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The Nexus Among Transformational Leadership and Firm Performance: Testing the Mediating Role of Knowledge Sharing

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ABSTRACT

The purpose of this paper is to clarify the mediating roles of active and passive knowledge sharing (KS) in the relationship between transformational leadership (TL) and specific aspects of firm performance namely operational and financial performance. The paper used Analysis of Moment Structures (AMOS) and Structural Equation Modelling (SEM) to investigate the influence of TL and knowledge sharing (KS) on aspects of firm performance using data from a survey of 235 manufacturers and suppliers in Vietnam. The empirical findings show the significant and positive influence of TL, and KS activities in supply chain networks on firm performance. It highlighted the key role of active and passive KS in linking the effect of TL on firm's operational and financial performance. Especially, this study reveals that TL has a greater effect on financial performance compared to its effects on operational performance. Especially, active KS has a greater effect on both firm's operational and financial performance compared to the influence of passive KS. The paper has extended the theory of leadership, knowledge management and organizational performance by clarifying the critical roles of TL practice and processes of KS in the supply chain in improving firm's operational and financial performance.

INTRODUCTION

Under the increasing pressure in developing new products and services quickly and efficiently, firms have exerted to foster greater collaborative activities in supply chain networks to maintain and improve their long-term performance (Nguyen *et al.*, 2019; Wang and Hu, 2020). Knowledge resources have been recognized as important strategic assets and have made remarkable contributions to firm performance and competitive advantage (Obeidat *et al.*, 2016; Son *et al.*, 2020; Nguyen *et al.*, 2022). However, the major challenge for today's organizations in building their knowledge capital is to be aware of how they can better facilitate knowledge sharing (KS) activities among members in supply chain networks to contribute to the firm performance and success (Rajabion *et al.*, 2019; Jen *et al.*, 2020). Among the typical leadership styles, transformational leadership (TL) is regarded as one of the most effective leadership styles with significant influences on KS activities and key organizational outcomes (Le and Lei, 2019; Phong and Son, 2020; Gui *et al.*, 2022). Transformational leaders inspire and motivate KS behaviors among employees to obtain the greatest degree of achievement for organizational performance and managerial performance (Ali *et al.*, 2019; Ha *et al.*, 2019; Son *et al.*, 2020). To enrich the mechanisms and deepen our understanding of the nature of the relationship between KS and firm performance, this study introduces active and passive KS activities in supply chain as a new approach in explaining how TL and KS activities are transpired into firm performance. It is expected to bring deeper understanding of the potent pathway and mechanism for fostering firm's performance by following motives.

First, previous studies have found KS activities enable firms to successfully apply or replicate knowledge dispersed by interactive activities among individual firms and their supply chain networks (Mishra and Shah, 2009; Wang and Hu, 2020). These KS activities can not only enhance knowledge capital among different firms but also significantly contribute to increasing volume, variety, and engagement in improving innovation performance (Wang and Hu, 2020; Le and Do, 2023; Le and Le, 2023). Even though, it is not easy for employees to share knowledge with others, especially in sharing knowledge with individuals in the other organization due to concerns of information leakage and lacks of trust (Wang and Noe, 2010; Nguyen *et al.*, 2019; Le and Nguyen, 2023). Among the premise factors of KS, TL is acknowledged as a key factor having decisive influence on KS activities of individuals within an organization (Hui *et al.*, 2018; Lei *et al.*, 2019; Yin *et al.*, 2019; Sheehan *et al.*, 2020) or among members in supply chain (Birasnav, 2013; Ojha *et al.*, 2018). Given the important role of TL on KS activities for improving firm performance, the first goal of this study is to clarify TL's effect on KS activities in supply chain by posing the first research question:

RQ1. Does TL positively affect KS activities in supply chain networks?

Second, KS is an important basis for improving firm performance because it provides a complete set of essential skills and knowledge for individuals to work or achieve goals more efficiently (Le and Lei, 2019; Singh *et al.*, 2019). KS is often perceived a basic survival and least expensive strategy and a key source for firms to increase innovation competence (Le and Lei, 2019; Le, 2021; Le

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and Le, 2021). Scholar pointed out that successful KS processes enable firms to expand knowledge capital and exploit and convert all available resources into dynamic competences for improving firm performance (Le, 2020; Son *et al.*, 2020; Le, 2021). Moreover, in case of supply chain, firms strive to achieve greater collaboration and effectiveness by leveraging their resources and knowledge through the process of knowledge creating and sharing among members in supply chain such as suppliers and customers (Cao and Zhang, 2011; Jen *et al.*, 2020; Wang and Hu, 2020). Firms in supply chain tend to look outside their organizations for developing collaboration opportunities with partners to successfully innovate and to ensure that supply chain members are efficient and responsive to dynamic market needs (Cao and Zhang, 2011; Nguyen *et al.*, 2018). However, the relationship between KS in supply chain and firm performance seem to be ignored in the current literature (Jen *et al.*, 2020; Li, 2020). To fill the research gaps and investigate potential effects of KS activities in supply chain on firm performance, the paper proposes the second research question as follows.

