The Impacts of Generative AI Application on Employees' Creativity: The Mediating Role of Knowledge Management Activities

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Abstract: As generative artificial intelligence applications, such as ChatGPT, DeepSeek are widely used, the impacts of generative artificial intelligence on employees' creativity remains unknown. This study aims to investigate the relationship between generative artificial intelligence applications and employees' creativity as well as the role of knowledge management activities - namely knowledge acquisition, knowledge sharing, and knowledge application - in this relationship. Based on 350 employees' valid responses in China, the structural equation modelling was used to test the hypotheses and we find that generative artificial intelligence applications positively impact employees' creativity. Additionally, knowledge management activities mediate the relationship between generative artificial intelligence applications and employees' creativity. This study provides insights into the linkage between generative artificial intelligence and employees' creativity. This study enriches current knowledge by demonstrating how knowledge management activities mediate the relationship between generative artificial intelligence applications and employees' creativity—an underexplored area in prior research. It also assists us in understanding how generative artificial intelligence applications influence employees' creativity, thereby informing strategic decisions for organizations to utilize artificial intelligence while developing a creative workforce.

Keywords: Generative artificial intelligence, Employees' creativity, Knowledge management activities

1. Introduction

It is a wide belief that knowledge management (KM) technologies applications benefit organizational performance (Liu, Kianto, et al., 2023), which means that employees can use KM technologies to enhance organizational performance. With the rise of digital technologies, particularly generative artificial intelligence (GenAI), there is growing interest in whether GenAI can enhance employees' creativity. Employees' creativity is a vital driver of organizational innovation and growth, involving the generation of original and applicable ideas that lead to new products, services, or methods (Luu, 2022). GenAI, which produces novel content by learning from existing data (Brynjolfsson et al., 2025), offers immediate, human-like responses, potentially transforming creative processes. Unlike traditional digital tools that automate routine tasks, GenAI is seen as a catalyst for creative ideation. However, its long-term effects on creativity remain unclear.

Creative process theory suggests that GenAI may enhance absorptive capacity - the ability to identify and apply external knowledge (Zahra & George, 2002) - thereby fostering divergent thinking and creativity. Conversely, over-reliance on GenAI could reduce cognitive deepening, the in-depth analysis of information (Krämer, 2013), which is linked to convergent thinking and may hinder creativity. Employees with strong interpersonal skills may mitigate this by engaging in reflective discussions, enriching GenAI outputs, and preserving deep thinking.

Existing literature presents conflicting views. While GenAI can improve knowledge management (KM) by automating acquisition, sharing, and application (Nonaka, 1994), its effectiveness depends on human oversight to ensure critical evaluation and avoid passive acceptance (Haefner et al., 2020). KM activities thus mediate GenAI's impact, balancing automation with human agency to maximize creativity (Nonaka and Takeuchi, 1997).

This study explores the dual effects of GenAI on creativity, emphasizing the mediating role of KM. It provides theoretical insights and practical guidance for organizations to leverage GenAI effectively while fostering innovation.

2. Literature Review

Recent research highlights GenAI's role in enhancing workplace creativity by providing original ideas, automating repetitive tasks, and enabling strategic thinking (Rahman and Watanobe, 2023). Tools like ChatGPT assist in brainstorming and information synthesis, acting as catalysts for creative output (Liu et al., 2023). However, the direct impact of GenAI on creativity remains debated, with concerns about overreliance potentially stifling human innovation (Bahrini et al., 2023). Studies suggest GenAI can reduce cognitive load and offer new perspectives, yet its effectiveness depends on mediating factors like KM activities - knowledge acquisition (KA), knowledge sharing (KS), and knowledge application (KAP) (Jarrahi et al., 2022).

GenAI enhances KA by providing instant access to information and personalized learning (Sallam, 2023), which fosters engagement and creativity (Martin and Bolliger, 2018). For KS, GenAI facilitates real-time collaboration and multilingual communication, though its success hinges on organizational trust in GenAI outputs (Al-Emran et al., 2023). In KAP, GenAI supports problem-solving through tailored recommendations, but algorithmic biases may limit its effectiveness (Zhai, 2024).

The expectation-confirmation model (ECM) explains how continuous GenAI usage strengthens KM activities, ultimately boosting creativity (Bhattacherjee, 2001). Hypotheses propose (See Figure 1):

H1-H3: GenAI continuous usage positively affects KA, KS, and KAP. (Jarrahi et al., 2022).

