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Article

Social capital and firm operational performance: The mediating roles of knowledge sharing

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MANAGEMENT | RESEARCH ARTICLE

Social capital and firm operational performance: The mediating roles of knowledge sharing

Minh-Tri Ha^{1*}

Abstract: Personal or private relationships between leaders of construction firms and government officials are critical to a firm's market success because they provide access to valuable information that their competitors do not. This study was carried out to investigate the associations between social capital dimensions, the sharing of knowledge and firm operational performance of small and medium-sized enterprises (SMEs) in the construction sector. Our study utilised a questionnaire-based survey design to gather online data using a convenience sampling method. To test the hypotheses, data obtained from 346 SMEs were analysed using structural equation modelling. Overall, other than the connection between structural social capital and explicit knowledge sharing, all social capital dimensions had a positive impact on both explicit and tacit knowledge sharing. Furthermore, explicit and tacit knowledge sharing positively influenced firm operational performance. Surprisingly, only cognitive social capital dimension was found to affect operational performance directly. Our study offers several practical implications regarding how firms can enhance improved operational performance in relation to advocating social capital dimensions and the sharing of knowledge.

Subjects: Business, Management and Accounting; Leadership; Corporate Governance; Human Resource Management

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Dr. Minh-Tri Ha is currently a lecturer at the International University, Vietnam National University – Ho Chi Minh City. His teaching focuses on marketing research, business strategy and business ethics. His research interests are social capital, intellectual capital, corporate social responsibilities, knowledge sharing, innovation, greenwashing, and firm performance.

PUBLIC INTEREST STATEMENT

Personal or private relationships between leaders of construction firms and government officials are critical to a firm's market success because they provide access to valuable information that their competitors do not. This study investigates the relationships between different social capital dimensions, knowledge sharing and firm operational performance of small and medium-sized enterprises (SMEs) in the construction industry in Ho Chi Minh City, Vietnam. Overall, other than the connection between structural social capital and explicit knowledge sharing, relational and cognitive social capital dimensions had a positive impact on both explicit and tacit knowledge sharing which then influence operational performance. Our study offers several practical implications regarding how firms can enhance improved operational performance in relation to advocating social capital dimensions and the sharing of knowledge.

Keywords: construction; knowledge sharing; operational performance; SMEs; social capital; Vietnam

1. Introduction

Social capital (SC) has been regarded as a lubricant that aids the completion of tasks. It enables people to collaborate and reap the benefits of social ties (Ha & Nguyen, 2020; H. Nguyen & Ha, 2020). Modern economies rely on social capital to function effectively (P. K. Nguyen & Ha, 2020). Without social capital, our society, economy, institutions, and political system would not exist. SC has been widely examined in sociology over the past two decades, and more recently in businesses such as management (Hollenbeck & Jamieson, 2015; Liu & Lee, 2015), organisation (Acquaah, 2007; Tamer et al., 2014), and family businesses (Herrero, 2018; E. P. C. Chang et al., 2009; Sandefur et al., 2006). An increased interest in social capital studies has stimulated economists to explore economic studies further. Mainstream economists have largely examined the role of tie strength, social ties and culture in production, as well as human and intellectual capital (Nahapiet & Ghoshal, 1998; Rupasingha et al., 2015; Tamer et al., 2014). For firms needing to maintain efficiency and performance, it is inevitable that a competitive advantage will be identified (Nahapiet & Ghoshal, 1998). Intangible assets, including SC and knowledge, have been used to identify a competitive advantage. While knowledge is an important source of SC (Adler & Seok-Woo, 2002; Burt, 1997; Coleman, 1988; Uzzi, 1997), it is also a crucial driver for the performance of firms (Gulati, 1998; Ha & Nguyen, 2020; Sandefur & Laumann, 1998).

In a similar vein, SMEs benefit from knowledge, and even more so than traditional resources (Desouza & Awazu, 2006; Ha & Nguyen, 2020; H. Nguyen & T., 2020). They can effectively build social capital to execute some important functions such as creating intellectual capital (Nahapiet & Ghoshal, 1998) and exchanging resources. They can also boost innovation (H. Nguyen & T. Ha & Nguyen, 2020; Tsai & Ghoshal, 1998), information, influence and control, as well as creating social solidarity (Sandefur & Laumann, 1998) and solving coordination problems (Light & Dana, 2013). Social capital allows SMEs to accelerate their performance by exploiting the knowledge and expertise that is embedded in employees, clients, suppliers, partners, and alliances (Daud & Yusoff, 2010).