RQ2. Do KS activities in supply chain significantly affect firm performance?

Third, leadership and KS are widely considered the strategic resources for firms to foster organizational performance (Hassan and Hatmaker, 2015; Son *et al.*, 2020; Le and Le, 2021). Son *et al.* (2020) highlighted the decisive role of leadership in creating a positive influence on firm performance by establishing a KS

climate among employees. In particular note, KS climate is found as a significant mediator between leadership/TL and key outcomes of an organization such as innovation performance (Zheng *et al.*, 2017; Le and Do, 2023), and organizational performance (Son *et al.*, 2020; Le and Le, 2021).

However, there have been few studies investigating the mediating role of KS in supply chain especially in term of active and passive KS between TL and key organizational outcomes such as specific forms of firm performance (Son *et al.*, 2020; Le, 2021). This limits firm's understanding of the different ways according to which leaders can apply and follow to achieve specific goals of performance. To address this theoretical gap, third research question is proposed:

RQ3. Do active and passive KS in supply chain mediate the effects of TL on firm's operational and financial performance?

To address the above research questions, this study will develop a research model to investigate TL's impacts on firm's operational performance and financial performance through the mediating role of active and passive KS activities in supply chain networks (see Figure 1).

This study will apply the structural equations modeling to examine the relationship among the latent factors in the proposal research model through a survey data of 235 firms in Vietnam. The authors expect that, this study will provide valuable theoretical initiatives and specific practical guidance for directors/managers to improve the operational and financial performance in their firms.

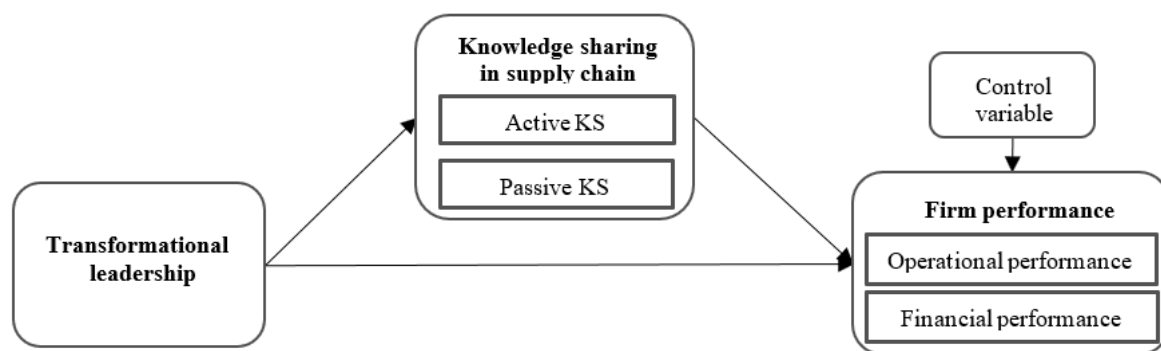


Figure 1: Proposal research model

LITERATURE REVIEW

Influence of TL on Firm Performance

Transformational leadership is well known as one of the higher-ranking leadership styles (Lei *et al.*, 2017; Le *et al.*, 2018; Cao and Le, 2022). It describes the leaders who have capabilities of inspiring the employees to get the highest degrees of achievement and outcomes (Le, 2020; Phong and Son, 2020; Lathong *et al.*, 2021). Literature defined TL with four characteristics namely idealized influence, intellectual stimulation, inspirational motivation, and individualized consideration (Bass, 1985; Bass, 1990; Le and Lei, 2019; Le *et al.*, 2021; Le *et al.*, 2022). Idealized influence reflects abilities of leaders to provide a vision and perception of mission, instilling pride, gaining

respect and trust; intellectual stimulation involves leaders' ability to promote intelligence, rationality and attentive problem-solving; inspirational motivation reflects leaders' interest in communicating high expectations, using symbols to focus efforts, and expressing important purposes in simple ways; and individualized consideration refers leaders' interest in coaching and advising, personal attention, and treating each employee individually.

Firm performance is understood in various meanings for different people since it contained many facets. According to Madella *et al.* (2005), firm performance reflects firm's capability in obtaining and handling properly organizational resources relating to human, finance and material to attain the organization's targets.

