

Influence of collaborative culture on innovation performance: Mediating role of knowledge management

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ABSTRACT: This study aims to investigate the effects of collaborative culture and knowledge management on innovation performance in the context of Vietnamese SMEs. Questionnaire survey and Structural Equation Modeling are applied to test the hypotheses in the proposal research model using a sample of 201 participants in 92 small and medium firms. The findings revealed that knowledge management significantly mediate the relationship between collaborative culture and innovation performance. In addition, the findings implied that collaborative culture is the main driving force of knowledge management and innovation. The study significantly fills the gaps in literature by emphasizing the need of buiding and developing collaborative culture to foster organizational knowledge resources and innovation performance of Vietnamese SMEs.

KEYWORDS: Collaborative culture; Knowledge management; Innovation performance.

I. INTRODUCTION

Literature revealed that increasing innovation performance is one of the most optimal solutions to help firms create momentum and competitive advantages and sustainable development (Le & Lei, 2019; Le & Do, 2024). Previous studies have shown that firms with high levels of innovation performance can effectively adapt to the uncertainties of both external and internal environments and bring firms success in the dynamic market in the long term (Le et al., 2020; Le, 2024; Le & Hung, 2025). However, one of the major obstacles is that firms have not identified important prerequisites and lack understanding of organizational culture practices to leverage core organizational resources and drive innovation performance (Yang et al., 2018; Lei et al., 2019; Gui et al., 2022; Nguyen et al., 2022; Le, 2023). To fill these theoretical gaps, the main objective of this study is to investigate the impact of collaborative culture on innovation performance of SMEs based on the mediating role of knowledge management capabilities. This study is expected to significantly extend the theory and provide valuable insights into innovation management for the following reasons.

First, collaborative culture and knowledge management are widely accepted as the most important factors of promoting innovation performance (Yang et al., 2018; Phong & Do, 2023; Le & Do, 2024; Le & Ha, 2024; Le & Vu, 2025; Le & Le, 2025; Tuyen & Phong, 2025). Previous indicated that collaborative culture plays an important role in fosterting knowlledge management (Yang et a., 2018; Nguyen et al., 2019; Tung et al., 2022; Le & Vu, 2025) which in turn enables firms to expand knowledge capital and exploit and convert all available resources into dynamic competences such as innovation. Accordingly, this study will attempt to enrich the understanding of the pathway that drives innovation performance by examining the influence of collaborative culture and knowledge management on innovation performance. Second, collaborative culture and knowledge management are generally evaluated as the key antecedents for firms to pursue innovation and key organizational outcomes (Le & Lei, 2018; Le & Ha, 2024; Anh et al., 2025; Tuyen & Phong, 2025; Ha et al., 2025). However lack of empirical work has investigated the mediating role of knowledge management in the relationship between collaborative culture and innovation performance (Le & Ha, 2024; Le & Vu, 2025). This limits scholars and practitioners' understanding of the mediating mechanisms by they can follow and develop favorable opportunities for improving innovation performance. Accordingly, to fill the research gap, the study

was conducted to answer three research questions:

1. Does collaborative culture have a positive impact on innovation performance?
2. Does knowledge management have a positive impact on innovation performance?
3. Does knowledge management play a mediating role in the relationship between collaborative culture and innovation performance?

To address the above research questions, the paper applied structural equations modeling (SEM) to evaluate the extent of the effects of collaborative culture and knowledge management on innovation performance using the data survey of 201 participants from 92 Vietnamese small and medium firms. The findings of this study are expected to bring specific initiatives for scholars and managers to nourish theoretical initiatives and practical implications to successfully foster innovation performance.