In Ho Chi Minh City (HCMC), construction firms' behavior, including real estate enterprises is primarily influenced by private connections between company leaders and government officials regarding land availability. As a result, such companies' perceptions of the role of relationships are skewed. As a result, they have not taken full advantage of their relationships to support their commercial operations (H. Nguyen & T. Ha & Nguyen, 2020; H. T. Nguyen & Huynh, 2012). Despite the importance of social capital and knowledge sharing in boosting firm performance, research in construction sector remains unexplored, especially in Vietnam. An insightful understanding of relationships within SC and knowledge sharing (KS), and firm operational performance (FOP) is important for both a healthy business environment and also for a broader scale of socio-economic development in Vietnam. Despite the wealth of literature available in the field other than construction sector, further research is needed to investigate the influence of SC on KS and FOP, especially in the construction sector. To bridge this gap, this research sets out to examine the associations between SC, KS, and FOP of SMEs in construction sector in HCMC. The findings are expected to provide practical insights and implications for SME construction managers.

Following this introduction, section two reviews the literature and develops research hypotheses. Section three describes the methodology of the data collection and construct measurement. Section four presents the research results, while discussion, implications and limitations as well as future research are delivered in the last part.

2. Literature review and hypotheses development

2.1. Knowledge Sharing (KS) and Firm Operational Performance (FOP)

Knowledge is considered to be a primary asset or resource that drives a firm's growth and thus performance (Yli-Renko et al., 2002). Recent years have seen the significant role of knowledge as a root of competitive advantages and social capital, and also knowledge sharing in optimising strategy development and firm performance (Grant, 1996; Ha & Nguyen, 2020; Nahapiet & Ghoshal, 1998; H. Nguyen & T. Ha & Nguyen, 2020; Nonaka & Takeuchi, 1995). KS between individuals facilitates the development of organisational efficiency for those whose structure involves a wide range of different teams and groups (Alavi & Leidner, 2001). According to Kogut and Zander (1992), KS is among the critical behaviours which strengthen organisational performance. A review of major studies in this area confirmed that there is ample evidence contributing to the favourable association between KS and FOP, both directly and indirectly (Ha & Nguyen, 2020; Law & Ngai, 2008; P. K. Nguyen & T. M. Ha & Nguyen, 2020; Rao et al., 2015; Singh & Power, 2014; Son et al., 2020; Wang & Wang, 2012; Wang et al., 2014).

Explicit knowledge sharing (EKS) is found to have a positive association with FOP. More specifically, Ha and Nguyen (2020) discovered that EKS has a significant impact on firm operating performance. Additionally, EKS was found to convey novel information, and systematises knowledge in the organisation resulting in an improvement in organisational effectiveness and efficiency (Van den Hooff & de Ridder, 2004). Furthermore, Mohsen Allameh et al. (2014) found that EKS is positively correlated with firm performance, including process performance, customer results and critical performance.

Tacit knowledge sharing (TKS) takes place in formal forms, including a training session or a conference, although it occurs mostly across informal channels, such as social networking and interaction among employees (Holste & Fields, 2010; Marquardt, 1996). The concept of tacit knowledge has been studied extensively in knowledge-oriented management research (Phelps et al., 2012). Von Krogh (1998) contends that, while the process in which employees are able to exchange experiences, and practices can increase knowledge creation, TKS can also result in higher organisational value. A large body of evidence confirms that TKS significantly improves organisational performance (Dhanaraj et al., 2004; Mohsen Allameh et al., 2014; Reychav & Weisberg, 2010; Wang & Wang, 2012; Wang et al., 2014). Tacit knowledge significantly improves the efficiency of the decision-making process, productivity, customer serving, the precision of task performance and the smoothness, and the quality of work (Brockmann & Anthony, 1998; Haldin-Herrgard, 2000).

Additionally, a large body of prior research looked at how knowledge sharing can act as a mediating factor in the relationship between social capital and firm performance (Dhanaraj et al., 2004; Ha & Nguyen, 2020; H. Nguyen & T., 2020; P. K. Nguyen & T. M., 2020; Park et al., 2015). In addition to the positive relationships between EKS and FOP, and TKS and FOP as discussed above, EKS is also found to be positively related to TKS (Zaqout & Abbas, 2012). In other words, individual who shares his or her explicit knowledge also shares implicit knowledge, and tacit knowledge may be shared in organisations where explicit knowledge is shared. Therefore, we hypothesise the following:

H1: EKS positively affects FOP.

