

## **Knowledge Management Capability and Innovativeness of Public Organizations: Examining the Moderating Roles of Social Capital and Creative Organizational Climate**

**ความสามารถในการจัดการความรู้และการสร้างนวัตกรรมขององค์กรภาครัฐ:**

**การตรวจสอบบทบาทการเป็นตัวแปรกำกับของทุนทางสังคมและบรรยากาศองค์กรเชิงสร้างสรรค์**

Panissara Naowakhoaksorn<sup>1\*</sup>, Pornlapas Suwannarat<sup>2</sup>, Karun Pratoom<sup>2</sup>  
and Veeraya Pataraarechachai<sup>2</sup>

พาณิสรา นาวาโภอักษร<sup>1\*</sup> พรลักษ์ สุวรรณรัตน์<sup>2</sup> การุณย์ ประทุม<sup>2</sup> และเวรยา ภัทรอาชาชัย<sup>2</sup>

<sup>1\*</sup>*Mahasarakham Business School, Mahasarakham University, Thailand*

<sup>2</sup>*Department of Management, Mahasarakham Business School, Mahasarakham University, Thailand*

<sup>1</sup> คณะการบัญชีและการจัดการ มหาวิทยาลัยมหาสารคาม

<sup>2</sup> สาขาวิชาการจัดการ คณะการบัญชีและการจัดการ มหาวิทยาลัยมหาสารคาม

### **ABSTRACT**

The main objective of this study is to examine the moderating role of social capital on the relationship between knowledge-oriented leadership and knowledge management capability (KMC). The aim is also to explore the moderating role of creative organizational climate on the relationship between KMC and public organizational innovativeness. Structural equation modeling (SEM) was applied to analyze the survey data from 784 tax administrative organizations in Thailand to test the proposed hypotheses. The results presented that knowledge-oriented leadership positively influences KMC. Meanwhile, KMC positively affects public organizational innovativeness. For the moderating effect, the findings indicated that social capital positively moderates the relationship between knowledge-oriented leadership and KMC. Additionally, creative organizational climate positively moderates the relationship between the accumulation of knowledge stocks and organizational innovativeness. Surprisingly, creative organizational climate negatively moderates the relationship between the regulation of knowledge flows and organizational innovativeness. These empirical results provide some recommendations for executives of public organizations in recognizing how to appropriately play a leadership role for effective knowledge management. Simultaneously, they could support important internal factors such as social capital and creative organizational climate to enhance their knowledge management capability and organizational innovativeness.

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(การสร้างนวัตกรรมขององค์กร)

\*Corresponding author

E-mail address: snaowakho@gmail.com

## บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์เพื่อตรวจสอบบทบาทการเป็นตัวแปรกำกับของทุนทางสังคมที่มีต่อความสัมพันธ์ระหว่างภาวะผู้นำแบบมุ่งเน้นความรู้และความสามารถในการจัดการความรู้ และเพื่อสำรวจบทบาทการเป็นตัวแปรกำกับของบรรยักษองค์กรเชิงสร้างสรรค์ที่มีต่อความสัมพันธ์ระหว่างความสามารถในการจัดการความรู้ และการสร้างนวัตกรรมองค์กรภาครัฐในประเทศไทย 784 แห่ง เพื่อทดสอบสมมติฐาน ผลการวิจัยแสดงให้เห็นว่าภาวะผู้นำแบบมุ่งเน้นความรู้มีอิทธิพลในเชิงบวกต่อความสามารถในการจัดการความรู้ และความสามารถในการจัดการความรู้ที่ส่งผลในเชิงบวกต่อการสร้างนวัตกรรมองค์กรภาครัฐ สำหรับผลการเป็นตัวแปรกำกับนั้น พบว่าทุนทางสังคมและดงบทบาทการเป็นตัวแปรกำกับในเชิงบวกต่อความสัมพันธ์ระหว่างภาวะผู้นำแบบมุ่งเน้นความรู้และความสามารถในการจัดการความรู้ นอกจากนี้บรรยักษองค์กรเชิงสร้างสรรค์ยังแสดงบทบาทการเป็นตัวแปรกำกับในเชิงบวกต่อความสัมพันธ์ระหว่างการสะสมคลังความรู้และการสร้างนวัตกรรมองค์กร ในขณะที่บรรยักษองค์กรเชิงสร้างสรรค์แสดงบทบาทการเป็นตัวแปรกำกับในเชิงลบต่อความสัมพันธ์ระหว่างการจัดการกระแสความรู้และการสร้างนวัตกรรมองค์กร ผลการวิจัยให้แนวทางสำหรับผู้บริหารขององค์กรบริหารภาครัฐในการตระหนักรถึงการแสดงบทบาทภาวะผู้นำที่เหมาะสมสำหรับการจัดการความรู้ที่มีประสิทธิภาพ ตลอดทั้งผู้บริหารสามารถสนับสนุนปัจจัยภายในสำคัญที่ช่วยส่งเสริมความสามารถทางด้านการจัดการความรู้และการสร้างนวัตกรรมองค์กร

## Introduction

The bureaucratic reform in the concept of New Public Management and Good Governance to Digital 4.0 (known as Government 4.0) seriously challenges public sector organizations to leverage and adjust for rapid changes in the present. Furthermore, due to the need for the country to escape from the trap of middle-income countries, therefore, strengthening the internal bureaucracy coupled with connecting with the international community is necessary (Deeyiam & Boontongkham, 2020). The income of the business sector helps to drive the economy and creates wealth for the government in the form of tax revenue that is used to drive domestic activities within the country. In the financial situation report for the fiscal year 2019 of the Fiscal Policy Office, the Ministry of Finance has indicated that 88.33% of Thailand's income was derived from tax revenue, and 11.67% came from other income. However, the public organizations involved in tax administration must play an important role to increase the efficiency of tax revenue collection and deliver satisfying services to their customers. Additionally, the promotion of creativity and new innovations are determined in the Constitution of the Kingdom of Thailand B.E. 2560 (2017) to improve and develop public administration. Innovation is not only a necessity for the business sector, the public sector also needs innovation to cope with the shift from globalization to enhancing development competition at the country level which requires the efficiency of public organizations to help drive policies. Therefore, the issues of knowledge management and innovation are recognized as the reflector of the success of public sector organizations' development and value creation.

