Mediating Role of Knowledge Management Capability on the Relationship between Knowledge-Oriented Leadership and Organizational Innovativeness in Public Organizations

บทบาทตัวแปรคั่นกลางของความสามารถในการจัดการความรู้ในความสัมพันธ์ระหว่างภาวะผู้นำแบบมุ่งเน้นความรู้และการสร้างนวัตกรรมองค์กรในภาครัฐ

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Abstract

The main purpose of this study is to verify the mediating role of knowledge management capability (i.e., accumulation of knowledge stocks and regulation of knowledge flows) in the relationship between knowledge-oriented leadership and public organizational innovativeness. The data from 784 tax administrative organizations in Thailand were analyzed via structural equation modeling (SEM) to test the posited hypotheses. The results indicated that knowledge-oriented

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leadership strongly and positively influenced both two components of knowledge management capability. Furthermore, knowledge management capability in the dimension of regulation of knowledge flows positively affected public organizational innovativeness whilst the accumulation of knowledge stocks did not affect. For the mediating effect of knowledge management capability, the findings showed that the regulation of knowledge flows positively mediated the relationship between knowledge-oriented leadership and organizational innovativeness while the accumulation of knowledge stocks did not mediate the relationship. Also, managerial implication has been provided from the study especially the important role of leadership that stimulates the creating of knowledge stock and knowledge flow for organization.

Keywords: *Knowledge Management Capability, Knowledge-Oriented Leadership, Accumulation of Knowledge Stocks, Regulation of Knowledge Flows, Organizational Innovativeness*

บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์เพื่อตรวจสอบบทบาทการเป็นตัวแปรคั่นกลางของความสามารถในการจัดการความรู้ คือ การสะสมคลังความรู้และการจัดการกระแสความรู้ ในความสัมพันธ์ระหว่างภาวะผู้นำแบบมุ่งเน้นความรู้และการสร้างนวัตกรรมขององค์กรภาครัฐ แบบจำลองสมการโครงสร้างถูกนำไปใช้ในการวิเคราะห์ข้อมูลจากองค์กรบริหารภาษีในประเทศไทย 784 แห่ง เพื่อทดสอบสมมติฐาน ผลการวิจัยชี้ให้เห็นว่า ภาวะผู้นำแบบมุ่งเน้นความรู้มีอิทธิพลอย่างมากและเป็นไปในเชิงบวกต่อทั้งสององค์ประกอบของความสามารถในการจัดการความรู้ นอกจากนี้ ความสามารถในการจัดการความรู้ด้านการจัดการกระแสความรู้ส่งผลในเชิงบวกต่อการสร้างนวัตกรรมขององค์กรภาครัฐ ในขณะที่ความสามารถในการจัดการความรู้ด้านการสะสมคลังความรู้ไม่ส่งผลกระทบต่อการสร้างนวัตกรรมขององค์กรภาครัฐ สำหรับผลการเป็นตัวแปรคั่นกลางของความสามารถในการจัดการความรู้ พบว่า ความสามารถในการจัดการความรู้ด้านการจัดการกระแสความรู้ส่งผลในเชิงบวกต่อความสัมพันธ์ระหว่างภาวะผู้นำแบบมุ่งเน้นความรู้และการสร้างนวัตกรรมองค์กรภาครัฐ ในขณะที่ความสามารถในการจัดการความรู้ด้านการสะสมคลังความรู้ไม่ได้เป็นสื่อกลางในความสัมพันธ์ดังกล่าว การศึกษาให้ประโยชน์ทางด้านการจัดการโดยเฉพาะอย่างยิ่งบทบาทสำคัญของภาวะผู้นำที่ช่วยกระตุ้นการสร้างคลังความรู้และกระแสความรู้ให้แก่องค์กร

คำสำคัญ: *ความสามารถในการจัดการความรู้ ภาวะผู้นำแบบมุ่งเน้นความรู้ การสะสมคลังความรู้ การจัดการกระแสความรู้ การสร้างนวัตกรรมองค์กร*

Introduction

Over the past decades, the recognition of the value of knowledge as a strategic resource and the most important for sustainable competitive advantage, the superior performance as well as innovation of the organization has steadily increased (Abubakar, Elrehail, Alatailat, & Elçi, 2019). The appearance of knowledge as a strategic resource, obtaining the rules of competition and strategy, and results in organizations committed to developing and strengthening systems and knowledge management capabilities. The improvement in the knowledge conversion process (knowledge flow) between tacit knowledge (individual expertise) and the organization's explicit knowledge (knowledge stock) should be strongly emphasized, in order to achieve knowledge management success.