Lee (2008) viewed firm performance as the results/output of an organization that measured against its intended objectives. Richard *et al.* (2009) defined firm performance comprising three aspects of organization's outcomes namely financial performance, product market performance, and shareholder return. Tsai and Yen (2008) focus on financial and market performance to evaluate performance of an organization. The current study uses operational and financial performance to evaluate firm performance as they are the crucial constituents of organizational performance had critical impacts on organizational survival and competitiveness (Wang *et al.*, 2016; Son *et al.*, 2020). According to Wang *et al.* (2016), operational performance reflects the fruit in managing cost, developing quality, achieving of customer satisfaction, responsiveness and productivity; while financial performance manifests the success of an organization in exerting its assets to bring about revenues that represented in its financial statements.

Current literature indicated that among different leadership style, TL plays a crucial role and servers as antecedents of key outcomes and firm performance (Arif and Akram, 2018; Cao and Le, 2022). Prior studies noted that practicing TL is one of the best solutions to increase the firm performance at both individual and group levels (Bass 1985; Van *et al.*, 2018; Sengphet *et al.*, 2019). Many prior researches had explained for the positive relationship between TL and firm performance (e.g., Judge and Piccolo, 2004; Arif and Akram, 2018; Son *et al.*, 2020). Prior research showed that firm performance is fostered by transformational leaders' capabilities of motivating and inspiring individuals to work and attain outcomes beyond expectations (Bass, 1985). They build systems with provision direction, vitality and enthusiasm to the organization, producing good chance for employees learning and innovating for boosting firm performance (Tushman and Nadler, 1986). Judge and Piccolo (2004) denoted that transformational leaders have positive relationship with job performance and organizational performance, they inspired followers toward the fulfillment of the desired result, with or without the rewards in line with the fruit. Wang *et al.*'s (2011) meta-analytic study pointed out that TL is strongly and positively associated with firm performance. According to Birasnav (2013), transformational leaders significantly predict effectiveness of supply chain management, and as a result, firms' overall performance has been improved. In the same vein, Son *et al.* (2020) stated that TL influences firm performance by promoting gradual contributions of followers through the striving efforts further than the call of obligation. Their empirical findings show TL's significant effects on operational and financial performance.

Based on above arguments, the following hypotheses are proposed:

H1a: TL positively affect firm's operational performance.

H1b: TL positively affect firm's financial performance.

Mediating effect of KS in supply chain between TL and firm performance

Knowledge is widely accepted as a crucial resource for firms to develop competitive advantages before the changes of environment (Lei *et al.*, 2019; Lei *et al.*, 2021; Cao *et al.*, 2022; Ha *et al.*, 2023). As a key component of knowledge management process, KS helps to maximize a firm's ability to manage knowledge and allows employees in organization to work or achieve goals more efficiently (Le and Lei, 2017; Yang *et al.*, 2018; Le and Le, 2023). KS is defined as the process of interchanging data, information, know-how, and expertise among individuals to accomplish both personal and organizational goals (Wang *et al.*, 2016; Yang *et al.*, 2018; Le and Lei, 2019). This study uses the term of KS to describe the exchange of knowledge between organizations rather than individuals. According to this approach, KS in supply chain refers to processes of exchanging data, information, know-how, experience and new ideas among supply chain members to achieve the common goals. This study separates KS in supply chain into two sub-processes called active and passive KS. Active KS reflects the voluntary and proactive degree of firms in communicating knowledge and information to supply chain members, whereas passive KS reflects the readiness level of firms to provide knowledge and information to those in supply chain in need or request it. We use this classification because KS in supply chain is a two-way process. In addition, active and passive KS commonly represent two divergent behavior tendencies of an organization toward KS activities.

Literature stresses the important and significant impact of leadership on KS processes (Lei *et al.*, 2019; Nguyen *et al.*, 2022; Ha and Le, 2023; Phong and Thanh, 2023). Specifically, according to Manafi and Subramaniam (2015), transformational leaders can encourage KS processes by transforming employees' positive attitudes and behaviors toward KS in organization. Choi *et al.* (2016) and Xiao *et al.* (2017) indicated that transformational leaders can create an appropriate climate for cultivating employees' knowledge and skills, and encouraging them to share a lot of knowledge and expertise with the others like colleagues and partners in supply chain for common goals. Lei *et al.* (2019) showed that under leadership by TL, employees are more willing to share their personal knowledge and expertise with others due to collaborative motivation for a common goal and the belief that leaders and colleagues are worth trusting. This is very important to develop a culture of sharing knowledge among individuals of organizations in supply chains. In particular note, scholars indicated significant influences of TL on competence-based trust of those they interact with (Le and Lei, 2018; Lei *et al.*, 2019; Ha and Le, 2021). As a result, competence-based trust developed by TL will supports KS process among members in supply chain by reducing information loss from sender to receiver (Ajmal and Kristianto, 2012; Lei *et al.*, 2019). Recent studies also demonstrated that TL is one of the most appropriate leadership styles for creating an atmosphere of trust

and developing the knowledge-centered culture which in turn significantly foster the willingness of individuals for sharing knowledge within an organization (Lei *et al.*, 2019; Sheehan *et al.*, 2020; Yin *et al.*, 2019; Le *et al.*, 2022) or sharing knowledge among supply chain members (Nguyen *et al.*, 2019; Wang and Hu, 2020). These arguments support the positive influence of TL on KS activities in supply chain, so the following hypotheses are posed:

H2a.b: TL positively influences active and passive KS in supply chain members.