Knowledge is accepted as a strategic resource that involves competition and the strategy of an organization (Pucciarelli & Kaplan, 2016). Managerial thinkers and practitioners are facing the challenge of answering questions about how to effectively manage knowledge and can bring benefits to the organization. Accordingly, the development of the knowledge conversion process (knowledge flow) between tacit knowledge and explicit knowledge (knowledge stock) of the organization might be intensely focused to attain knowledge management success. Knowledge management capability (KMC) is significantly mentioned as organizational intangible knowledge assets (Özbağ, M. Esen, & D. Esen, 2013) and activities considered to manage organization resources more efficiently to improve efficiency (Demchig,

2015). In literature, there is empirical evidence that shows leadership is an important antecedent affecting the success of knowledge management in an organization (Aminbeidokhti, Nikabadi, & Hoseini, 2016). In consequence, knowledge-oriented leadership presenting in the form of a combination of transactional and transformational leadership behaviors (Donate & de Pablo, 2015) is needed to investigate for KMC of public organizations.

Additionally, innovation is extremely important to public organizations to enhance the operational efficiency and public service quality. Public organizational innovativeness reflects exploiting new opportunities in generating the capacity to innovate and to introduce effective innovations to the organization (Werlang & Rossetto, 2019) which is a consequence of an organization's knowledge management capability (Chiu & Chen, 2016). The innovation is emphasized through strategies and policies for the public organizations' administration. For example, tax administration organizations have focused on knowledge implementation and innovative creation to increase the tax collection's performance. Likewise, to succeed in sustainable organizations' development, the Ministry of Finance intends to motivate these organizations to generate and improve into six aspects of innovation: (1) creating or producing new products or services using new technology that has never been seen before (product and service innovation); (2) improving quality of internal processes to be more efficient (process innovation); (3) generating the new model, methods, and techniques of organizational management (organization or management innovation); (4) changing the concept of worldview and challenging paradigms (conceptual innovation); (5) formulating patterns and processes of administrative governance or management that can solve problems of society (governance innovation); and (6) changing the relations' fundamental between organizations, institutions, and stakeholders in the government sector (institutional innovation). Additionally, there are several examples of innovative outcomes for working support which is initiated by tax administrative organizations such as tax information services through the e-government system (MOF Tax Clinic), E-Matching invoice deduction system, WHT Chatbot, Tax Mapping System, Mobile Fuel Laboratory Unit, GFMIS-Interface, RD Smart Tax, Green Office Management System, Smart Office Service, and so forth.

This study has affirmed and highlighted to affirm that KMC and organizational leadership (knowledge-oriented leadership) are important conditions for developing and stimulating innovativeness objectives in public organizations related to tax administration in Thailand. Furthermore, significant internal factors in public organizations encouraging KMC and innovativeness to be successful (i.e., social capital and creative organizational climate) are also investigated as the moderators of the relationships. The objectives of this study are posited as follows: (1) to investigate the relationships among knowledge-oriented leadership, KMC, and organizational innovativeness; (2) to examine the moderating role of social capital on the relationship between knowledge-oriented leadership and KMC; and (3) to explore the moderating role of creative organizational climate on the relationship between KMC and organizational innovativeness.

## Research Questions

1. How does knowledge-oriented leadership affect KMC (i.e., accumulation of knowledge stocks and regulation of knowledge flows)?
2. How does KMC (i.e., accumulation of knowledge stocks and regulation of knowledge flows) influence organizational innovativeness?
3. How does knowledge-oriented leadership influence organizational innovativeness?
4. How does knowledge-oriented leadership, when moderated by social capital, affect KMC (i.e., accumulation of knowledge stocks and regulation of knowledge flows)?
5. How do KMC (i.e., accumulation of knowledge stocks and regulation of knowledge flows), when moderated by creative organizational climate, affect organizational innovativeness?

## Literature Review

### Theoretical Foundation

#### Knowledge-Based View

The knowledge-based view (KBV) recommends that knowledge as an intangible organizational resource is considered as valuable, rare, inimitable, and non-substitutable by other resources and can be a source of sustainable competitive advantage (Barney, 1991; Suwannarat, 2016a, 2016b). The ability to value creation of an organization is based upon a set of intangible knowledge-based capabilities due to knowledge is the precious input in production and the preliminary source of value (Grant, 1996). The contribution of KBV in this study is being applied to describe a public organization's knowledge as a strategic and valuable resource for encouraging organizational capability, innovative behavior, and better outcomes for the organization. Also, the KBV illustrates the relationship between capability in knowledge management and innovativeness based on the assumption that innovativeness occurs when an organization creates and manages knowledge effectively (Costello & Donnellan, 2011).

#### Contingency Theory

The contingency theory depends on the situation and then considers choosing the best practices that are suitable for each situation (Gerdin & Greve, 2008). The contingency theory is applied to leadership and behavior (Luthans & Stewart, 1977; Nawaz, & Khan, 2016), which is widely accepted for Fiedler's model that presented the contingent relationship between environmental factors, leadership style, and effectiveness. Consequently, this study uses the contingency concept to explain the relevance of leadership (i.e., knowledge-oriented leadership) and contingent factors (i.e., social capital and organizational creative climate) affecting KMC and organizational innovativeness. Leadership severely influences the knowledge management capability and innovativeness of public organizations. Accordingly, characteristics of leadership should modify to be appropriate for changing situations. Knowledge-oriented leadership combining transformational and transactional leadership style focuses on applying knowledge to generate value creation to the organization by motivating and rewarding their members. Additionally, stimulating critical internal factors such as social capital and a creative organizational climate can lead to attaining knowledge management and innovativeness goals.