H2: TKS positively affects FOP.

H3: EKS positively affects TKS

2.2. SC and KS

In knowledge management research, SC concerns close relationships among members of the organisation to adapt their values and behaviours through social interaction (Allameh Sayyed, 2018; Terry Kim et al., 2013; Van den Hooff & Huysman, 2009). Previous studies identified the importance of social trust, social relations and increased attention of SC dimensions (Hau et al., 2013). Several studies, including Akhavan and Mahdi Hosseini (2016) and Van den Hooff and Huysman (2009), found that SC assists in properly elucidating knowledge of others by providing related knowledge, and promoting mutual trust and respect. This can be acknowledged as a superior organisational resource, since it encourages individual interactions, required for collaborative or joint actions (Carrie et al., 1999). Extensive research has examined the connection between SC and KS (Aslam et al., 2013; C.-W. Chang et al., 2012; García-Sánchez et al., 2019; Lefebvre et al., 2016; Wah et al., 2007). It has been suggested that SC is the essential means of achieving knowledge transfer (Chow & Chan, 2008; Van den Hooff & Huysman, 2009). Other research has already investigated the correlation between specific SC dimensions and KS (Chow & Chan, 2008; Holste & Fields, 2010; Yang & Farn, 2009). In addition, as found by Chang and Chuang (2011), all three facets or dimensions of SC promote KS quantity and quality considerably in the organisational setting. These three SC dimensions were considered as influential factors of knowledge sharing through the collection and donation of knowledge (Terry Kim et al., 2013).

2.3. Structural Social Capital (SSC)

The phrase “strength of weak tie” is considered to be the foundation for the relation of the SSC and KS (Granovetter, 1992). Borgatti and Cross (2003) contended that the attributes of social networking are strongly interrelated with the development and sharing of knowledge in an organisation. A high level of networking, in which interaction occurs closely and frequently, results in the increase of TKS (Sorenson et al., 2006). Zaqout and Abbas (2012) concluded that SC positively affects relationships with both types of knowledge. Moreover, social interaction, which is one element of the network, also receives much consideration in the knowledge sharing aspect. Social interaction is typically important in TKS as it provides highly interactive communication, sharing guidance and experiences (Vera-Mun˜oz et al., 2006). Additionally, SSC offers frequent direct contact, which creates the time and possibilities to exchange explicit knowledge (Adler & Seok-Woo, 2002). Taking the aforementioned arguments all together, we formulated the following hypotheses:

H4a: SSC positively affects EKS.

H4b: SSC positively affects TKS.

2.4. Relational Social Capital (RSC)

RSC indicates asset embedded relationships among network members (Bolino et al., 2002; C.-W. Chang et al., 2012; Nahapiet & Ghoshal, 1998). These relationships includes the various elements such as liking, trust and cooperation (Bolino et al., 2002). More specifically, trust is considered the essential element of RSC. Trust can cut down perceived uncertainty, promote risk-taking actions and encourage constructive guidance, which will later improve employees’ willingness in TKS (L. Hu & Randel, 2014). When people have trust in each other, they both share more knowledge (Szulanski et al., 2004), and they also share the knowledge that is peculiar or private or can be described as TK (Uzzi & Lancaster, 2003). The RSC represented by the trust was proved to affect KS positively (Aslam et al., 2013; Chiu et al., 2006), and EKS and TKS specifically (C.-W. Chang et al., 2012; Dhanaraj et al., 2004; Zaqout & Abbas, 2012). Other aspects of RSC also show its relationships with KS in terms of identification (Aslam et al., 2013; Chang & Chuang, 2011; Chiu et al., 2006) and reciprocity (Aslam et al., 2013; Chang & Chuang, 2011; Chiu et al., 2006;

Tamjidyamcholo et al., 2013). Based on previous literature, the following hypotheses are established:

H5a: RSC positively affects EKS.

H5b: RSC positively affects TKS.

2.5. Cognitive Social Capital (CSC)

CSC indicates the level at which network members share a common perspective and understanding (Tsai & Ghoshal, 1998). CSC contributes substantially to KS, particularly complex knowledge (Wasko & Faraj, 2005). Terry Kim et al. (2013) indicated that CSC has the greatest impact on knowledge collecting, which is a part of the knowledge sharing process. CSC supports both communication and corporation among team members, and it also helps to develop better expression and understanding of shared knowledge, especially tacit knowledge (L. Hu & Randel, 2014). Chang and Chuang (2011) contended that shared language, a key facet of CSC, has been proved to be significant to the quality and quantity of KS. Shared language can influence in different ways for the conditions necessary for the intellectual assets, capital exchange and integration (Nahapiet & Ghoshal, 1998). Shared vision and goals use each function as a connector which enables members within the business network to share and generate knowledge (Inkpen & Tsang, 2005). It is suggested that members in an organisation who share the same vision will probably become partners, which results in the sharing and exchange of resources (Tsai & Ghoshal, 1998). From the previous literature review, the following hypotheses are established:

H6a: CSC positively affects EKS.