With respect to the KS-firm performance relationship, despite lack of study has evaluated the direct effect of KS activities in supply chain on firm performance (Samuel *et al.*, 2011; Sangari *et al.*, 2015), prior studies have also shown the evidence supporting this relationship (Hult *et al.*, 2004; Sangari *et al.*, 2015; Wang and Hu, 2020). Shaw *et al.* (2003) have realized that firm performance can be improved by coupling knowledge management initiatives with in supply chain networks and argued that firms must possess and share knowledge about different facets of the supply chain to achieve success. In the similar vain, Hult *et al.* (2004) indicated that the knowledge acquisition activities result in reduced cycle time as a performance outcome at the supply chain level and the knowledge development process is an important antecedent to supply chain efficiency. Jansen *et al.* (2006) argue that the exchange of knowledge and information helps firms avoid being constrained inside their knowledge boundaries, thereby creating opportunities for firms to renew knowledge and improve firm performance. According to Sangari *et al.* (2015), realized that KS activities in process of knowledge management will enhance supply chain's knowledge flows and ultimately will enhance supply chain performance. Recently, Wang and Hu (2020) pointed out that KS process among members in supply chain facilitates the creation of new ideas and processes for improving the innovation performance. Their empirical findings showed that KS process in supply chain networks is positively associated with innovation performance. Based on the above discussion this study argued, the vital knowledge and information gained from the KS process in supply chain will help firms use their material, financial and other resources more effectively for improving operational and financial performance. So, following hypotheses are posed:

H3a.b: Active KS in supply chain significantly affects firm's operational and financial performance.

H3c.d: Passive KS in supply chain significantly affects firm's operational and financial performance.

Above argument supports the mediating roles of KS in supply chain by indicating that TL significantly influences KS in supply chain, which in turn positively affects firm performance. In addition, the current literature has also verified the mediating role of KS in the relationship between leadership and key organizational outcomes. For example, Uddin *et al.* (2017) justified that effective leadership plays a significant role in promoting a supportive

climate for exposing knowledge into organization innovation. These scholars found that TL significantly predicts firm's innovation capability and performance via fostering the KS activities of individuals. Zheng *et al.* (2017) argued that KS activities contribute significantly to innovation efforts and help ameliorate organizational performance at the firm level. Their findings revealed that KS positively mediates the relationship between TL and project-based innovation performance. Recently, Ojha *et al.* (2018) pointed out that orientation of learning and KS in supply chain significantly mediates the relationship between TL and supply chain ambidexterity. Although the mediating role of KS in supply chain between leadership and firm performance is supported, empirical research on relationship between KS among supply chain members and firm performance is still lacking. We, therefore, propose the hypotheses:

H4a: KS in supply chain mediate TL effects on firm's operational performance.

H4b: KS in supply chain mediate TL effects on firm's financial performance.

METHODOLOGY

Sample and Data Collection

The paper used the data collected from August to November 2020 through a survey with the final sample size of 235 manufacturers and suppliers which are randomly selected from the initial list of more than 15,000 Vietnamese enterprises published in 2018 by Vietnam Yellow Pages. We then communicated with representatives of 800 firms by phone, e-mail and/or made personal visits in some cases to explain the purpose of our research and ask for their assistance and cooperation in gathering the data, among which 500 ones agreed to assist us in data collection. The respondents in this survey need to be managers or leaders of firms with supply chain collaboration experience. This study used measurement items that are utilized and developed from prior works. We released 500 question sheets and received back 356 ones, of which 121 responses were excluded from the sample because of missing data, and 235 are usable with the response rate of 47.0%. We used the Armstrong and Overton's (1977) method to assess potential non-response bias. Chi-square and independent sample t-tests were used to compare the first 80 respondents and the last 80 ones via demographic variables namely age and gender. The results demonstrated there were no significant differences between the two groups of responses ($p > 0.05$).

Variable Measurement

The paper used measures developed by previous studies to ensure the validity and reliability of the measurements. All items are measured via five-point Likert-type scales ranging from "1" (strongly disagree) to "5" (strongly agree).