#### Knowledge-Oriented Leadership

Knowledge-oriented leadership is a leadership style that results from combining the attributes of the transactional and transformational leadership styles for effective knowledge management in an organization (Naqshbandi & Jasimuddin, 2018). The transactional leadership style has emphasized the exchange between leader and follower in the form of benefits, rewards, incentives, and self-interest (Birasnav, 2014). The transformational leadership style has focused on the motivation and inspiration of followers or members to give their best (Donate & de Pablo, 2015).

#### Knowledge Management Capability (KMC)

Knowledge management capability is an organization's ability to accumulate critical knowledge resources and manages their assimilation and exploitation (Miranda, J.N. Lee, & J.H. Lee, 2011) across functional boundaries to create useful ideas for working and to improve organizational performance (Liu & Deng, 2015). KMC consists of two dimensions (i.e., the accumulation of knowledge stocks and the regulation of knowledge flows).

Accumulation of knowledge stocks is accumulating resources that are a source of knowledge in the organization (i.e., human resources, technology infrastructure, and strategic templates) available for reuse, which often transfers from one unit to another.

Regulation of knowledge flows is regulating - or the rules that govern - general knowledge management and the process of acquiring, adjusting, and applying the stocks of

knowledge. Consequently, this determines the speed at which the accumulated resources are used in the organization (i.e., institutionalization, internal learning processes, and external learning processes).

### **Knowledge-Oriented Leadership and KMC**

Leadership is recognized as a critical factor in effectively managing organizational knowledge in the previous literature (Singh, 2008) and has also begun to be used to describe knowledge management in the organization (Sadeghi & Rad, 2018). Knowledge-based leadership concerns the accumulation of knowledge stocks through the management of human resources as knowledge workers by executing the tactical knowledge management process among employees. As well as knowledge stock concerning the provision of appropriate and effective technological tools for knowledge management is directed by leaders who commit to knowledge (Ingebrigtsen et al., 2014). Additionally, knowledge stocks in the area of strategic templates are recognized as intangible assets for organizational value creation (Kaplan & Norton, 2004) which the leader has determined knowledge management strategies by indicating a clear management approach toward employees and encouraging them to follow the leader to collectively attain the organization's goals.

Knowledge-based leadership encourages an organizational culture and leads to internal learning processes including creation, acquisition, dissemination, sharing, application of knowledge among the members (Abbasi & Zamani-Miandashti, 2013). The regulated knowledge flows indicate the speed and effectiveness of the knowledge management process in an organization in which the leadership encourages an organization's knowledge flows through knowledge-sharing behavior and organizational learning of employees (Park & Kim, 2018). Thus, this study proposes hypotheses as follows:

$H_1$ : Knowledge-oriented leadership positively affects an organization's accumulation of knowledge stocks and regulation of knowledge flows.

### **Organizational Innovativeness**

Organizational innovativeness is a characteristic that is part of the organization's culture and reflects its intention to exploit new opportunities, thereby generating the capacity to innovate and, later, to introduce effective innovations to the organization (Hurley & Hult, 1998; Werlang & Rossetto, 2019). The general objectives for innovation in the public sector are the improvement in efficiency (lower service costs and reduced management), transparency, service quality, and users' satisfaction. But there are also more specific objectives, such as managing social challenges, complying with new laws and rules, policies, and improving the employees' working conditions (Thenint, 2010).

### **KMC and Organizational Innovativeness**

Accumulating the stocks of knowledge as intellectual capital derived from human resources displays preliminary roles in the fluent functioning of modern organizations, thus it is universally acknowledged that knowledge-based assets are a basis of success (Wiig, 1997) in formatting innovation capability (Andrews & Criscuolo, 2013). The sources of human capital are knowledge, experiences, skill, and innovative behavior of human resources (Seleim & Khalil, 2011). Therefore, the generation of organizational innovativeness will be encouraged by knowledge-based human resources. Furthermore, the potential of technology or information technology capability assists the organizational processes automatically operate and encourages routine tasks and practices (García-Álvarez, 2015) including enhances organizational agility for innovation (Cai, Liu, Huang, & Liang, 2019) and open innovation (Martinez-Conesa, Soto-Acosta, & Carayannis, 2017). As well, the effectiveness of the implementation of strategic knowledge management promotes organizational creativity (Shahzad, Bajwa, Siddiqi, Ahmid, & Sultani, 2016) and innovation (Ozbag et al., 2013).

The new knowledge creation and tacit knowledge transfer between employees are conducted through internal learning processes (knowledge flows) underlying incremental and radical innovativeness (Pini & Santangelo, 2010). Moreover, knowledge derived by learning from external sources such as customers, networks, and research and development can provide supplementary insights into the job expertise of employees in various knowledge management activities to generate better quality outputs (Pee & Kankanhalli, 2009). Thus, this study proposes hypotheses as follows:

$H_2$ : The accumulation of knowledge stocks and regulation of knowledge flows positively affect organizational innovativeness.

### **Knowledge-Oriented Leadership and Organizational Innovativeness**

Leaders can achieve the desired goals from their followers by adopting the appropriate leadership style according to the situation (Shamim, Cang, Yu, & Li, 2016) as well as an organization's creativity and innovation objectives often depend on leadership (Černe, Jaklič, & Škerlavaj, 2013). Knowledge-oriented leadership is one type of leadership style that is essential for organizational innovativeness by communicating strategies for knowledge management and innovation to receive better organizational performance. Such a leader also motivates followers to exploit the organization's knowledge resources by supporting the intellectual and creative stimulation as well as empowering them to take risks to utilize new ideas resulting in effective diffusion of knowledge (Williams & Sullivan, 2011) that reflects or justifies the leaders' efforts about acquiring the organizational innovativeness. Thus, this study proposes hypotheses as follows:

$H_3$ : Knowledge-oriented leadership positively affects organizational innovativeness.