Knowledge management capability is recognized as an organization's ability to accumulate critical knowledge resources and manipulate the assimilation and exploitation to create useful ideas for working and to improve organizational performance. Knowledge management capability has become one of the most important aspects

of management practices and established as a fundamental resource for profits and non-profit organizations (Bučková, 2015). The concept of knowledge management in the past and present is understood and linked to the business sector. At present, together with the creation of a knowledge society, there is a necessity to study more knowledge in public organizations. Because public or non-profit sectors are part of the economy, they cannot be excluded in the base economy and actively use knowledge. The public sector organizations tend to implement knowledge in fostering innovation to generate better and more effective public service and delivery to citizens (Mustafid, 2013). The innovation in the public sector enhances efficiency improvement (lower service costs and reduced management), transparency, service quality, and users' satisfaction (Thenint, 2010). Therefore, an innovative public sector is providing high-quality services, particularly a new service or new aspects, ease of use, access, timeliness, actions to strengthen relations between the public sector and citizens in areas such as public information, taxation, education, healthcare, etc. (Bloch, 2011).

The literature indicates the efforts to rejuvenate organizations in the public sector to be a modern organization under the concept of New Public Management (Osborne, 2018). Knowledge management principles and practices are proven to be effective in private business organizations can provide opportunities to improve performance (Frimpong, Williams, Akinbobola, Kyeremeh, & Kwarteng, 2018), service delivery, relations with clients, and the internal process of public administration (Acheampong & Kandadi, 2008; Adobor, Kudonoo, & Daneshfar, 2019). Accordingly, examples of best practice or any successful methods in the management (includes knowledge management) of the private sector are continually adapted to the public sector for generating organizations' competencies and improving the quality of public services by innovation (Daglio, Gerson, & Kitchen, 2014).

Organizational innovativeness implies the characteristics that reflect the intention to exploit new opportunities in generating the capacity to innovate and to introduce effective innovations to the organization. Innovativeness is more aware in public sectors because innovation helps to facilitate organizational effectiveness (Hussein, Omar, Noordin, & Ishak, 2016). The literature appears on the possibility of innovativeness for public organizations and it is found that it is still limited information. However, some researches are investigated factors affecting public organizational innovativeness. The empirical evidence shows that important conditions, which is specific to public organizations influence the probability of innovativeness (Demircioglu & Audretsch, 2017), and intrinsic factors, as well as managerial practices, affect improving performance which is crucial for achieving innovation in the public sector context (Sahni, Wessel, & Christensen, 2013). Furthermore, the leadership role is highlighted as one of important factors in developing knowledge management capability and stimulating innovativeness goals in public organizations. Therefore, this research aims to investigate the relationship among the specific leadership mode (knowledge-oriented leadership), knowledge management capability (i.e., accumulation of knowledge stocks and regulation of knowledge flows), and organizational innovativeness of tax administrative organizations in Thailand.

The tax administrative organizations are responsible for collecting taxes, which are the country's main income, to be used to drive domestic activities. These organizations are also involved in the economic system which works closely with the citizen in the public and business sectors. Knowledge within the public organizations is a valuable resource

and leads to development in various areas therefore knowledge management including innovation is one of the key strategies for the Ministry of Finance (Office of the Permanent Secretary, 2017). The knowledge that is systematically stored results in individuals, juristic persons, companies, business organizations, and stakeholders can access it for searching (Rowley & Farrow, 2018). While the technology and innovation help to support and originate more efficient channels in receiving services (Bertot, Estevez, & Janowski, 2016).

Research objective

The main objective of this research is to examine the mediating role of knowledge management capability (i.e., accumulation of knowledge stocks and regulation of knowledge flows) on the relationship between knowledge-oriented leadership and organizational innovativeness.