Transformational Leadership

This study used 8 items From Le's (2021) study to

assess the perceptions of employees about the TL style of their direct supervisors. These items were also adopted in previous studies of TL in Chinese context, one of the emerging countries (e.g., Le and Lei, 2019). A sample item is “my supervisor encourages me to think about problems from a new perspective”. Knowledge sharing in supply chain. We used three items adapted from the study of Le (2021) to measure active and passive KS in supply chain networks. This study then splits KS behaviors into two versions: “active KS” and “passive KS”. Active KS was measured by three items reflecting the proactive level of supply chain members in sharing new knowledge and information that they have. A sample item is “we proactively share our new work reports and technical documents we have to other supply chain members”. Passive was measured by three items reflecting the readiness level of supply chain members to provide knowledge and information to those request it. A sample item is “we are willing to share new work reports and technical documents to other supply chain members when they ask for it”. Firm performance. This study used 11 items obtained from the Son *et al.* (2020) study to evaluate firm’s operational and financial performance, where operational performance is assessed by five items that describe the firms’ successful degree in obtaining the quality development, customer satisfaction, responsiveness, productivity, and cost management. A sample item is “customer satisfaction of our firm is better than that of key competitors”. Financial performance is assessed by six items to describe the firm’s capabilities in using its resources to result in revenues that exhibited in the financial statements of an organization. A sample item is “return on investment of our company is better than that of key competitors”. Control variable. Firm

size serves as the control factor to explain for variations among organization and its potential effect on firm performance.

Data Analysis Methods

This study utilized Structural Equation Modeling (SEM) to test proposal hypotheses in the research model by two reasons. First, SEM method has been widely used due to its ability to demonstrate versatile regression correlations on a single model and test (Kline, 2015). Second, it is also proper and practical to identify interaction and mediation effects (Lei *et al.*, 2019). As a result, this study has used SEM through AMOS software for the test of the structural model and hypotheses based on the data gathered from the 235 manufacturers and suppliers. Data analysis was conducted using SPSS and AMOS version 22.

RESULTS

Measurement model

We first tested the reliability of the measures for the constructs by examining the private Cronbach’s alpha coefficients ($C\alpha$). The results of statistics are range of 0.93 - 0.97, which are all over than Nunnally and Bernstein’s (1994) recommended level of 0.7. We continuously analyze confirmatory factor (CFA) to evaluate the universal measurement model to check the discriminant and convergent validity.

Convergent Validity

As shown in Table 1, all factor loadings are range of 0.698 - 0.997; CR values are range of 0.93 - 0.97; and the AVE values are range of 0.73 - 0.94. According to Hair *et al.*’s (2006) criteria, these measurements meet the criteria on convergent validity.

Table 1: Standardize loading and reliabilities for measurement model

Construct	Item	Standardize loading	t-value	AVE	CR	$C\alpha$
Transformational leadership (TL)	8	-	-	0.76	0.96	0.96
	TL1	0.839***	17.9			
	TL2	0.891***	20.5			
	TL3	0.875***	25.8			
	TL4	0.857***	18.7			
	TL5	0.870***	19.4			
	TL6	0.895***	20.7			
	TL7	0.888***	20.3			
Active knowledge sharing (AKS)	3	-	-	0.85	0.94	0.94
	AKS1	0.972***	32.5			
	AKS2	0.940***	31.1			
	AKS3	0.860***	22.6			
Passive knowledge sharing (PKS)	3	-	-	0.94	0.97	0.97
	PKS1	0.997***	68.9			
	PKS2	0.982***	68.7			
	PKS3	0.929***	34.5			
Operational performance (OP)	5	-	-	0.74	0.93	0.93

	OP1	0.858***	19.9			
	OP2	0.698***	13.3			
	OP3	0.918***	23.7			
	OP4	0.893***	22.0			
	OP5	0.920***	23.9			
Financial performance (FP)	6	-	-	0.73	0.94	0.94
	FP1	0.805***	17.7			
	FP2	0.918***	24.9			
	FP3	0.758***	15.6			
	FP4	0.930***	25.5			
	FP5	0.922***	25.3			
	FP6	0.808***	17.8			

Notes: $Ca \geq 0.7$; $CR \geq 0.7$; $AVE \geq 0.5$; *** Significant at $p < 0.001$.