II. LITERATURE REVIEW AND HYPOTHESES

2.1. Influence of collaborative culture on innovation performance : Innovation performance is crucial to drive business growth, competitiveness, and long-term survival by improving products, services, and processes (Phong et al., 2018; Le & Le, 2021; Than et al., 2023; Son & Phong, 2023; Nguyen & Le, 2024; Than et al., 2024). Tajasom et al. (2015) indicated that innovation performance refers to the outcomes for firms in terms of how quickly they actually bring innovations to market, such as the speed at which they introduce new products, processes, or equipment. Innovation performance is not only the fundamental source for firms to gain competitive advantage but also the main premise for product and process innovations as well as firm performance (Than et al., 2019; Le & Tran, 2020; Khanh Ly & Le, 2021; Tung et al., 2022; Le & Son, 2024). Collaborative culture is identified as a decisive one in fostering innovation performance due to its positive role in creating an appropriate condition and favorable climate for firms to pursue innovation (Le & Ha, 2024; Le & Vu, 2025). Le & Vu (2025) stated that “Considered the core values of organizational culture, collaborative culture is characterized by long-term vision and advanced management of the change, teamwork, communication, risk assumption, respect and empowerment and promoting the knowledge of individuals. Essentially, collaborative culture is built on mutual respect, care, and support (Yang et al., 2018; Nguyen et al., 2019; Le & Vu, 2025). It is the source of collective strength because it can mobilize the participation of all members for a common goal (Lei et al., 2017; Nguyen et al., 2019; Le & Ha, 2024; Le & Vu, 2025). Literature revealed that core values of collaborative culture help firms to unleash valuable resources in the organization to improve innovation (Yang et al., 2018; Nguyen et al., 2019; Le, 2023; Le & Vu, 2025; Nhan et al., 2025). Therefore, this study will explore the impact of collaborative culture on innovation performance by posing the first hypothesis:

H1: Collaborative culture positively affects innovation performance.

2.2. Meditating role of knowledge management : Knowledge management is defined as a firm’s ability to acquire, share and apply knowledge resources to create core value and sustain competitive advantage (Sun et al., 2020; Phong, 2021; Nguyen et al., 2022; Le & Ha, 2025). Knowledge management contains three processes of knowledge acquisition, knowledge sharing and knowledge application. In which, knowledge acquisition refers to the firm's ability to seek and acquire new information and knowledge from existing knowledge (Nguyen et al., 2022; Le & Ha, 2024; Nguyen & Le, 2024); knowledge sharing includes the process of exchanging expertise and knowledge between individuals to complement and bring new and valuable knowledge and skills to each other (Le & Lei, 2018; Le & Lei, 2019; Ha et al., 2025; Le & Le, 2025; Le et al., 2025); and knowledge application refers to the realization and application of knowledge values into practice to create desired results (Lee et al., 2012; Le & Ha, 2024; Nguyen & Le, 2024).

Regarding the collaborative culture-knowledge management relationship, previous reported that collaborative and creative culture positively affect knowledge management because it creates appropriate cultural values and conditions to support the process of absorbing and distributing new knowledge in organizations (Chang & Lee, 2007; Le & Ha, 2024). An organization with a collaborative climate and environment will provide an atmosphere in which the development of skills and knowledge is seen not only as a core responsibility of an individual but is also encouraged by the engagement and motivation of organizational participants (Nugroho, 2018; Lei et al., 2019). Literature revealed that collaboration-focused cultural values create a positive context for social interactions, which in turn will determine and foster processes of acquiring, sharing and applying knowledge in a variety of situations (Yang et al., 2018; Shehzad et al., 2023; Le & Ha, 2024). Recent studies also hihghligned the positive effects of collaborative culture on knowledge management (Le et al., 2020; Shehzad et al., 2023; Le & Ha, 2024). From the above argument, to investige the influence of collaborative culture

knowledge management, this study proposed the following hypothesis:

H2. Collaborative culture significantly affects knowledge management

With regard to the relationship between knowledge management and innovation performance, previous study asserted that a firm’s ability to innovate and compete is highly dependent on their knowledge management and

resources (Le & Ha, 2024). Scholars reported that the involvement of organizational members in knowledge creation, collection, sharing, and application activities plays an important role in organizational innovation because it not only enhances the intellectual capital of an organization but also facilitates innovation by generating and implementing creative ideas (Du Plessis, 2007; Migdadi, 2022; Le & Ha, 2024). Du Plessis (2007) emphasized that knowledge management capability contributes to innovation in several ways, including facilitating collaboration, converting tacit knowledge into explicit knowledge, identifying knowledge gaps, and ensuring accessibility. According to Gope et al. (2018), innovation processes are successful when new or existing knowledge is created, acquired, shared, and applied. Shehzad et al. (2021) justified that, knowledge management facilitates the creation, acquisition, and application of knowledge to enhance firms' innovation capabilities. Recently, Abualoush (2025) indicated that firms with capability to manage their knowledge assets will perform significantly better than those unable to do so. Their findings shown innovation performance of an organization significant depends on its ability to create, integrate, recombine, and use knowledge. From these

Discussions, this study proposed that:

H3: Knowledge management is positively related to innovation performance.