H6b: CSC positively affects TKS.

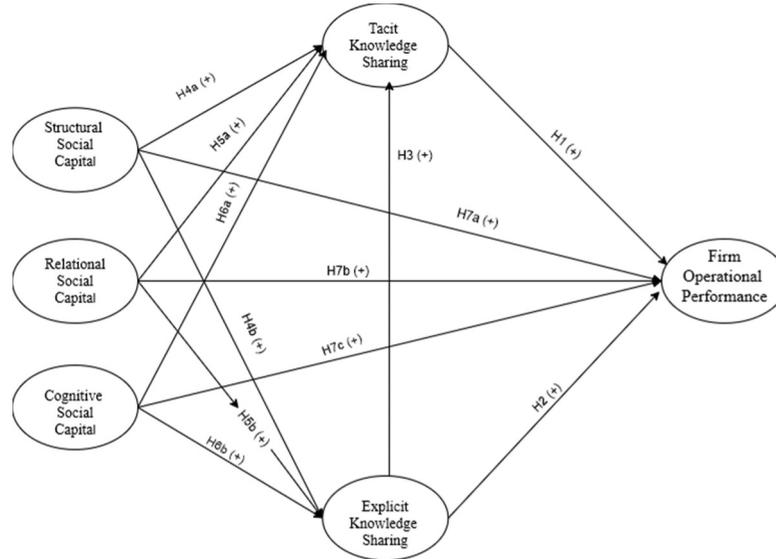
2.6. Social capital and firm operational performance

SC is helpful in terms of increasing the availability of resources, which directly and indirectly affect firm performance (Wang & Wang, 2012), and productivity in particular (Greve et al., 2010). Nahapiet and Ghoshal (1998) highlighted that all three dimensions or facets of SC collaborate to facilitate the transmission and processing of knowledge among organisation members and thus improve organisational performance. Some studies showed that SC dimensions encourage the knowledge-sharing process which indirectly benefits firm performance (Cheng et al., 2008; Maurer et al., 2011; Terry Kim et al., 2013; Zhu & Wang, 2009). Some authors revealed that SC dimensions, which are represented by its key facets, bring about the improvement of quality, costs, and performance of a firm (Carey et al., 2011; Krause et al., 2007; Villena et al., 2011).

2.7. Structural Social Capital (SSC)

SSC involves the “configurations of linkages between people and units” (Nahapiet & Ghoshal, 1998, p. 244), or it can be described as social interaction or social connection. Miller (2006) contended that constant mutual interaction among agents may benefit organisational performance by increasing cooperation levels. Additionally, structural capital is sometimes used as an alternative for organisational capital that the firm applies to reach better outcomes (Bontis, 1998; Martínez-Torres, 2006; Youndt et al., 2004). By generating structural capital, firms improve their working procedures and processes to promote communication and technical sharing, boost efficiency of production and service, and optimise problem resolutions to improve quality and minimise costs (Ordóñez De Pablos, 2004; Zangouinezhad & Moshabaki, 2009). As a result, firms integrating SSC will dynamically enhance the method of collecting, generating and transferring knowledge, as well as being able to accomplish better quality,

Figure 1. Research model.



lower the cost and have a deeper insight, which altogether results in better operational performance in the organisation (Aramburu & Sáenz, 2015; Zangouinezhad & Moshabaki, 2009). On the basis of the mentioned arguments, it is expected that:

H7a: SSC positively affects FOP.

2.8. Relational Social Capital (RSC)

Strong relational ties are positively associated with externalities which include lowering turnover intention as well as consolidate commitment (Dirks & Ferrin, 2001). This, in turn, engenders improved performance (Benkhoff, 1997). Through new insights generated from substantial relational capital, firms can improve their quality, cost production, responsiveness, efficiency and asset management (Wang et al., 2014). A high trust level helps organisation members to feel significant support from their leaders, which thus promotes their commitment (Thau et al., 2007). Cunningham and MacGregor (2000) contended that the positive connections within an organisation may engender better performance from employees. Willem and Buelens (2007) discovered the important function of trust in improving both efficiency and effectiveness at organisational level as it encourages managers at various levels to share ideas and exchange information openly. From previous literature, a hypothesis is established as follows:

H7b: RSC positively affects FOP.