H4-H6: KA, KS, and KAP each enhance creativity by exposing employees to diverse ideas and enabling practical implementation (Bolisani and Bratianu, 2017).

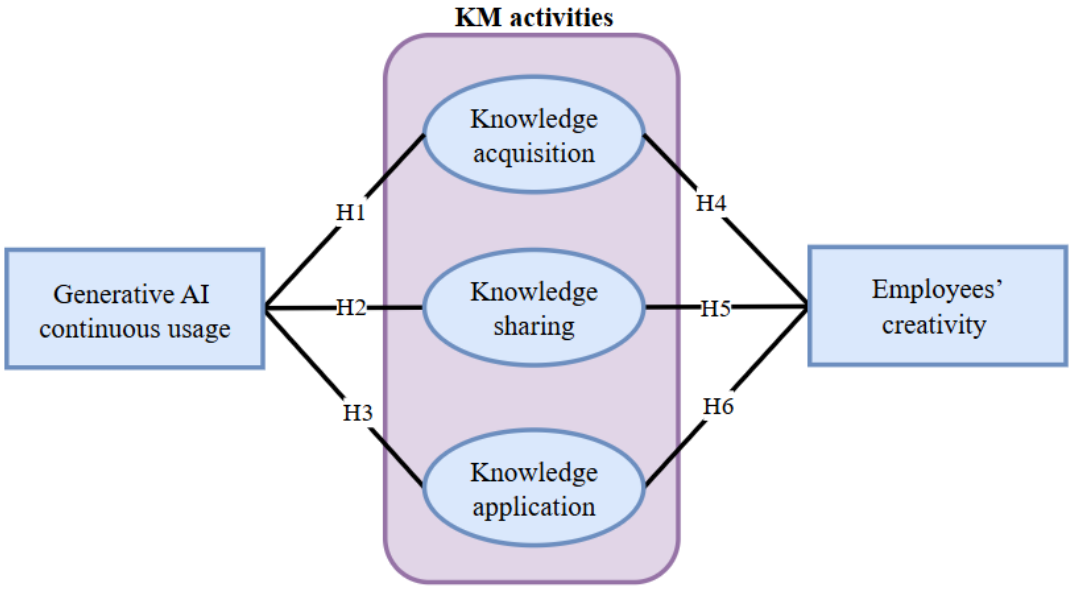

Figure 1: Theoretical model and hypotheses

3. Methods

3.1 Data Collection

A cross-sectional survey was conducted via the Credamo platform, collecting 397 responses. After removing 47 incomplete responses, the final sample included 350 employees with GenAI experience across various industries and company sizes. The sample distribution shows in Table 1:

Table 1: Demographic characteristics statistics

Question	Option	Frequency	Percentage
Number of employees	Less than 10	88	25.1
	10-100	93	26.6
	100-300	86	24.6
	More than 300	83	23.7
Whether it is a multinational company	Yes	180	51.4
	No	170	48.6

Data quality was ensured through attention-check questions and minimum response time requirements. Ethical considerations included informed consent and anonymity.

3.2 Measurement of Variable

The questionnaire measured five key constructs using validated multi-item scales adapted from prior research (see Table 2):

GCU: Measured intention to continuous using GenAI (3 items) (Wolf and Maier, 2024)

KA: Assessed AI' s role in facilitating knowledge gain (5 items) (Jarrahi et al., 2022)

KS: Evaluated AI-enabled knowledge exchange (5 items) (Sundaresan and Zhang, 2021)

KAP: Examined practical use of AI-derived knowledge (4 items) (Jarrahi et al., 2022)

Creativity: Captured innovative behaviors (3 items) (Sarooghi et al., 2015)

Table 2: Questionnaire scale item content

Scale	Item	Content	Source
GenAI continuous usage (GCU)	GCU1	You intend to continuously use GenAI in the future.	Adapted from (Ngo et al., 2024)
	GCU2	You intend to continuously use GenAI tools over other options.	
	GCU3	If you could, you would like to continuously use GenAI tools.	
Knowledge acquisition (KA)	KA1	GenAI application facilitates the process of KA from the working documents.	
	KA2	GenAI application facilitates the process of KA through discussions.	
	KA3	GenAI application allows you to generate a new knowledge based on your current knowledge.	
	KA4	GenAI application enables you to access to knowledge through various resources.	
	KA5	GenAI application helps you to gain the knowledge that suits your needs.	
Knowledge sharing (KS)	KS1	GenAI application permits you to share knowledge with your supervisors and colleagues.	
	KS2	GenAI application supports various types of discussions.	
	KS3	GenAI application facilitates the process of KS at any time anywhere settings.	
	KS4	GenAI application enables me to share different types of resources with your supervisors and colleagues.	
	KS5	GenAI application facilitates the collaborative learning process.	
Knowledge application (KAP)	KAP1	GenAI application provides you with immediate access to different types of knowledge.	
	KAP2	GenAI application allows you to apply your knowledge while working.	
	KAP3	GenAI application permits you to combine various types of knowledge.	
	KAP4	GenAI application can assist us in better handling of working documents within the company.	
Creativity	C1	You have the experience of trying or using new methods at work (methods not previously available in the company) to achieve work goals.	
	C2	You would actively express your ideas to your colleagues.	
	C3	You would be willing to take risks for innovative approaches at work.	