The above arguments and discussions have indicated the rationale and reasoning for the mediating roles of knowledge management between collaborative culture and innovation performance by revealing that by building and fostering a collaborative culture, firms could bring an appropriate conditions and climate for stimulating knowledge management capability which, in turn, significantly enhances innovation performance. Recently, Le and Ha (2024) showed the evidence that collaborative culture promotes innovation capabilities and open innovation by enabling knowledge sharing and management practices. Following the above arguments, this study posed following hypothesis:

H4: Knowledge management positively mediates the relationship between collaborative culture and innovation performance.

III. DATA AND METHODOLOGY

3.1 Sample and data collection : The paper used the data collected from April to August 2025 through a survey of 201 participants of 92 Vietnamese small and medium firms. This study used measurement items adapted from existing scales in the literature to develop the initial list of items. Overall, this study issues 265 questionnaires and receives 213 ones in the formal data collection, among which 201 ones are valid, corresponding to a validity rate of 75.8%.

3.2 Measurements : All measures used in this study were tested and validated in previous research. We easured all items via five-point Likert-type scales ranging from "1" (strongly unwilling to) to "5" (strongly willing to); or from "1" (strongly disagree) to "5" (strongly agree). *Collaborative culture.* This study used eight items adapted from Le et al.'s (2020) research to measure of a culture whose members foresee changes, support dialogue and encourage respect, teamwork, risk and diversity. *Knowledge management.* This study used seven items originated and developed by Mao et al. (2016) to measure firm's knowledge management capability. *Innovation performance.* Eight items adapted from Kaya and Patton's (2011) study used to measure innovation performance. Finally, given the potential effect of firm type on innovation performance, this study examines the control roles of this variable to account for differences in innovation performance among firms.

IV. RESULTS AND ANALYSYS

4.1. Measurement model : The paper first examined the reliability of the measures for the constructs by examining the individual Cronbach's alpha coefficients ($C\alpha$), with the result's statistics ranging from 0.90 to 0.94, which were all higher than the recommended level of 0.7 (Nunnally & Bernstein, 1994). The paper then performed confirmatory factor analysis to assess the convergent and discriminant validity. The results show that all factor loadings are greater than 0.6; CR values exceed 0.7; and the AVE values are greater than 0.5 (see Table 1). Overall, all the measurements showed adequate convergent validity.

Table 1. Convergent validity and reliability

Construct	Mean	SD	AVE	CR	$C\alpha$
Collaborative culture (CC)	3.40	0.55	0.67	0.94	0.94
Knowledge management (KM)	3.41	0.46	0.56	0.90	0.90
Innovation performance (IP)	3.61	0.56	0.63	0.93	0.93

Notes: $C\alpha \geq 0.7$; composite reliability ≥ 0.7 ; average variances extracted ≥ 0.5 .

The authors continue using the measure of AVE as suggestion of Fornell and Larcker (1981) to examine the discriminant validity by comparing the AVE's square root and the correlations among the latent constructs (Table 2).

Table 2. Correlations and average variance extracted

Constructs	CC	KM	IP
Collaborative culture (CC)	0.82		
Knowledge management (KM)	0.56	0.75	
Innovation performance (IP)	0.66	0.74	0.79

Note: Diagonal elements in bold are the square root of the AVE

Table 2 indicated that AVE's square root of each factor (diagonal elements in bold ranging from 0.75-0.82) is higher than the correlations of the other factors in the research model (ranging from 0.56-0.74). In other words, the results strongly support the construct reliability, convergent and discriminant validity of the scales.