2.9. Cognitive Social Capital (CSC)

CSC relies on the fact that, as people engage as parts of a group, they are become enabled to establish shared goals and a shared vision for the organisation (Nahapiet & Ghoshal, 1998). When organisation members follow shared strategic vision and objectives, integration and collective responsibilities may be both promoted (Coleman, 1988). A clear understanding of organisational values and mission provides members with the “templates for particular types of actors” (Scott, 1995, p. 58), helping them to handle environmental uncertainties and possibly creating positive externalities for organisational performance (Andrews, 2010). From previous literature, a hypothesis is established:

H7c: CSC is positively related to FOP. Figure 1 presents the research model of our study.

3. Methodology

3.1. Sample and data collection

Our research employed the questionnaire-based survey to verify the hypotheses. Respondents are managers of construction firms in Ho Chi Minh City. The questionnaire, being used as a research instrument, was piloted with a small group ($n = 10$) before data collection. The aim of this pilot test was to evaluate whether any items were properly designed with respect to the sentence length, wording, phrasing, or terms (Colton & Covert, 2015), therefore establishing the construct validity of the instrument (Shadish et al., 2002). An online questionnaire was distributed to 500 respondents during February and March of 2020, using Google Forms to gather data employing the convenience sampling method. A list of the surveyed construction firms was developed from the Youth Business Association in Ho Chi Minh City and the Yellow Pages, a directory which lists all registered businesses in Vietnam. Because the pilot test was sent with detailed guidance, the survey return rate was 69.2%, generating 346 valid responses. This high rate of response reduced the likelihood of response bias (Colton & Covert, 2015). All respondents were between 28 and 65 years of age at the time. Furthermore, males and females accounted for 85.7% and 14.3% of the respondents, respectively.

3.2. Measurement scale

The questionnaire used existing scales adapted from prior research to establish content validity (Trochim & Donnelly, 2008). The scale for CSC was adapted from Chow and Chan (2008); the scales for RSC and SSC were adapted from Chow and Chan (2008) and Nahapiet and Ghoshal (1998); the scales for EKS and TKS were adapted from Reychav and Weisberg (2010) and Wang and Wang (2012); the scale for FOP was adapted from Wang and Wang (2012). The respondents were asked to evaluate the level of agreement on items by using a five-point Likert-type scale ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). All measures and constructs are displayed in Table 1.

4. Research results

4.1. Evaluation of measurement model

Data analysis employed a common two-step approach in which a measurement model is developed and assessed, followed by a structural model assessment (Anderson & Gerbing, 1988). Data analysis used IBM SPSS Amos, version 24. Since our questionnaire instruments were self-administered, “Harman’s single-factor test” was used to verify the. To test for Common Method Variance (CMV), a factor analysis (exploratory) was performed on one fixed factor, and the result indicated that this single factor accounted for 44.8%, which is smaller than 50% and not a majority, suggesting that the common method bias issue did not exist (Fuller et al., 2016; Podsakoff & Organ, 1986). Therefore, CMV does not seem to be a problem in our analysis. Our study further checks two important assumptions required by the SEM procedure, namely no significant outliers and the existence of normality (Byrne, 2016). Data screening revealed that there was no existence of any outliers in the dataset. The normality assessment was performed using kurtosis and skewness test. It was confirmed that if, in an absolute value term, kurtosis is smaller than 7.0, and skewness is smaller than 3.0, then the data was distributed normally (Byrne, 2016; Kline, 2015). Furthermore, no missing data was found in the valid questionnaires.

Table 1 presents the standardised regression weight (SRW), squared multiple correlation (SMC) of all measured variables, and the critical ratio (CR) and average variance extracted (AVE) of all constructs in our measurement model. All SRWs were significant at $p \leq .001$ as demonstrated in Table 1 (Anderson & Gerbing, 1988), and were $> .50$ (Hair et al., 2019). All SMCs were well above the threshold value of .40 (Bollen, 1989). Following Nunnally and Bernstein (1994), all CRs (ranging from .850: FOP to .945: TKS) were well above the cut-off value of .70 after eliminating two items, suggesting that the measures are reliable and surpassed the suggested values of .70. According to

Table 1. Constructs, measures, convergence and reliability validity testing results