### **The Moderating Role of Social Capital**

Social capital is the sum of both the actual and potential resources that are embedded within, available through, and obtained from the network of relationships or the connection among individuals in the organization (Bourdieu, 1983). In the context of knowledge management, social capital as the contingent factor not only reduces transaction costs (Putnam, 1993) but also aids adaptive efficiency (Nahapiet & Ghoshal, 1998). Further, social capital encourages cooperative behavior and therefore facilitates the development of new forms of association as well as knowledge management effectiveness (Wu & Tsai, 2005). Social capital is crucially significant to the development of knowledge management capabilities because the relationships and interactions between individuals and groups are important pathways of knowledge flows (Barton & Sensiper, 1998). Knowledge is produced by and exists in individual employees as well as it is produced through social interactions and is embedded in the social structure of organizational members (Narasimha, 2000). Therefore, the purpose of an organization's knowledge management is more achieved especially in practices of knowledge stock and knowledge flow when social capital is higher (Manning, 2010).

Social capital asserts that social relationships are resources that can lead to the development and accumulation of human capital through the learning process (Coleman, 1988). Knowledge-oriented leadership is particularly relevant when knowledge workers perceive leaders as actively engaging and committing to supporting knowledge and learning activities (DeTienne, Dyer, Hoopes, & Harris, 2004). The organization's social capital assists leaders with enhancing their ability in regulating the knowledge flow by supporting the organizational internal and external learning activities for employee benefit. Additionally, any organization has a complex social relationship between individuals and trust, and, at the same time, is also an opportunity to reduce obstacles for the leader in the formulation and

implementation of strategies or practices regarding the accumulation of knowledge stocks and regulation of knowledge flows. Thus, this study proposes hypotheses as follows:

H<sub>4a</sub>: Social capital positively moderates the relationship between knowledge-oriented leadership and the accumulation of knowledge stocks.

H<sub>4b</sub>: Social capital positively moderates the relationship between knowledge-oriented leadership and the regulation of knowledge flows.

### **The Moderating Role of Creative Organizational Climate**

The contingency theory describes operational congruence by applying contingent conditions such as an environment, culture, society for the best organizational performance (Drazin & Van de Ven, 1985). In other words, the contingency theory for an organization is to identify and assess the conditions under everything likely to occur, which results in the best practice and any approach for an organization's operational performance (Gerdin & Greve, 2008). Therefore, the significant factors (such as creative organization climate) affecting the effectiveness of knowledge management and innovation successes require consideration by organizations to realize improvement through reasoned adjustment. Creative organizational climate is a characteristic of perceived organizational support by its members and it encourages people to generate new ideas enabling the organization to grow and increase its efficiency (Ekwall, 1996; Samad, 2010).

The creative climate (e.g., challenge/motivation, freedom, dynamism, openness, idea time, playfulness, conflicts, debates, risk-taking, so forth) stimulates the accumulation of knowledge stocks in human resources and the regulation of knowledge flows via the process of organizational learning and consequently towards enabling creativity performance (Coveney, 2008). The creative organizational climate support affects the organization's internal and external learning (Samad, 2004) and organizational innovativeness (Ismail, 2005), thus the perceived creative organizational climate will be predictable and stimulate the relationship to be stronger. The implication, therefore, is that if an organization in which employees or knowledge workers can perceive the creative organizational climate support in the organization, the implementation of knowledge management activities in the accumulation of knowledge stocks and the regulation of knowledge flows facilitates more organizational creativity and innovativeness. Thus, this study proposes hypotheses as follows:

H<sub>5a</sub>: Creative organizational climate positively moderates the relationship between the accumulation of knowledge stocks and organizational innovativeness.

H<sub>5b</sub>: Creative organizational climate positively moderates the relationship between the regulation of knowledge flows and organizational innovativeness.

## **Research Methods**

### **Respondents**

This study used the official database of the Ministry of Finance, Thailand. There were a total of 1,334 tax administrative organizations (i.e., Revenue Department, Excise Department, and Customs Department). The sample size recommended is to be 10 per each observed variable (Nunnally, 1967). Therefore, 540 samples are primarily considered sufficient for data analysis by the structural equation model. The survey method used was by mailed questionnaires was used for the total of the population. The 784 completed questionnaires were returned had a response rate of 58.77 percent. Non-response bias testing was conducted by comparison between early and late respondents, with the results showing no significant differences between early and late responses (Armstrong & Overton, 1977). The main respondents are the chiefs of the tax collection division of each tax administrative organization

in Thailand because they are responsible for formulating strategic plans and implementing them to develop the efficiency of tax collection. Consequently, these respondents are well informed about the role of leaders in managing the strategic operations that influence the KM effectiveness, including innovativeness and performance outcomes of an organization. As shown in Table 1, the 555 respondents were affiliated organizations of the Revenue Department (70.80%), with 229 respondents categorized as affiliated organizations of the Excise Department and the Customs Department (29.20%).

### **Instruments**

#### **Measurements**

The research instrument was the questionnaire that adapts from reviewing the related literature, definitions, and methods used in previous research. The measurement was developed by using multiple items. The items in the survey questionnaire used to measure each construct were adapted from previous studies. Organizational innovativeness was measured by 12 items adapted from the measurement scales of Shoham, Vigoda-Gadot, Ruvio, & Schwabsky (2012). Knowledge-oriented leadership was measured by eight items scale adopted from Donate & de Pablo (2015). Two dimensions of KMC were adapted from the measurement scale of Miranda et al. (2011). The accumulation of knowledge stocks was gauged by 10 items. As for the regulation of knowledge flows, it was measured by nine items. Social capital was gauged by using nine items scale adapted from Nahapiet and Ghoshal (1998), and Pee and Kankanhalli (2009). The creative organizational climate was assessed by six items based on Sundgren, Dimenäs, Gustafsson, & Selart (2005). Furthermore, the organization type and size were controlled due to be organizational variables that might influence the dependent variables.