Table 3. Overall fit index of the CFA model

Fit index	Scores	Recommended threshold value
Absolute fit measures		
CMIN/df	1.366	$\leq 2^a$; $\leq 5^b$
GFI	0.885	$\geq 0.90^a$; $\geq 0.80^b$
RMSEA	0.043	$\leq 0.08^a$; $\leq 0.10^b$
Incremental fit measures		
NFI	0.920	$\geq 0.90^a$;
AGFI	0.857	$\geq 0.90^a$; $\geq 0.80^b$
CFI	0.977	$\geq 0.90^a$;

Note: a Acceptability: acceptable; b Acceptability: marginal

To assess the measurement model fit, this study evaluates the fit indicators of the CFA model. Table 3 indicated that all fit indices met satisfactory levels. Therefore, we can state that the model fits the data which can interpret the research hypotheses.

4.2. Structural model

4.2.1 Test direct effects

Findings in Table 4 and Figure 1 show that all the standardized path coefficients of direct effects are found to be significant and in line with the stated hypothesis. Specifically:

Hypothesis H1 relating to the relationship between collaborative culture and innovation performance, Table 4 indicated that collaborative culture is significantly and positively related to innovation performance ($\beta = 0.356$; $p < 0.001$). Thus, H1 is supported.

Regarding the relationship between collaborative culture and knowledge management, results in the Table 4 supports the positive effects of collaborative culture on knowledge management ($\beta = 0.558$; $p < 0.001$). Thus, Hypotheses H2 is supported.

Table 4. Results of the direct relationships and moderation

Relationship	Beta	Standard error	t-value	Results
Collaborative culture → Innovation performance	0.356***	0.074	5.297	Supported
Collaborative culture → Knowledge management	0.558***	0.061	7.153	Supported
Knowledge management → Innovation performance	0.546***	0.108	7.086	Supported
Firm type → Innovation performance	0.009	0.064	0.186	Not supported

Notes: *** $p < 0.001$; ** $p < 0.05$ level.

Relating to the relationship between knowledge management and innovation performance, the findings have confirmed the positive effects of knowledge management ($\beta = 0.546$; $p < 0.001$) on innovation performance. Thus, hypothesis H3 is also supported.

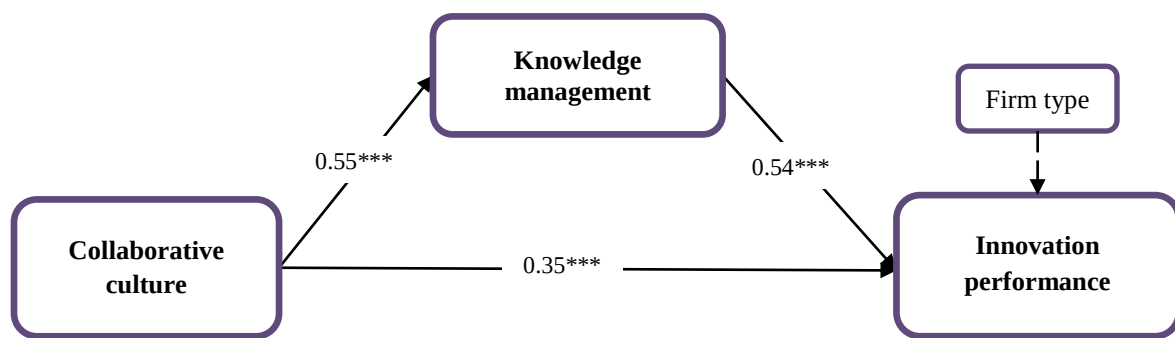


Figure 1. Path coefficients of the structural model

Notes: *** $p < 0.001$; ---- Non-significant paths.

This study also examines the control role of firm type to account for differences in innovation performance of firms. The results did not support the significant effect of this variable. So, firm type does not reflect the differences in innovation performance among firms.

Test mediating effects

To test and provide evidence of the mediating roles of knowledge management in the relationship between collaborative culture and innovation performance, this study applied the bootstrap confidence intervals method with 3,000 iterations as the suggestion of Preacher and Hayes (2008) to verify the magnitude and statistical significance of the indirect effects (see Table 5).