3.3 Data Analysis Method

The study employed a rigorous analytical approach to examine relationships between GenAI usage, KM activities (KA, KS, KAP), and employees' creativity. Descriptive statistics and normality tests (skewness < 3, kurtosis < 10) confirmed data quality. Reliability was strong (Cronbach's $\alpha > 0.7$).

EFA revealed a five-factor structure (71.34% variance explained, loadings > 0.7), and CFA validated the model with good fit indices. SEM with bootstrapping (5000 samples) confirmed KM activities as significant mediators between GenAI usage and creativity. This robust analysis supported all hypotheses.

4. Result

The study employed SEM for analysis. Before validation, descriptive statistics were conducted to assess sample characteristics and variable distributions using SPSS.

4.1 Descriptive Analysis

Descriptive statistics for all variables (N=350) confirmed normal distribution, with skewness (<3) and kurtosis (<10) within acceptable thresholds (Table 3). Mean scores ranged from 2.73 (KAP4) to 2.88 (C1), indicating consistent response patterns.

Table 3: Data quality test

	Minimum	Maximum	Mean	Standard Deviation	Skewness	Kurtosis
GCU1	1	4	2.7914	0.7374	-0.123	-0.339
GCU2	1	4	2.8086	0.73818	-0.196	-0.24
GCU3	1	4	2.8086	0.72644	-0.096	-0.365
KA1	1	5	2.8029	0.76341	0.039	-0.505
KA2	1	4	2.7543	0.76242	-0.099	-0.419
KA3	1	5	2.7886	0.71887	-0.033	-0.152
KA4	1	4	2.7971	0.71536	-0.058	-0.373
KA5	1	5	2.76	0.75671	-0.008	-0.318
KS1	1	4	2.76	0.6976	0.162	-0.607
KS2	1	4	2.7686	0.73834	0.01	-0.513
KS3	1	4	2.78	0.70215	-0.064	-0.298
KS4	1	4	2.7857	0.71602	0.012	-0.473
KS5	1	4	2.7771	0.70734	-0.093	-0.267
KAP1	1	5	2.7886	0.69866	0.062	-0.214
KAP2	1	4	2.7457	0.70684	-0.083	-0.253
KAP3	1	4	2.7543	0.71189	-0.083	-0.275
KAP4	1	5	2.7343	0.75756	0.008	-0.303
C1	1	4	2.8829	0.69422	0.006	-0.574
C2	1	5	2.8114	0.70111	-0.022	-0.119
C3	1	4	2.8086	0.69829	-0.075	-0.3

4.2 Reliability Analysis

All constructs showed high internal consistency (Cronbach's α > 0.7; corrected item-total correlations (CITC) > 0.5) (Table 2).

Table 4: Questionnaire reliability analysis table

Variable Name	Measurement Index	Corrected Item - Total Correlation	Cronbach's α after Deleting Item	Cronbach's α
GenAI continuous usage (GCU)	GCU1	0.682	0.813	0.845
	GCU2	0.719	0.778	
	GCU3	0.735	0.762	
Knowledge acquisition (KA)	KA1	0.732	0.872	0.894
	KA2	0.762	0.866	
	KA3	0.728	0.873	
	KA4	0.743	0.87	
	KA5	0.732	0.872	
Knowledge sharing (KS)	KS1	0.723	0.86	0.885
	KS2	0.725	0.86	
	KS3	0.712	0.863	

Variable Name	Measurement Index	Corrected Item - Total Correlation	Cronbach's α after Deleting Item	Cronbach's α
	KS4	0.711	0.863	
	KS5	0.741	0.856	
Knowledge application (KAP)	KAP1	0.672	0.821	0.853
	KAP2	0.661	0.826	
	KAP3	0.722	0.801	
	KAP4	0.72	0.801	
Creativity	C1	0.651	0.763	0.816
	C2	0.67	0.744	
	C3	0.68	0.733	
Total Scale		——	——	0.914

4.3 Validity Analysis

The exploratory factor analysis (EFA) revealed a 5-factor structure (71.34% variance explained; loadings > 0.7). The confirmatory factor analysis (CFA) confirmed excellent fit (χ^2/df = 1.03; the root mean square error of approximation (RMSEA) = 0.009; CFI = 0.999) and convergent validity (AVE > 0.5, CR > 0.7) (see Table 5).