#### **Validity and Reliability**

Content validity assessment comes from the opinions of five experts and the overall index of IOC being more than 0.50, which is acceptable (Turner & Carlson, 2003). The convergent validity is appraised by the average variance extracted (AVE). The AVE value in Table 2 is between 0.484 - 0.686, which shows almost all values are higher than acceptable thresholds of 0.50 (Fornell & Larcker, 1981). Except for knowledge-oriented leadership, the AVE value is below the cut-off criterion of 0.484. However, if an AVE value is less than 0.50 and the CR value (equals 0.882) is more than 0.60, thus the convergent validity of the variable is accepted. Further, discriminant validity is tested by comparing the square root of each construct's AVE value to the correlation value (Fornell & Larcker, 1981). The result in Table 3 presents the construct to have discriminant validity. Additionally, the results of the reliability test in Table 2 shows Cronbach's alpha coefficients of each construct between 0.737 to 0.836 which are greater than 0.70 as recommended by Nunnally & Bernstein (1978).

**Table 1.** The organizational characteristic of respondents

Variables	Scale	Frequency	Percent
Affiliated organization	Revenue Department	555	70.80
	Non-Revenue Department (Excise Department and	229	29.20
	Customs Department		
Location of office	Central area	134	17.10
	Regional area	650	82.90
Organizational level	Bureau/division/group/center	22	2.80
	Sector/region office	16	2.04
	Province/Area office	158	20.15
	Branch office	553	70.54
Number of officers	Customs house	35	4.47
	Less than 30 officers	585	74.62
	31 - 50 officers	58	7.40
	51 - 100 officers	60	7.65
	More than 100 officers	81	10.33

Note:  $N = 784$

### Data Analysis

The structural equation modeling (SEM) was employed to analyze the data derived from the survey to measure constructs (the measurement model) and to test the hypotheses of the relationships between variables (the structural model) as well as control variables. SEM is a multivariate technique combining aspects of multiple regression and also factor analysis to estimate a series of interrelated dependence relationships simultaneously (Hair & Tripp, 1995), therefore it is utilized to investigate the model and impose the model's goodness of fit with its data. It helps to assess the network of relationships between measured items, thus it is held as an underlying model. The model relevancy is indicated by contrasting the goodness-of-fit value between the hypothesized model and the samples' data. The statistical indexes indicated goodness-of-fit value include Chi-square, Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Normed Fit Index (NFI), Comparative Fit Index (CFI), Relative Fit Index (RFI), and Incremental Fit Index (IFI). For the testing results, the chi-square value should be nonsignificant to imply the hypothesized model is well-fitted with the samples' data. At a lower value than 0.05 is recommended for RMSEA (Hair, Black, Babin, Anderson, & Tatham, 2006). The other constituents of the goodness-of-fit index such as GFI, NFI, CFI, RFI, and Incremental IFI are considered to the measuring range from 0 (no fit at all) to 1.00 (perfect fit), with the well-fitted level being 0.90 or higher (Diamantopoulos & Siguaw, 2000).

### Results

The structural model shows the goodness-of-fit indices. The value of CMIN/DF equals 2.617 which are between 2.00 - 5.00 (Diamantopoulos & Siguaw, 2000). Moreover, the values of other goodness of fit indexes is higher than 0.90 (Bollen, 1989) (i.e., GFI = 0.983, CFI = 0.992, NFI = 0.987, IFI = 0.992, RFI = 0.972) including RMSEA equals 0.045 which is

between 0.05 - 0.08 (Schermelleh-Engel & Moosbrugger, 2003). The results of hypotheses testing are demonstrated at figure 1 and Table 4. The relationship between knowledge-oriented leadership and KMC is significant at  $p$ -value  $< 0.001$ . Knowledge-oriented leadership significantly and positively influence both the accumulation of knowledge stocks ( $\beta = 0.263$ ,  $t$ -value = 9.347, and  $p$ -value = 0.000) and the regulation of knowledge flows ( $\beta = 0.211$ ,  $t$ -value = 8.206, and  $p$ -value = 0.000). Thus,  $H_1$  is supported. The results of the structural model disclose that the accumulation of knowledge stocks positively influences organizational innovativeness ( $\beta = 0.106$ ,  $t$ -value = 2.312, and  $p$ -value = 0.021) as well as the regulation of knowledge flows ( $\beta = 0.214$ ,  $t$ -value = 4.361, and  $p$ -value = 0.000). Accordingly,  $H_2$  is supported. The relationship between knowledge-oriented leadership and organizational innovativeness ( $H_3$ ) is statistically significant at  $p$ -value  $< 0.001$  ( $\beta = 0.219$ ,  $t$ -value = 7.705, and  $p$ -value = 0.000) which indicates to be supported.

**Table 2.** Descriptive statistics, validity, and reliability

Construct	Mean	S.D.	Range of loadings	CR	AVE	Cronbach's alpha ( $\alpha$ )
OI	4.229	0.523	0.595 - 0.790	0.927	0.516	0.737
KL	4.218	0.476	0.633 - 0.752	0.882	0.484	0.817
KS	5.655	0.821	0.656 - 0.820	0.929	0.570	0.804
KF	5.574	0.822	0.695 - 0.803	0.920	0.561	0.793
SC	5.716	0.835	0.678 - 0.806	0.929	0.592	0.836
CC	5.510	0.941	0.759 - 0.874	0.929	0.686	0.828