Literature review

Knowledge-Based View (KBV)

The knowledge-based view (KBV) is an expansion of the resource-based view that suggests knowledge as intangible resource possessed by an organization, is a source of sustainable competitive advantage when it is valuable, rare, inimitable, and non-substitutable by other resources (VRIN) (Barney, 1991; Suwannarat, 2016a, 2016b). KBV points out that knowledge is the most strategically important resource of an organization and it is also a significant resource for setting an organization's strategy, which leads to results in organizational competency. The fundamental of the organization's KBV is assumed that knowledge is the precious input in production and the preliminary source of value (Grant, 1996). Therefore, this implies that the ability to value creation is based upon a set of intangible knowledge-based capabilities. The KBV theory is applied to describe an organization's knowledge as a valuable and specific resource for enhancing organizational capability and innovative behavior.

Knowledge-oriented leadership

Knowledge-oriented leadership is a specific leadership style that is defined as the attitude and actions of a leader that stimulates the creating (knowledge stock), and sharing or using (knowledge flow) new knowledge for enhancing the thinking and overall organizational outcomes (Mabey, Kulich, & Lorenzi-Cioldi, 2012). The organizational leaders demonstrate the behavior of knowledge-oriented leadership in many ways, such as creating an environment for responsible employee behavior and teamwork, mediating for the achievement of the organization's objectives, promoting the learning from experience and the acquisition of external knowledge, and rewarding employees who share and apply their knowledge, so forth (Naqshbandi & Jasimuddin, 2018).

Knowledge management capability

Knowledge management capability is an ability of an organization to accumulation critical knowledge resources and manages their assimilation and exploitation across functional boundaries to create useful ideas for working and to improve the organizational performance (Liu & Deng, 2015). Knowledge management capability consists of two components including accumulation of knowledge stocks and regulation of knowledge flows (Miranda, Lee, & Lee, 2011).

- Accumulation of knowledge stocks

The stock of knowledge is considered to be an organizational asset as a source of knowledge available for reuse, which often brings knowledge transferred from one unit to another. Accumulated stocks of organizational knowledge such as products or services in the pipeline, citations, and patents of the organization contribute to superior performance

and it also promotes new knowledge production that can be used in organizations. The essential sources of the organization's knowledge stocks include human resources, technology infrastructure, and strategic templates.

- *Regulation of knowledge flows*

Regulation of knowledge flows is a process for knowledge acquisition, transfer, and utilization. Therefore, the regulation of knowledge flow is related to the rules that govern general knowledge management and the process of acquiring, adjusting, and applying the knowledge stocks. The regulation of knowledge flows is in terms of the speed with which the accumulated resources are used in an organization such as institutionalization, internal learning processes, and external learning processes.

Organizational innovativeness

Organizational innovativeness is a characteristics 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 (Werlang & Rossetto, 2019). The creative endeavors include the search for, and the discovery, experiment, and progression of new technologies, novel products or services, new processes of production, and modern organizational structures. Organizational innovativeness has been defined as five attributes of innovative behavior including creativity (implementing a new idea), risk-taking (committing resources to risky decisions), future orientation (facilitates an organization's adaptation in a rapidly changing environment), openness to change (involves an organization's willingness to adopt innovations), and proactiveness (the proactive organization anticipates changes and exploits opportunities) (Shoham, Vigoda-Gadot, Ruvio, & Schwabsky, 2012).

Hypothesis development

1) Knowledge-oriented leadership and knowledge management capability

Knowledge-oriented leadership plays a critical role in increasing organizational capability in knowledge management especially involving in terms of accumulated knowledge stocks through the management of human resources as knowledge workers. This leadership style focuses on defining the organizational processes and practices of effective individual management such as selecting, staffing, training, assessing, compensating knowledge workers. Leadership influence to develop a vision comprised a long-term commitment to the application of information technology in an organization (Ingebrigtsen et al., 2014). Moreover, 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.

The roles of leadership enhance knowledge flows via institutionalization. Leaders play an important role in the institute such as encouraging collaboration culture in an organization, supporting the followers or members to learn and share their knowledge, motivating employees' commitment, so forth. 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). As well, leadership has been recognized as a key determinant of the organizational learning process because it has a significant effect on presenting appropriate attitudes and behaviors for employees. Thus, this research proposes hypotheses as follows:

H1: Knowledge-oriented leadership positively influences both the accumulation of knowledge stocks and the regulation of knowledge flows of an organization.