Discriminant Validity

Discriminant validity refers to the level of the factors that assumed to assess a certain construct do not forecast conceptually independent criteria (Kline, 2015). This

paper applies the method of Fornell and Larcker (1981) relating to compare the AVE's square root with the correlations among the dormant constructs (see Table 2). Table 2 indicated that the AVE's square root of each

Table 2: AVE's square root and descriptive statistics from constructs

Constructs	Mean	SD	TL	AKS	PKS	OP	FP
TL	3.23	0.59	0.87				
AKS	3.67	0.62	0.54***	0.92			
PKS	3.71	0.70	0.32***	0.38***	0.96		
OP	3.57	0.57	0.51***	0.59***	0.42***	0.86	
FP	3.71	0.61	0.54***	0.62***	0.43***	0.63***	0.85

Note: Diagonal components (in bold) are the AVE's square root; off-diagonal components are the constructs' correlation coefficients.

construct is higher than the correlation coefficients among variables of research model. Overall, the above results show strong evidence for both the reliability of the constructs, and the discriminant validity of scales. Regarding the satisfactory of measurement model, we estimated the fit of measurement model based on

examining: (1) absolute fit values (such as GFI; CMIN/df, and RMSEA); and (2) incremental fit values (such as NFI, AGFI, and CFI). Table 3 shows that all fit indices of the measurement model were satisfactory; thus, the model fit the data.

Table 3: The fit indices of the CFA model

Fit index	Scores	Proposal threshold values
Absolute fit measures		
CMIN/df (Chi-square/df)	1.629	$\leq 2^a$; $\leq 5^b$
GFI (goodness of fit index)	0.877	$\geq 0.90^a$; $\geq 0.80^b$
RMSEA (root mean square error of approximation)	0.052	$\leq 0.08^a$; $\leq 0.10^b$
Incremental fit measures		
NFI (incremental fit measures including normed fit index)	0.941	$\geq 0.90^a$;
AGFI (adjusted goodness of fit index)	0.847	$\geq 0.90^a$; $\geq 0.80^b$
CFI (comparative fit index)	0.976	$\geq 0.90^a$;

Notes: a: good fit; b: acceptable fit (Schermelleh-Engel et al., 2003; Le and Lei, 2019).

Structural Model

This study used structural equation model (SEM) with maximum likelihood estimation procedures to test the proposal hypotheses. The fit indices of the structural model are satisfactory ($\chi^2=463.05$; $df = 264$; $RMSEA = 0.057$; $GFI = 0.867$; $CFI = 0.972$; $TLI = 0.968$),

suggesting that the relationships among latent constructs fit the data.

Direct Effect Analysis

The results in Figure 2 and Table 4 demonstrate that effects of independent variables on dependent ones

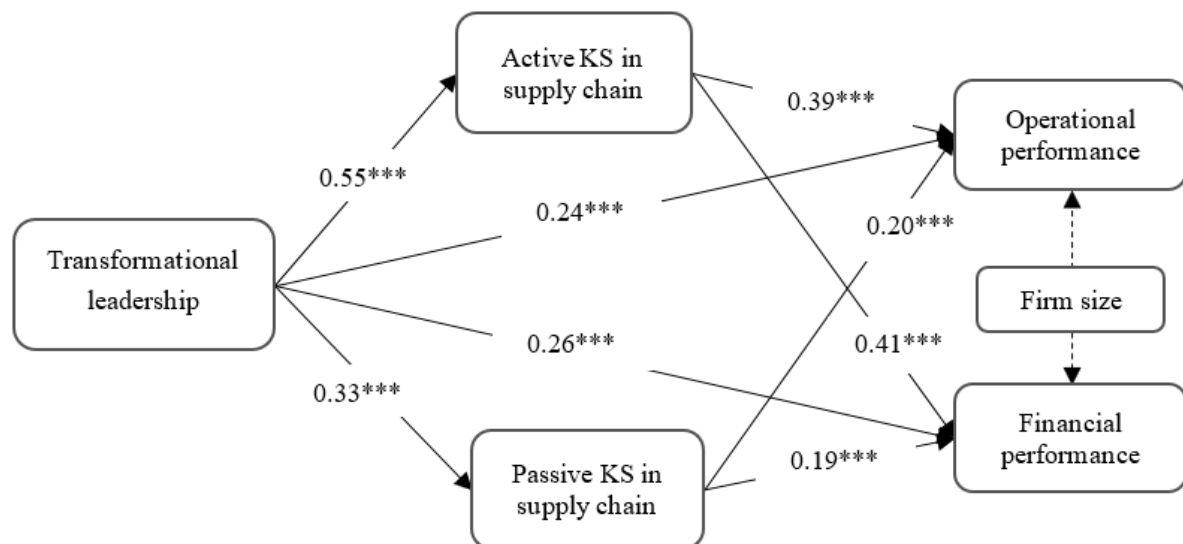


Figure 2: Path coefficients of the structural model

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

ensure statistically significant. Hypotheses H1-H3 are, therefore, supported. Specifically:

Hypothesis H1a.b relating to the effect of TL on aspects of firm performance. The results in Figure 2 and Table

4 revealed that TL's influences on financial performance ($\beta = 0.267$; $p < 0.001$) is larger than its influence on operational performance ($\beta = 0.246$; $p < 0.001$).