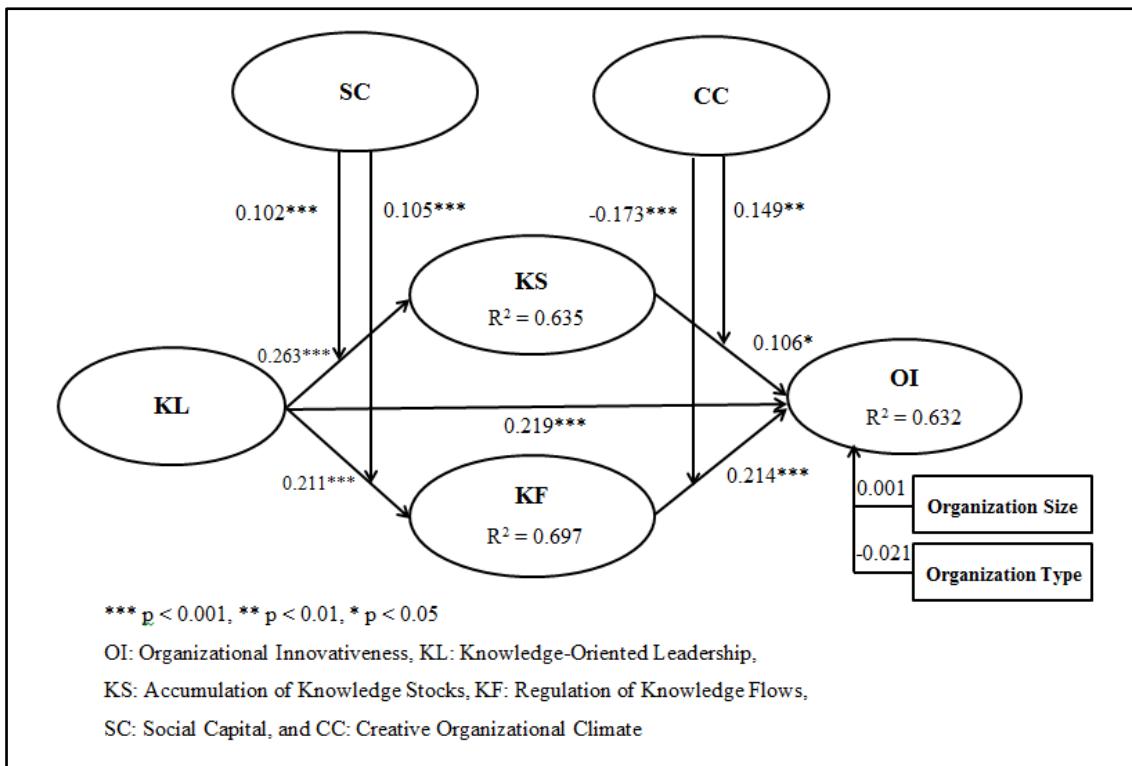
Note: 1. All of loading are significant with  $p < 0.001$ .

2. OI is organizational innovativeness, KL is knowledge-oriented leadership, KS is the accumulation of knowledge stocks, KF is the regulation of knowledge flows, SC is social capital, and CC is creative organizational climate

**Table 3.** Correlation and discriminant validity

Construct	Correlation between constructs					
	OI	KL	KS	KF	SC	CC
OI	<b>0.718</b>					
KL	0.615**	<b>0.696</b>				
KS	0.684**	0.603**	<b>0.755</b>			
KF	0.711**	0.598**	0.726**	<b>0.748</b>		
SC	0.692**	0.573**	0.619**	0.615**	<b>0.769</b>	
CC	0.630**	0.576**	0.524**	0.568**	0.514**	<b>0.829</b>

Note: \*\*  $p < 0.01$



**Figure 1** Structural model with standardized parameter estimates and statistical significance

The moderating effect of social capital on knowledge-oriented leadership and KMC (H<sub>4a</sub> and H<sub>4b</sub>) is supported. Social capital positively moderate the relationship on knowledge-oriented leadership and the accumulation of knowledge stocks at  $p$ -value  $< 0.001$  ( $\beta = 0.102$ ,  $t$ -value = 3.702, and  $p$ -value = 0.000). As well, the relationship between knowledge-oriented leadership and the regulation of knowledge flows is significantly and positively moderated by social capital ( $\beta = 0.105$ ,  $t$ -value = 4.206, and  $p$ -value = 0.000).

The moderating effect of creative organizational climate on the accumulation of knowledge stocks and organizational innovativeness (H<sub>5a</sub>) is positively significant at  $p$ -value  $< 0.01$  ( $\beta = 0.149$ ,  $t$ -value = 2.800, and  $p$ -value = 0.005) and shows to be supported. In contrast, creative organizational climate negatively moderates the relationship between KMC in the regulation of knowledge flows and organizational innovativeness ( $\beta = -0.173$ ,  $t$ -value = -3.221, and  $p$ -value = 0.001). Thus, H<sub>5b</sub> is not supported.

**Table 4.** Standardized structural equation parameter estimates and hypotheses testing results

Hypothesis	Path Analysis	Path Coefficient	t-value	Result
H <sub>1</sub>	KL $\rightarrow$ KS	0.263	9.347***	Supported
	KL $\rightarrow$ KF	0.211	8.206***	
H <sub>2</sub>	KS $\rightarrow$ OI	0.106	2.312*	Supported
	KF $\rightarrow$ OI	0.214	4.361***	
H <sub>3</sub>	KL $\rightarrow$ OI	0.219	7.705***	Supported
H <sub>4a</sub>	KL * SC $\rightarrow$ KS	0.102	3.702***	Supported
H <sub>4b</sub>	KL * SC $\rightarrow$ KF	0.105	4.206***	Supported
H <sub>5a</sub>	KS * CC $\rightarrow$ OI	0.149	2.800**	Supported
H <sub>5b</sub>	KF * CC $\rightarrow$ OI	-0.173	-3.221***	Not supported

Note: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$

## Discussion

### Research Question 1: How does knowledge-oriented leadership affect KMC (i.e., accumulation of knowledge stocks and regulation of knowledge flows)?

The finding shows that knowledge-oriented leadership affects KMC in the accumulation of knowledge stocks and the regulation of knowledge flows. The effect of knowledge-oriented leadership on the accumulation of knowledge stocks is accordant with the preceding studies that have highlighted the role of leadership in promoting the accumulation of knowledge stocks by managing knowledge workers effectively (Mládková, 2012). Also, the resources which are necessary for KM activities, especially technology infrastructure are supported. Leadership roles facilitates technological learning (Senge, Kleiner, Roberts, Ross, & Smith, 1994) by inspiring employees to accept the implementation of new technology and understand the purpose of said technology usage (Schepers, Wetzels, & De Ruyter, 2005) to support organizational goals. Furthermore, leaders play a vital role in strategic planning by considering involved organizational factors and generating the process capabilities (Birasnav, Albufalasa, & Bader, 2013) to attain the organization's KM objectives.

