prior literature. These scales, previously translated into Chinese and validated by Yu et al. (2022), underwent minor modifications to align with the specifics of the construction engineering sector. Detailed measurement items are outlined in Table 1. All assessments were conducted using a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree).

Specifically, psychological contract breach was assessed using a scale devised by Robinson and Morrison (2000) [7], consisting of 5 items. Knowledge hiding was evaluated using a 12-item scale developed by Connelly et al. (2012) [2].

4 Analysis Results

4.1 Validation and Reliability Testing

Further validity was tested through factor loadings (see Table 2). The standardized loadings for all items are mostly above the 0.5 standard and have all passed the T-test at a significant level of $P < 0.001$. The AVE values for all six variables are almost all greater than 0.500 (explaining more than 50% of the variance for the items). Therefore, the scale demonstrates good convergent validity.

Finally, by calculating composite reliability using factor loadings, all composite reliability values are greater than 0.7, indicating excellent reliability of the scale.

Table 2. Convergent Validity and Reliability Test

Variables	Item	Standardized factor loading	AVE	Composite reliability
Psychological contract breach	A1	0.763	0.547	0.857
	A2	0.688		
	A3	0.748		
	A4	0.819		
	A5	0.671		
Knowledge hiding	B1	0.792	0.529	0.930
	B2	0.704		
	B3	0.611		
	B4	0.742		
	B5	0.805		
	B6	0.627		
	B7	0.835		
	B8	0.799		
	B9	0.622		
	B10	0.801		
	B11	0.703		
	B12	0.636		

4.2 Results

4.2.1 The Influence of Demographic Factors on Employee Knowledge Hiding

4.2.1.1 Gender

Table 3 presents the results of an independent samples t-test analyzing the impact of gender on employee knowledge hiding. As indicated in the table, males (n=347) and females (n=210) exhibited different patterns of knowledge hiding. Specifically, the mean rating for males was 3.16 (SD = 0.67), whereas the mean for females was 3.60 (SD = 0.70). The t-value (-2.34) and the corresponding p-value (0.019) suggest a statistically significant difference in employee knowledge hiding between males and females.

Table 3. The Independent Samples t-test of the Gender Factor

	Gender	N	Mean	SD	t-value	df	sig
Employee knowledge hiding	male	347	3.16	0.67	-2.34	554.34	0.019
	female	210	3.60	0.70			

4.2.1.2 Age

Table 4 demonstrates the results of multiple comparisons using the least significant difference (LSD) test to analyze the effect of age on employee knowledge hiding. The table reveals that employees in the 36-45 years and over 45 years age groups tend to hide knowledge more frequently than those in the 22-35 years age group, with both statistically significant differences ($p < 0.001$). However, no significant difference was observed between the 36-45 years and over 45 age groups.

Table 4. Differences in Knowledge Hiding Among Different Ages

Age group	\bar{X}	Mean Difference (I-J)		
		Group J		
		22-35 years	36-45 years	More than 45 years old
Group I		3.45	4.00	3.90
22-35 years	3.45	-	0.555 (0.000)*	0.453 (0.000)*
36-45 years	4.00		-	-0.102 (0.291)*
More than 45 years old	3.90			

* The mean difference is significant at the 0.05 level

4.2.1.3 Educational Level

As shown in Table 5, the LSD test was used to assess the impact of educational level on knowledge hiding. The results indicate that employees with a high school education tend to hide knowledge more frequently than those with bachelor's degrees or postgraduate qualifications ($p < 0.001$ for both comparisons). Additionally, postgraduate-level employees hide knowledge more than those with a bachelor's degree ($p < 0.001$).

Table 5. Differences in Knowledge Hiding Among Education Level

Educational level group	\bar{X}	Mean Difference (I-J)		
		Group J		
		High school	Bachelor's degree	Postgraduate qualifications
Group I		4.12	3.11	3.59
High school	4.12	-	-1.010 (0.000)*	-0.530 (0.000)*
Bachelor's degree	3.11		-	-0.480 (0.000)*
Postgraduate qualifications	3.59			-

* The mean difference is significant at the 0.05 level

4.2.1.4 Marital Status

Table 6 presents the results of multiple comparisons using the LSD test to analyze the effect of marital status on employee knowledge hiding. The findings suggest that divorced or widowed employees tend to hide knowledge more frequently compared to married and single employees ($p < 0.001$ for both comparisons). Furthermore, married employees hide knowledge more than single employees ($p < 0.001$).