Table 5. Confidence intervals of the indirect effects

Path	Direct effects	Indirect effects	Total effects	Bias-corrected confidence intervals	
				Lower confidence level	Upper confidence level
CC→KM→IP	0.356***	0.304***	0.660***	0.222	0.394

Note: *** $p < 0.001$.

The results in Table 5 indicated that the indirect collaborative culture on innovation performance ($\beta = 0.304$; $p < 0.001$) is significant within the range of confidence intervals (from 0.222 to 0.394). In general, this finding provides the evidence to confirm the mediating role of knowledge management in the effects of collaborative culture on innovation performance.

V. DISCUSSIONS AND CONCLUSIONS

Collaborative culture and processes of knowledge management significantly (such as knowledge acquisition, knowledge sharing and knowledge application) are widely accepted as the determinants to improve key organizational outcomes like innovation capability, organizational and work performance, and competitive advantage by fostering open communication, trust, collaboration and promoting the value of organizational knowledge capital (Le & Lei, 2018; Phong, 2021; Le & Ha, 2024; Anh et al., 2025; Ha et al., 2025; Le Ba et al., 2025). By investigating the effects of collaborative culture on knowledge management and innovation performance, the assessment of the hypotheses developed in this paper significantly contributes to theoretical and practical initiatives that help firms make the right decisions to pursue and increase their innovation performance in following ways. First, in order to adapt to rapid changes of business environment, priors highlights the importance of building collaborative culture as a strategic solution for SMEs to adapt to the new context for improving innovation and performance. In consistent with previous academic works, the finding of this study indicated that fostering collaborative culture is important to create a good environment where diverse perspectives and skills can be shared, leading to better problem-solving and creative breakthroughs (Lei et al., 2017; Yang et al., 2018; Le & Ha, 2024). This is essential to create positive conditions that encourage trust and open communication thereby empowering employees to take risks, experiment, and contribute their ideas freely for improving innovation performance. Second, although collaborative culture is considered as the key and appropriate antecedents of creativity and innovation, most prior studies focus on examining the effects leadership styles on innovation performance (e.g., Lathong et al., 2021; Le & Le, 2023; Le & Do, 2023) or

investigating the influence of human resource management on innovation performance (Cao et al., 2022; Le, 2024), lack of study exploring the impact of collaborative culture on innovation performance (Borah et al., 2022; Fatima & Masood, 2024). Accordingly, this study has significantly contributed to advancing the theory of innovation by investigating the mediating role of knowledge management in linking collaborative culture and innovation performance. The empirical findings have verified the mediating role of knowledge management in the effects of collaborative culture on innovation performance and revealed that collaborative culture practices will significantly affect innovation performance directly or indirectly through stimulating firm's knowledge management capability. Generally, the paper reveals the important roles of collaborative culture and knowledge management as main motivation to successfully improve innovation performance.

Third, this study has value to directors/managers in Vietnamese SMEs as a valuable reference and effective pathway to build collaborative culture for pursuing and improving innovation competence. Directors and managers may apply the present empirical findings as a benchmark to assess their own drawbacks and strengths to stimulate their capability of knowledge management, which in turn, enhance innovation performance. In other words, managers and practitioners are encouraged to develop collaborative culture aimed at stimulating knowledge management capability for pursuing innovation performance. Beside significant contributions on both theoretical and practical aspects, this study also contains the certain limitations that indicate directions for future research. First, the paper used cross-sectional design to investigate the correlation among the constructs. This may appear ability that causal relationships may change in the long term. This may not rule out the possibility that the cause-and-effect relationship may change over time. A longitudinal study would overcome this limitation and consolidate the results. Second, this study is carried out in a context of Vietnam, which may have potential implications for research results compared to other contexts. Therefore, future studies should persist in testing the effect of collaborative culture on knowledge management and innovation performance in the new context such as developed countries to clarify and strengthen the research results.

Acknowledgement : This research is funded by Hanoi University of Industry, Hanoi, Vietnam under code: 39-2024-RD/HĐ-ĐHCN.

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