Construct	Code	Item	Standardised regression weights	SMC	AVE	CR
Cognitive SC (CSC)	CSC1	My co-workers are frequently in agreement with me about what is important.	.924***	.855	.824	.933
	CSC2	My co-workers and I pursue shared organisational objectives and missions.	.879***	.772		
	CSC3	My co-workers and I have identical objectives and visions.	.919***	.845		
Relational SC (RSC)	RSC1	I feel like my co-workers and I are connected.	.835***	.698	.666	.888
	RSC2	I know that when I get into any trouble, my co-workers will always try to assist me.	.847***	.718		
	RSC3	I place reliance on my co-workers as I want their assistance.	.737***	.544		
	RSC4	When I need support at work, I can always count on my co-workers.	.840***	.706		
Structural SC (SSC)	SSC1	Overall, my relationships with my co-workers are very good.	.882***	.778	.683	.895
	SSC2	I can identify my co-workers from whom I could seek knowledge support.	.875***	.766		
	SSC3	My co-workers understand what knowledge I have at hand.	.827***	.684		
	SSC4	I can identify who has the knowledge that is relevant and available to me within my department.	.711***	.505		
Explicit KS (EKS)	EKS1	Official reports and documents are usually shared among members of my networks.	.812***	.659	.643	.915
	EKS2	Reports and documents prepared by members of my networks are usually shared with each other.	.822***	.676		
	EKS3	Official reports and documents are frequently collected by co-workers within my networks.	.795***	.633		
	EKS4	The means of knowledge-sharing frequently encourages members of my networks.	.802***	.644		
	EKS5	Various training and developing programs are usually provided to members of my networks.	.799***	.638		
	EKS6	IT systems allow knowledge-sharing among members of my networks.	.781***	.609		

(Continued)

Table 1. (Continued)

Construct	Code	Item	Standardised regression weights	SMC	AVE	CR
Tacit KS (TKS)	TKS1	My network members often share knowledge based on their skills and expertise.	.781***	.610	.710	.945
	TKS2	My network members often gather knowledge from others based on their skills and expertise.	.854***	.729		
	TKS3	My network members often exchange knowledge of know-how with each other.	.891***	.794		
	TKS4	My network members often gain knowledge of know-how with each other.	.841***	.708		
	TKS5	My network members often share knowledge using their skills and expertise.	.841***	.707		
	TKS6	My network members often gain knowledge using their skills and expertise.	.827**	.684		
	TKS7	My network members will share lessons learned when they feel that they're necessary.	.859***	.738		
Firm operational performance (FOP)	FOP1	Our customer satisfaction is higher than that of our key competitors.	.677***	.458	.588	.850
	FOP2	Our quality development is higher than that of our key competitors.	.800***	.639		
	FOP3	Our cost management is higher than that of our key competitors.	.813***	.660		
	FOP4	Our responsiveness is higher than that of our key competitors.	.770***	.593		
	FOP5	Our productivity is higher than that of our key competitors. (d)				
	FOP6	Our asset management is higher than that of our key competitors. (d)				

*** significant at p < .001; (d) denotes items ignored during the validity and reliability test.

Table 2. Results of discriminant validity test

Construct	TKS	EKS	SSC	RSC	FOP	CSC
TKS	.843					
EKS	.685***	.820				
SSC	.533***	.496***	.827			
RSC	.514***	.454***	.339***	.816		
FOP	.529***	.536***	.415***	.400***	.767	
CSC	.696***	.651***	.674***	.539***	.584***	.908

*** significant at $p < .001$. Diagonal figures are the square roots of AVE.

Fornell and Larcker (1981), all AVEs (ranging from .588: FOP to .824: CSC) exceeded the cut-off value of .50, implying that the measurement model achieved convergence validity.

Next, we assessed discriminant validity further. Table 2 shows that no violation can be found because each construct's square root of AVE was greater than the association between it and any other construct, implying discriminant validity (Fornell & Larcker, 1981). Therefore, the measurement model of our study is acceptable in validity and reliability. Furthermore, the model fit statistics revealed that $\chi^2 = 643.697$ ($df = 335$, $p = .000$), $CMIN/df = 1.921$, $SRMR = .039$, $CFI = .959$, and $RMSEA = .052$. Following L. t. Hu and Bentler (1999), this shows that the measurement model achieved an excellent fit.