Table 5:Convergent validity

Scale	Item	Standardized Factor Loading	AVE	CR	VIF
GenAI continuous usage (GCU)	GCU1	0.76	0.6474	0.8462	2.364
	GCU2	0.832			3.247
	GCU3	0.82			3.058
Knowledge acquisition (KA)	KA1	0.776	0.6275	0.8938	2.519
	KA2	0.819			3.04
	KA3	0.777			2.525
	KA4	0.8			2.786
	KA5	0.788			2.646
Knowledge sharing (KS)	KS1	0.772	0.6065	0.8851	2.475
	KS2	0.785			2.604
	KS3	0.764			2.404
	KS4	0.763			2.392
	KS5	0.809			2.89
Knowledge application (KAP)	KAP1	0.741	0.5928	0.8532	2.217
	KAP2	0.733			2.16
	KAP3	0.8			2.786
	KAP4	0.803			2.817
Creativity	C1	0.761	0.5962	0.8158	2.375
	C2	0.764			2.398
	C3	0.791			2.674

4.4 Hypotheses Testing

Following CFA, AMOS 26.0 was used to construct the SEM. Through statistical estimation, path coefficients and significance levels between latent variables were calculated to test the proposed hypotheses. The model's path diagram is showed in Figure 2.

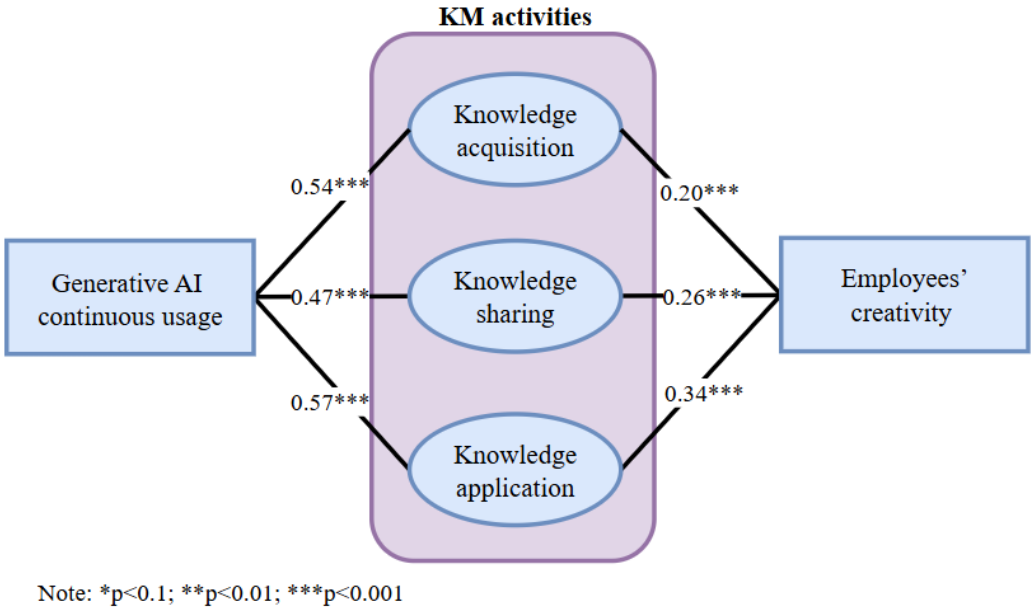

Figure 2: Test of structural model

The SEM results revealed significant direct effects of GenAI continuous usage on all three KM activities: KA (β = 0.541, p < 0.001), KS (β = 0.475, p < 0.001), and KAP (β = 0.565, p < 0.001). Furthermore, each KM activity positively influenced employees' creativity, with KAP showing the strongest effect (β = 0.344, p < 0.01), followed by KS (β = 0.256, p < 0.01) and KA (β = 0.202, p < 0.05). Crucially, bootstrap mediation analysis (5000 samples) confirmed that all three KM activities fully mediated the relationship between GCU and creativity, with KAP demonstrating the largest mediating effect (0.195, p < 0.001, 95% CI [0.115, 0.286]), followed by KS (0.122, p < 0.05, 95% CI [0.055, 0.197]) and KA (0.109, p < 0.05, 95% CI [0.036, 0.193]). These findings indicate that while GenAI usage significantly enhances all aspects of KM, its ultimate impact on creativity is most strongly realized through the practical application of knowledge in work tasks.