Table 6. Differences in Knowledge Hiding Among Different Marital Status

Marital status group	\bar{X}	Mean Difference (I-J)		
		Group J		
		Single	Married	Divorced or widowed
Group I		3.15	3.65	4.20
Single	3.15	-	0.499 (0.000)*	1.045 (0.000)
Married	3.65		-	0.546 (0.000)*
Divorced or widowed	4.20			-

* The mean difference is significant at the 0.05 level

4.2.1.5 Duration of Service

As shown in Table 7, the LSD test was employed to examine the influence of duration of service on knowledge hiding. The results indicate that employees with more than nine years of service tend to hide knowledge more frequently than those with less than three years and 4-9 years of service ($p < 0.001$ for both comparisons). Additionally, employees with 4-9 years of service hide knowledge more than those with less than three years of service ($p < 0.001$).

Table 7. Differences in Knowledge Hiding Among Different Duration of Service

Duration of service group	\bar{X}	Mean Difference (I-J)		
		Group J		
		Less than 3 year	4-9 year	More than 9 years
Group I		3.40	3.85	4.03
Less than 3 year	3.40	-	0.450 (0.000)*	0.632 (0.000)
4-9 years	3.85		-	0.181 (0.045)*
More than 9 years	4.03			-

* The mean difference is significant at the 0.05 level

4.2.2 The Impact of Psychological Contract Breach on Employee Knowledge Hiding

A simple linear regression analysis was conducted at a 95% confidence level to examine the relationship between psychological contract breach and employee knowledge hiding.

Table 8. The Linear Regression Results

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	0.540	0.146		3.699	.000
Psychological contract breach	0.769	0.051	0.742	15.077	.000

Table 8 presents the results of the regression analysis. The model explains 55% of the variance in employee knowledge hiding ($R^2 = 0.550$, adjusted $R^2 = 0.548$). The regression coefficient for psychological contract breach is statistically significant ($\beta = 0.742$, $p < 0.001$), indicating that a higher level of psychological contract breach is associated with an increased tendency to hide knowledge.

In summary, the results suggest that psychological contract breach has a significant positive impact on employee knowledge hiding, with the magnitude of the relationship being moderate to strong.

5 Conclusion

The present study provides valuable insights into the factors influencing employee knowledge hiding. Our findings indicate that demographic factors, such as gender, age, educational level, marital status, and duration of service, play a significant role in determining the extent to which employees hide knowledge. Specifically, females, older employees, those with lower educational levels, divorced or widowed individuals, and those with longer service durations tend to hide knowledge more frequently.

Moreover, the regression analysis reveals a strong and statistically significant relationship between psychological contract breaches and employee knowledge hiding. This suggests that employees are more likely to engage in knowledge-hiding behaviors when they perceive a violation of their psychological contract with the organization.

By comparing our findings with relevant literature, we find consistency in recognizing demographic factors as predictors of knowledge hiding [2]. However, our study provides a more nuanced understanding of these factors by identifying specific demographic groups more prone to hiding knowledge. Furthermore, our finding regarding the impact of psychological contract breach on knowledge hiding aligns with previous research highlighting the importance of psychological contracts in fostering employee attitudes and behaviors [8], [9].

The managerial implications of these findings are significant. First, managers should know the demographic differences in knowledge hiding and tailor their strategies accordingly. For instance, providing additional support and resources to employees more prone to hiding knowledge, such as those with lower educational levels or longer service durations, may help mitigate this behavior.

Secondly, managers must prioritize maintaining a strong psychological contract with their employees. This involves fostering a sense of trust, fairness, and reciprocity in the organization. Managers can reduce the likelihood of psychological contract breaches and employee knowledge hiding by creating an environment where employees feel valued and respected.

In conclusion, understanding the factors influencing employee knowledge hiding is crucial for organizations seeking to foster a culture of knowledge sharing and innovation. Managers can play a pivotal role in promoting a more open and collaborative work environment by addressing demographic differences and maintaining a strong psychological contract with employees.

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