4.2. Evaluation of structural model

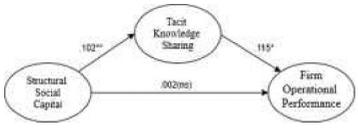
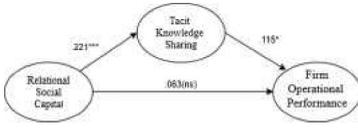
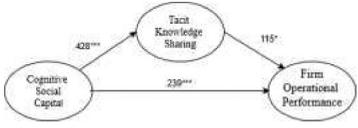
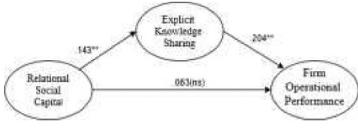
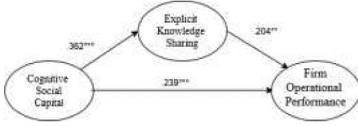
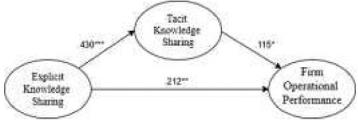
An analysis of structural model was subsequently carried out to verify all proposed hypotheses. Table 3 entails the results of the hypothesis testing. Other than H_{4a} , H_{7a} and H_{7b} , all remaining hypotheses are statistically significant at different levels. The subsequent step involves an estimation that uses maximum likelihood estimation to validate all the hypothesised relationships postulated from the research model (Byrne, 2016). Model fit measures revealed that $\chi^2 = 685.310$, $p = .000$ with 336 df . With the χ^2/df value of 2.040 being within the thresholds of 1 and 3, the model was proved to be parsimonious. The $SRMR$ was .059, and $RMSEA$ was .055, while CFI was .953. Overall, all findings revealed that our model renders absolute and incremental goodness of fit from an acceptable to an excellent level (Hair et al., 2019; L. t. Hu & Bentler,

Table 3. Hypotheses testing of structural model

Hypothesis	Relationship	Expectation	Estimate	P-value	Remarks
H1	FOP \leftarrow EKS	Positive	.204	.006	Supported
H2	FOP \leftarrow TKS	Positive	.115	.084	Supported
H3	TKS \leftarrow EKS	Positive	.430	***	Supported
H4a	EKS \leftarrow SSC	Positive	.076	.119	Not supported
H4b	TKS \leftarrow SSC	Positive	.102	.050	Supported
H5a	EKS \leftarrow RSC	Positive	.143	.009	Supported
H5b	TKS \leftarrow RSC	Positive	.221	***	Supported
H6a	EKS \leftarrow CSC	Positive	.362	***	Supported
H6b	TKS \leftarrow CSC	Positive	.428	***	Supported
H7a	FOP \leftarrow SSC	Positive	.002	.970	Not supported
H7b	FOP \leftarrow RSC	Positive	.063	.995	Not supported
H7c	FOP \leftarrow CSC	Positive	.239	.001	Supported

*** significant at $p < .001$.

Table 4. Mediation analysis results

Relationship	Path of mediation	Estimate	Probability	Conclusion
SSC—TKS—FOP		.015	.058	Full mediation
RSC—TKS—FOP		.026	.061	Full mediation
CSC—TKS—FOP		.068	.081	Partial mediation
RSC—EKS—FOP		.030	.035	Full mediation
CSC—EKS—FOP		.102	.030	Partial mediation
EKS—TKS—FOP		.046	.094	Partial mediation

* p < .10; ** p < .05; *** p < .001; (ns) non-significant at p < .05.

1999). All associations, apart from H_{4a}, H_{7a} and H_{7b}, were significant as their probability values were below .01. Table 3 exhibits the findings from the structural model evaluation.

4.3. The mediating roles of EKS and TKS

In addition, we also conducted a mediation analysis using a bootstrapping method (Cheung & Lau, 2008) to fully understand the associations between the variables of interest in the model. A 95% level of bias-corrected confidence interval was set, and the analysis performed 2,000 bootstrap samples. Our findings showed that (a) TKS fully mediates the relationship between SSC and FOP, (b) TKS fully mediates the relationship between RSC and FOP, (c) TKS partially mediates the relationship between CSC and FOP, (d) EKS fully mediates the relationship between RSC and FOP, (e) EKS partially mediates the relationship between CSC and FOP and (f) TKS partially mediates the relationship between EKS and FOP. The mediation results are presented in Table 4.

5. Discussion and implications

5.1. Discussion

Given a few attempts of examining the influence of SC on KS and FOP in Vietnam, our study is among the very few studies that largely provides evidence in this area. Except for the hypotheses H_{4a}, H_{7a} and H_{7b}, all eight hypotheses were validated. Our study characterises both the indirect (via KS) and direct mechanisms between SC and operational performance.