The result also shows that knowledge-oriented leadership significantly and positively affects the regulation of knowledge flows which is congruent with the previous studies that asserted the association between leadership and organizational learning. Knowledge-oriented leadership influences as a knowledge management initiator and promoter to stimulate shared mental models (i.e., institutionalization or culture) in new knowledge creation and learning commitment (Naqshbandi & Tabche, 2018). Consequently, this enhances the processes of employees' learning to regulate the knowledge flows in organizations (Camps & Rodríguez, 2011). The empirical evidence also displays that leadership affects the regulations of knowledge flows associating with the process of knowledge management such as acquisition, transfer, and application (Ugwu & Okore, 2020). Additionally, leadership affects organizational learning by advocating intellectual stimulation and motivating members' inspiration and self-confidence (Coad & Berry, 1998; García-Morales, Jiménez-Barrionuevo, & Gutiérrez-Gutiérrez, 2012).

### Research Question 2: How does KMC (i.e., accumulation of knowledge stocks and regulation of knowledge flows) influence organizational innovativeness?

The effect of KMC on organizational innovativeness is found to be positive. The result suggests that the accumulation of knowledge stocks encourages organizational innovativeness. Knowledge stock in human resources is related to the intellectual capital development of an organization's knowledge workers (Mostafa & El-Masry, 2008) and encourages innovative performance. Further, supporting technology used in KM practices (Hult, Hurley, & Knight, 2004) and determining effective KM strategies (Lumpkin & Dess, 1996) provide trends to reach innovation success.

KMC in the regulation of knowledge flows which is related to the KM processes such as acquiring, adjusting, and applying the accumulated knowledge stocks to be used in the organization through institutionalization and internal and external learning processes positively affect organizational innovativeness. In addition to the capability to integrate daily activities of employees to achieve the planned goals, institutionalization (e.g., culture, collaboration, and shared values) can also help organizations positively adapt well to the external environment employing rapid and appropriate responses to circumstances whilst setting and aiming for possible goals in the future (Nguyen & Mohamed, 2011). Also, knowledge flow via organizational learning supports creativity, inspires for new knowledge and ideas, and increases the capability for orientation to organizational innovation (García-Morales et al., 2012).

**Research Question 3: How does knowledge-oriented leadership influence organizational innovativeness?**

The positive relationship between knowledge-oriented leadership and organizational innovativeness is supported. Knowledge-oriented leadership emphasizes the combined behaviors of transformational and transactional leadership styles by focusing the knowledge application to create value for the organization together with stimulating members' motivation to have creativity and innovative characteristics. The role of leadership is highlighted in promoting the creation and adoption of new ideas by exemplifying the desired activities and encouraging followers to learn (Garcia-Morales, Llorens-Montes, & Verdú-Jover, 2006).

**Research Question 4: How does knowledge-oriented leadership, when moderated by social capital, affect KMC (i.e., accumulation of knowledge stocks and regulation of knowledge flows)?**

The finding reveals social capital positively moderates the effect of knowledge-oriented leadership on the accumulation of knowledge stocks. When the social capital of an organization is higher, knowledge-oriented leadership takes greater participation in generating KM capability by accumulating and developing the knowledge stocks in human resources, technology infrastructure, and strategic templates. Also, the relationship of knowledge-oriented leadership and the regulation of knowledge flows are affirmed by social capital to play a moderating role. Social capital has a positive effect on knowledge management processes that encourages knowledge to circulate in the organization (Smith, Bakker, Leenders, Gabbay, Kratzer, & Van Engelen, 2006; Kim, G. Lee, Paek, & S. Lee, 2013; Akhavan & Mahdi Hosseini, 2016). Organizations with high levels of social capital have more knowledge management capability than organizations with low levels (Hoffman, Hoelscher, & Sherif, 2005). Accordingly, good relationships between the members regarding the organization's social capital help the leader who expresses knowledge-oriented leadership and can therefore augment the regulation of knowledge flows.

**Research Question 5: How do KMC (i.e., accumulation of knowledge stocks and regulation of knowledge flows), when moderated by creative organizational climate, affect organizational innovativeness?**

The creative organizational climate is verified as a moderator of the relationship between the accumulation of knowledge stocks and organizational innovativeness. The result presents a significant and positive moderating effect on the relation. Organizational climate is related to knowledge management capability and innovation (Chen, Huang, & Hsiao, 2010; Mafabi, Munene, & Ntayi, 2012). The creative climate is essential for the innovative performance in an organization by knowledge workers who perceive their work climate as creative hold a greater work motivation, which in turn positively affects organizational innovation (Lin & Liu, 2012). Likewise, organizational creative climate plays a decisive role in motivating the knowledge workers to improve the ability to implement complex work designs (Isaksen & Ekvall, 2010) and to think creatively for augmenting innovation performance (Shah & Ali, 2011). Furthermore, knowledge stock in terms of technology infrastructure is one of the strategic factors that can help improve an organization's productivity and performance (Yang, Lee, & Lee, 2007). Technology is the basic component of innovation performance (Jabbouri, Siron, Zahari, & Khalid, 2016), as well as, the creative climate is one of the several aspects leading technology to innovation performance (Li, Ragu-Nathanb, Ragu-Nathanb, & Raob, 2006). The summary of this research result indicates that when tax administrative organizations support or provide a higher creative climate, the accumulated knowledge stocks contribute to more innovativeness. The knowledge accumulated within an individual encourages more innovative

behavior when a positive and creative climate is provided (Yström, Aspenberg, & Kumlin, 2015).