Regarding hypothesis H2a.b, the results showed that TL's

Table 4: Results of the direct relationships

Hypothesis	Relationship	Beta	Standard error	t-value	Results
H1a	TL --> Operational performance	0.246***	0.070	3.570	Supported
H1b	TL --> Financial performance	0.267***	0.073	4.023	Supported
H2a	TL --> Active knowledge sharing	0.553***	0.067	9.101	Supported
H2b	TL --> Passive knowledge sharing	0.335***	0.078	5.203	Supported
H3a	AKS --> Operational performance	0.395***	0.061	5.984	Supported
H3b	AKS --> Financial performance	0.417***	0.063	6.568	Supported
H3c	PKS --> Operational performance	0.202***	0.047	3.614	Supported
H3d	PKS --> Financial performance	0.194***	0.048	3.619	Supported

Notes: ***significant at the 0.001 level.

impact on aspects of KS activities in supply chain is very considerable. The findings showed significant influences of TL on active KS activity ($\beta = 0.553$; $p < 0.001$) is more significant than its effect on passive KS activity ($\beta = 0.335$; $p < 0.001$) of firms in supply chain networks.

For hypotheses H3a.b and H3c.d, the results showed that, active KS has greater impacts on both operational and financial performance compared with the effect of passive KS. Specifically, the influences of active KS on operational performance ($\beta = 0.395$; $p < 0.001$) and financial performance ($\beta = 0.417$; $p < 0.001$) are statistically significant. Similarly, the impacts of passive KS on operational performance ($\beta = 0.202$; $p < 0.001$) and financial performance ($\beta = 0.194$; $p < 0.001$) are also statistically significant and supported.

The hypotheses assessments' results are attained after investigating the effects of control variable of firm size. The findings did not support the control role of

firm size because its effects on operational and financial performance are not statistically significant.

Indirect and Total Effect Analysis

To provide evidence on the mediating roles of active and passive KS in supply chain networks between TL and specific aspects of firm performance namely operational and financial performance, this study used the bootstrap confidence intervals method with 5,000 iterations as the suggestion of Preacher and Hayes (2008), to test the significance of indirect effects (see Table 5).

The results in Table 5 pointed out that the indirect effect of TL on operational performance ($\beta = 0.286$; $p < 0.001$) and financial performance ($\beta = 0.295$; $p < 0.001$) are significant within the range of confidence intervals. In general, these findings provide the evidence to confirm the mediating role of KS activities in supply chain between TL and firm performance.

Table 5: Confidence intervals of the indirect effects

Hypothesis	Path	Direct effects	Indirect effects	Total effects	Bias-corrected confidence intervals	
					Lower confidence level	Upper confidence level
H4a	TL-->KS-->OP	0.246***	0.286***	0.532***	0.225	0.367
H4b	TL-->KS-->FP	0.267***	0.295***	0.562***	0.235	0.376

Note: *** $p < 0.001$.

DISCUSSION AND IMPLICATIONS

Supply chain management and KS practice represent alternative approaches that have generated a lot of interests among scholars and practitioners. Scholars and practitioners considered have made great efforts to understand and identify how leadership practice can facilitate KS activities for fostering firm performance. It is unfortunately there is little guidance in the extant literature on how TL and KS activities among supply chain members affect specific aspects of firm performance namely operational and financial performance (Wang and Wang, 2012; Sangari *et al.*, 2015; Arif and Akram, 2018). Accordingly, by investigating the mediating role of KS activities in supply chain networks between TL and aspects of firm performance, the findings of this study significantly contribute to developing and advancing theory of leadership, knowledge management and performance management by some following important reasons.

First, the paper significantly contributes to filling the theoretical gaps and increasing the understanding of TL's effects on specific aspects of KS activities in supply chain networks. Indeed, knowledge is a pivotal resource of organization that bring firms a sustainable competitive advantage to survive before the increasingly changes of business environment and fierce competition (Lei *et al.*, 2019; Son and Phong, 2023; Than *et al.*, 2023). Many organizations have invested the huge time, efforts and money for improving their organizational knowledge capital through enhancing KS activities in their firm. However, they still fail to share knowledge and losing billions of dollars each year (Babcock, 2004; Le and Tran, 2020). An important reason for the failure of improving KS is the lack of understanding of how leadership styles or specific leadership characteristics influence KS (Wang and Noe, 2010; Le and Tran, 2020), especially in the context of supply chain networks (Birasnav, 2013; Ojha *et al.*, 2018). To address these theoretical gaps, the paper has examined the effects of TL on active and passive KS activities of supply chain members. The findings have underlined the TL's essential role in exhorting activity of active KS in comparison with passive KS activity. The findings reveal that the positive effects of transformational leaders have prompted and encouraged employees to voluntary and proactively share their new knowledge and information with co-workers in supply chain networks for creating greater benefit and achieving their common goals.