Except for the SSC and EKS relationship, our findings largely confirm the positive relationship between all SC dimensions and KS. Our findings are in line with the prior studies (Chow & Chan, 2008; Ha & Nguyen, 2020; Ha & Doan, 2021; Wu, 2008; Zaout & Abbas, 2012). These findings reinforce the general belief that KS is facilitated by most of the SC dimensions. For example, the more the network members trust each other and share common goals, mission, vision, the higher chance there is that they become involved in KS. In a similar vein, both EKS and TKS were found to be positively associated with FOP. This means that the more knowledge or information sharing there is, the more responsiveness, cost management, quality development and customer satisfaction firm can improve or do better than their competitors. These results were essentially confirmed in Mohsen Allameh et al. (2014), Dhanaraj et al. (2004), Ha and Nguyen (2020), and Son et al. (2020). In addition, our findings are somewhat surprising since we found only one out of the three SC dimensions, namely cognitive social capital, to be positively related to FOP. This implies that, if firms facilitate sharing a common vision, goals and values, then operational performance may be enhanced. This partly corroborates the findings of Saha and Banerjee (2015), and Kamboj et al. (2017).

We also found the various mechanisms with regard to the mediating roles of TKS and EKS in the relationships between SC dimensions and FOP. These findings provide a fuller picture of the dynamics that EKS and TSK can play in the relationships between SC dimensions and FOP. Similarly, the mediating role of TKS in the relationship between EKS and FOP was also found to be a partial mediation. This finding partially supports the finding of Zaout and Abbas (2012), who discovered that TKS fully mediates the relationship between EKS and performance.

Although three hypotheses (H_{4a}, H_{7a} and H_{7b}) were discovered that were not statistically significant, they were nonetheless interesting to investigate. These were the relationship between SSC and EKS, the relationship between SSC and FOP, as well as the relationship between RSC and FOP. These construction firms' organisational structures may not be strong enough to withstand the stresses of the social system, which may explain why this is the case. Apart from that, there is a lack of cohesiveness in the network of relationships, trust, and qualities of personal relationships among construction firms as a whole, which prevents them from sharing knowledge and contributing to firm operational performance.

5.2. Practical implications

The findings of this work will unravel and shed light on the understanding of how the three SC dimensions influence KS and then FOP in the context of construction firms in HCMC. First, facilitating both tacit and explicit KS were discovered to be instrumental for achieving better performance. To promote knowledge sharing, managers are urged to establish not only effective corporate culture but also structures, and a rewards system. Such an establishment may be helpful to workers in synthesising new knowledge and implementing both new habits and best practices. Individuals and groups may be honoured out of sharing based on their increased performance. Second, since KS mediates SC's influence on operational performance, it may be inadequate simply to encourage related activities with respect to SC. It is important that managers are kept well informed of SC's effect on knowledge sharing and operational performance, and devote to establish mechanisms which enable KS to be properly transferred to achieve the desired performance levels. This is true especially for construction firms in HCMC as many of them

are now paying close attention to building close relationships with their customers as well as partners in order to improve operational performance.

It was found that, except the SSC to EKS relationship, all SC dimensions positively impact on FOP via KS. Therefore, managers are advised to create a favourable working environment where mutual trust is encouraged and supporting systems (such as information or knowledge management systems) are in place to facilitate knowledge sharing which can then affect performance. Such systems could be rewarding schemes or incentives either in financial terms or in kind to stimulate and encourage such sharing.

Tacit knowledge sharing was found to partially mediate the relationship between explicit knowledge sharing and firm operational performance. This means that EKS not only affects FOP directly but also via the role of TKS. Managers are advised to establish and promote mechanisms that allow sharing of both tacit and explicit knowledge that ultimately improves operational performance. This may be in the forms of online or offline discussion forum, regular meetings to exchange information regarding construction activities.

5.3. Limitations and future research

Our research, however, is not without its limitations. First, the study used the convenience sampling method which prevents the generalisation of the findings. Future research could use random sampling to ensure generalisation. Second, our study only investigated the effect of three SC dimensions on KS and FOP without studying other contextual factors, such as organisational culture, network stability or the number of ties. Future research could be carried out taking into account these contextual factors to understand the consequences they might have regarding FOP even more. Finally, this study only examined operational performance as the final outcome variable which does not include financial performance. Further research could study financial performance to understand the influence of SC on KS and performance of firm fully.

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