Table 6: Standardized coefficients and standard deviations of the path model

Path			Unstandardized Path Coefficient	Standardized Path Coefficient	S.E.	C.R.	P
GCU	→	KA	0.581	0.541	0.069	8.413	***
GCU	→	KS	0.463	0.475	0.062	7.428	***
GCU	→	KAP	0.524	0.565	0.063	8.38	***
KA	→	Creativity	0.174	0.202	0.052	3.327	***
KS	→	Creativity	0.243	0.256	0.058	4.2	***
KAP	→	Creativity	0.344	0.344	0.065	5.265	***

Note: Model fit indices: $\chi^2/df = 1.469$, RMSEA = 0.037, CFI = 0.979.

5. Discussion

This study provides important insights into how GenAI enhances employees' creativity through KM activities. The findings demonstrate that GenAI's continuous usage positively impacts creativity primarily by transforming three key KM activities: KA, KS, and KAP. As an intelligent knowledge infrastructure, GenAI fundamentally reshapes organizational workflows by efficiently synthesizing complex information (facilitating KA), enabling seamless collaboration (promoting KS), and providing context-aware support for practical implementation (enhancing KAP). Importantly, these KM activities mediate GenAI's effect on creativity through distinct mechanisms. While KA exposes employees to diverse information sources that stimulate divergent thinking, and KS integrates cross-functional perspectives to generate novel ideas, KAP emerges as the most influential factor by translating abstract knowledge into concrete innovations. This hierarchy of effects (KAP > KS > KA) aligns with absorptive capacity theory, emphasizing that applied knowledge generates the highest creative value. The study

confirms that KM activities fully mediate GenAI's impact on creativity, with particularly strong mediation through KAP, suggesting that GenAI's ultimate value lies in how organizations operationalize the knowledge it provides. These findings support Nonaka's knowledge creation theory (1994), highlighting that true innovation emerges from the dynamic interplay between knowledge exploration (through KA and KS) and knowledge exploitation (through KAP). For organizations, this means that while GenAI serves as a powerful enabler of knowledge activities, its creative potential is maximized when combined with structured approaches to KAP and knowledge implementation. The robust structural model validates these relationships, offering practical guidance for leveraging GenAI to foster workplace innovation while avoiding potential pitfalls of overreliance that might hinder deep cognitive engagement.

6. Conclusion

This study provides compelling evidence that GenAI significantly enhances employees' creativity through its transformative effects on KM activities. The findings demonstrate that GenAI's impact is fully mediated by three key KM activities - KA, KS, and KAP - with KAP emerging as the most influential pathway. This hierarchy of effects (KAP>KS>KA) offers important theoretical contributions by validating absorptive capacity theory in AI-augmented contexts and resolving previous contradictions in the literature. The research positions GenAI not merely as a tool but as a comprehensive knowledge infrastructure that reshapes organizational learning by simultaneously supporting knowledge exploration (through KA and KS) and exploitation (through KAP). A particularly valuable insight is the dual-path model showing that GenAI can either enable creativity through enhanced self-efficacy when properly implemented, or inhibit it through over-dependence when human oversight is lacking. For organizations, these findings suggest that simply adopting GenAI is insufficient - the greatest creative benefits come from building integrated human-AI systems that emphasize critical application of AI-generated knowledge. Practical recommendations include developing targeted training programs focused on KAP, creating collaborative platforms that combine GenAI capabilities with human expertise, and establishing organizational practices that balance GenAI assistance with independent thinking. While the study provides robust evidence for these relationships, future research should address limitations by employing longitudinal designs, examining additional KM activities beyond KA, KS, and, KAP, and developing more nuanced measures to distinguish human from GenAI contributions to creative outputs. Future studies may also examine the role of KM practices, such as KM leadership (Liu et al., 2018), KM strategies (Liu, Tsui, et al., 2023), and strategic KM (Liu et al., 2020), etc., in affecting the relationship between GenAI and employees' performance.

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Ethics declaration: This study followed the ethical norms of academic study. The data used in this study were collected within a legal and ethical framework.

AI declaration: The AI tool was used for assistance in proof reading in this paper.

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