Second, active and passive KS represent two different

forms of KS activities of organizations in supply chain networks. By investigating the effects of active and passive KS on aspects of firm performance, the paper has contributed to the expanse and arousal the new ideas of improving firm performance. The findings show that, active and passive KS act as the significant predictors of operational and financial performance. The findings are consistent with Iqbal *et al.*'s (2019) findings on critical role of KS and knowledge management processes in improving firm performance. The paper has indicated that active KS has greater impacts on two aspects of firm performance in comparison with influence of passive KS. In other words, these findings emphasize the critical role of active KS activities in supply chain networks, and consider active KS activities as the main solution to foster firm performance. So, posing the right investment and great efforts on stimulating active KS among members in supply chain networks is right and possible solution for directors and managers to effectively improve firm performance. Moreover, transformational leaders also act as a driving force of nurturing firm performance. The findings of this study disclose the greater influence of TL on financial performance in comparison with TL's effect on operational performance. From these findings, the paper implies that focusing on practicing the TL style might help directors/managers to follow and attain better financial goals in term of the return on investment and sales, the growth of profit and sales, and the average profitability.

Third, previous studies have shown the positive influences of TL and KS activities on some particular spheres of firm performance such as operational and financial performance (Ojha *et al.*, 2018; Son *et al.*, 2020). However, there still exists a research gap in the literature that helps to explain potential mediating role of KS processes in supply chain networks in the relationship between TL and firm performance in supply chain (Wong and Wong, 2011; Birasnav, 2013; Ojha *et al.*, 2018; Son *et al.*, 2020). This limits our understanding of the mechanism by which TL can interact with KS activities in supply chain to produce significant influences on firm performance in certain forms. As a result, this paper contributes significantly to advancing the theory of leadership and performance management by evaluating the mediating effect of active and passive KS activities among supply chain members in the relationship between TL and two specific types of firm performance. The empirical findings have affirmed the mediators of active and passive KS in supply chain networks and spotlighted

that TL practices can significantly affect operational and financial performance directly or indirectly by stimulating active and passive KS activities among supply chain members. From these findings, the paper might serve as the valuable reference that provides valuable insights into the needful conditions and the new pathway to promote firm's operational and financial performance.

Finally, prior studies argued that in the context of developing and emerging countries like Vietnam, Vietnamese firms are still facing with many difficulties and quite sensitive to changes in technology and innovation (Nguyen *et al.*, 2019; Son *et al.*, 2020; Lei *et al.*, 2020). The majority of firms in developing countries like Vietnam are small and medium size, account for approximately 98.1%, and lack of capital, resources, and R&D capabilities to innovate for improving firm performance (Lei *et al.*, 2019; Son *et al.*, 2019). Thus, improving firm performance by huge investments in technological innovation or physical resources is not feasible (Than *et al.*, 2021; Than *et al.*, 2023; Tran *et al.*, 2023). Leadership and knowledge resource of supply chain members are well known as the main drive of innovation performance and organizational performance (Birasnav, 2013; Ojha *et al.*, 2018; Sengphet *et al.*, 2019; Son *et al.*, 2020). The findings of this paper have, therefore, implied that focusing on TL practice to stimulate knowledge and intellectual resource of firms in supply chain networks seems to be one of the most optimal and effective strategies for firms in developing countries to follow operational and financial performance.

RECOMMENDATION AND RESEARCH LIMITATION

This study has also inevitably limitations. First, the paper employs cross-sectional design this may arise the circumstance according to which causal correlations might fluctuate in the long-run due to KS activities of firms in supply chain networks may change over time. A longitudinal investigation will assist to control this limitation and affirm the result. Second, this study examined the correlation based on self-report data. This may lead to the limitation of common method bias or single source bias. Future research should test the relationship among the constructs, especially in term of measuring firm performance based on objective data to consolidate the findings. Third, the results and the benchmarks in this paper are more appropriate for the context of Vietnamese firms. Future research should implement in other circumstances to show clearer picture/implication in terms of the correlation among these factors.

Finally, active and passive KS activities are found to have significant impacts on firm performance. So, it is needed to perform further studies in future for exposing deeper the effects of TL and active and passive KS in supply chain on the other strategic components of firm performance such as innovation performance and market performance or key outcome of firms such as innovation capability and competitive advantage.

CONCLUSION

Generally, this study significantly contributes to filling the gaps on the relationship between TL, KS behaviors and organizational performance. Especially, the paper has enhanced understanding and pushed the theory of leadership and organizational behaviors forward by clarifying the mediating roles of KS processes in linking TL and specific forms of organizational performance namely operational and financial performance.

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