In contrast, the creative organizational climate shows a negative moderating effect of the relationship between the regulation of knowledge flows and organizational innovativeness. Although the previous studies affirm that the creative organizational climate positively influences employee learning processes and innovative behaviors, the results of this research are counterintuitively the opposite. Possible explanations for this result hinge on the characteristics of a determined creative climate. In this study, the creative climate is an atmosphere that an organization's members perceive to trust or possess openness, idea support, freedom, playfulness, debates, and dynamism or liveliness (Sundgren, Dimenäs, Gustafsson, & Selart, 2005). These characteristics can influence the larger effect of accumulated knowledge stocks on innovativeness. Nevertheless, any organization which employees feel to receive an overly creative organizational climate support environment may encounter a negative impact between regulated knowledge flows and innovativeness. For example, the atmosphere of discussion or debates in any project, if there are too many different opinions, can result in conflicts and mistrust. Thus, then employees' cooperation and learning are not promoted and at the same time can become a barrier to the regulation of knowledge flows and organizational innovativeness. The concept of divergence can explain this phenomenon. The organization which allows employees to have the openness of thinking sometimes may get positive results or benefits from the opinion diversity of team members. On the other hand, that very diversity can be problematic or require conflict resolution in a team environment or organization (Stahl, Mäkelä, Zander, & Maznevski, 2010). In another that may occur, the organization enhances an excessive dynamic climate (i.e., dynamism or liveliness), which can cause employees to be more serious and lead to refusing participation in activities of knowledge flow regulation and innovativeness. Even regulatory involvement could be a cause and hinder the learning and innovative climate. Likewise, the process of traditional public innovation acquisition is relatively slow as it is highly regulated and must adhere to strict rules and regulations (Mergel, 2018).

### **Political Contribution**

This study obtains three political contributions for public organizations. Firstly, leadership is one of the most important resources which can traverse an organization to the expected goals of innovation and competition. Therefore, knowledge-oriented leadership is accepted to be an initiator in knowledge management and innovativeness by motivating, communicating, and rewarding the members. Based on the results of this study, public organizations could positively reinforce leaders who have knowledge management orientation and skills as well as innovation commitment. Consequently, tax administrative organizations may encourage their leaders to follow a knowledge-oriented leadership style. Public organizations with knowledge-oriented leadership are better installed with knowledge management capabilities in increasing and developing an organization's knowledge stocks and simultaneously adjusting the speed of knowledge flows both within and outside organizations.

Second, social capital is confirmed to positively moderate the relationship between knowledge-oriented leadership and KMC. The finding displays that the public organizations have to use the benefit of the relational social capital to encourage the process of leadership on knowledge management capability creation. Public organizations with strong social capital show that leaders can better promote the accumulation of knowledge stocks and greater support the regulation of knowledge flows. Accordingly, the leader of an organization could formulate strategies and activities to continually support social capital.

Finally, the creative organizational climate perceived by members needs to be supported by the leaders of tax administration organizations as it helps to support the

relationship between knowledge management capabilities in the accumulation of knowledge and innovativeness. Even if the creative organizational climate in this study has a negative moderating effect on the relationship of regulation of knowledge flows on innovativeness, it meanwhile has a positive moderating effect on the relationship between accumulation of knowledge stocks and innovativeness. However, a creative organizational climate needs are considered in adapting appropriately to the knowledge management strategy of organizations. In summary, this study has integrated several concepts and provides some recommendations for executives to determine effective knowledge management activities and strategies to enhance innovativeness and performance in public organizations.

### **Limitation and Future Research**

Since this study has collected the data only from a single population which is the scope of tax administrative organizations in Thailand, the findings may not be generalizable to other contexts. However, future studies can test the research model in other contexts of public-sector organizations and target different cultural or country contexts to validate the results of a broader spectrum of cultures.

### **Conclusion**

The knowledge-based view asserts knowledge is the most strategic essential resource for an organization, and it is also an important resource in defining an organizational strategy that leads to organizational competence outcomes (Felin & Hesterly, 2007). Innovativeness is enhanced by effective knowledge management that is recognized for creating an organizational value and encouraging public organizational performance. There is a limited amount of study that has explored how leadership, especially knowledge-oriented leadership and how it relates to innovativeness. As a result, this study indicates and attempts to further enhance understanding of how specific leadership style (knowledge-oriented leadership) influence two dimensions of KMC (i.e., accumulation of knowledge stocks and regulation of knowledge flows) and innovativeness, including how the KMC of tax administrative organizations can influence the relationship between leadership styles and innovativeness. Also, the social capital and the creative organizational climate in tax administrative organizations have been examined with the moderating role of whether certain factors influence the relationships between knowledge-oriented leadership, KMC, and innovativeness. Knowledge-based view and contingency theory were used to explain variables' relationships in this study.

As a result of this research, it can be concluded that tax administration organizations that can effectively manage knowledge resources by accumulating stocks and regulating the knowledge flows enable them to leverage their sources of knowledge. This can emerge when an organization has a competent knowledge specialist in a management position who knows how to develop knowledge stocks, increase knowledge flows, and apply new ideas. Knowledge-oriented leaders are the fundamental unit of building the collective knowledge management capabilities of an organization by being a role models, motivators, communicators, and facilitators to support knowledge management success in an organization. Therefore, tax administrative organizations require knowledge-oriented leaders who can assist the promotion of the accumulation of knowledge stocks by developing knowledge workers' management systems, appropriately providing technology infrastructure, and effectively formulating knowledge management strategies. Simultaneously, knowledge-oriented leaders can encourage regulating knowledge flows through shaping collaboration culture and enhancing both internal and external learning processes.

Furthermore, tax administrative organizations need to explore and advocate the interpersonal relations within organizations such as social capital that positively affect knowledge management capabilities. Creative organizational climate is also essential to be

provided in an organization to stimulate the accumulation of knowledge stocks and the regulation of knowledge flows toward innovativeness. However, a creative organization climate indicates the negative moderating role on the relationship between the regulation of knowledge flows and innovativeness while it also plays a positive moderating role in the relationship between the accumulation of knowledge stocks and innovativeness. Consequently, tax administrative organizations can suitably consider providing and focusing on the knowledge management strategies of organizations. From conceptual development to the procedure execution of this study, leaders help to motivate and assist members by authorizing them with the desired resources and leading them to innovativeness goals. This empirical study argues that tax administrative organizations can aim to attain innovativeness through successful knowledge management, and they must appreciate leaders in developing the knowledge management capabilities plus environments to obtain their innovativeness goals and organizational performance.

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