2) Knowledge management capability and organizational innovativeness

Knowledge is a significant driver of an organization and the primary factor in value creation, and this knowledge is also considered as a strategic resource that gives the means for generating innovative products and services. The stock of knowledge resource is the intellectual capital of an organization, and it intimately involves human resources which are the most essential intellectual asset (Najmi, Kadir, & Kadir, 2018). 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 in formatting innovation capability. The knowledge stock of technology infrastructure promotes the conversion of implicit/tacit knowledge into explicit knowledge, and that knowledge can be systematized, stored in a document, and retrieved to implement within the organization. Similarly, information technology capability assists the organizational processes automatically operate and encourages routine tasks and practices including enhances organizational agility for innovation (Cai, Liu, Huang, & Liang, 2019) and open innovation (Martinez-Conesa, Soto-Acosta, & Carayannis, 2017).

Creative ideas are produced and used in product/service innovation via knowledge flow and refinement (Swink & Song, 2007). Knowledge flow concerns the institutionalization and organizational learning processes. Institutionalization demonstrates an organizational culture that creates capabilities of knowledge management activities within the organization (e.g., the support of leaders, organizational commitment, communication, collaboration, and including formal activities formulated from the operation of the institutes). Knowledge management can stimulate innovativeness as it enables firms to share and codify the tacit knowledge converted to explicit knowledge, to generate a culture of enhanced knowledge creation and sharing as well as to collaborate in an organization. Developing new knowledge via organizational learning processes interacts in generating new capability of employees and organizational performance. The new knowledge creation and tacit knowledge transfer between employees are conducted through internal learning processes. The internal learning process (knowledge flows) underlies incremental and radical innovativeness. Innovation depends largely on the amount of knowledge that is available in the organization. Therefore, knowledge management and knowledge-based assets are expected to be related to innovation performance especially when they are operated via organizational learning. Thus, this research proposes hypotheses as follows:

H2: The accumulation of knowledge stocks and the regulation of knowledge flows of an organization positively influence organizational innovativeness.

3) Knowledge-oriented leadership and organizational innovativeness

Leadership is a skill that influences others, inspires, motivates, and directs activities to achieve organizational goals. Leaders can achieve the desired goals from their fellows by adopting the appropriate leadership style according to the situation (Shamim, Cang, Yu, & Li, 2016). The empirical research has shown that creativity and innovation 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 leaders also

motivate their followers to exploit the organization's knowledge resources by specifying the mode of motivation they use, depending on the nature of the activities they want to promote in followers by supporting the intellectual and creative stimulation as well as empowering to take risks to utilize new ideas resulting in effective diffusion of knowledge. The role of leadership affects innovation climate and employee creativity (Jaiswal & Dhar, 2015). Thus, this research proposes hypotheses as follows:

H3: Knowledge-oriented leadership positively influences organizational innovativeness.

4) Mediating role of knowledge management capability

Existing research on innovation leadership in the context of knowledge management capability presents inconclusive results about how leadership can make a significant impact on organizational innovativeness (von Krogh, Nonaka, & Rechsteiner, 2012). As a knowledge-oriented leadership, it acts as a driving force for knowledge management capability this leadership style will share indirect connections with innovativeness. Leadership positively influences organizational innovation and improves organizational performance through knowledge management and organizational learning (Noruzy, Dalfard, Azhdari, Nazari-Shirkouhi, & Rezazadeh, 2013). Vargas (2015) proposed that a blended leadership style as a strategic leadership can simultaneously implement diverse courses of action to facilitate organizational learning and presented that the leadership style appears as the most dominantly apt to support an organizational learning process to achieve innovation, high performance, and competitiveness. Knowledge management capability encompasses the accumulation of knowledge stocks and regulation of knowledge flows that specifies the link between leadership and knowledge management success leading to organizational performance. Organizational leadership impacts knowledge management processes to inspire members in knowledge acquisition, sharing, and new idea creation. Furthermore, leaders have formulated suitable reward/incentive systems as well as supporting several and effective channels of communication. For innovation behavior, the leaders enhance the member's novel idea creation and new knowledge application for their routine work. Effective knowledge management usually demonstrates increased knowledge stocks, as well as regulated knowledge, flows through organization culture (as institutionalization) and learning processes. Thus, this research proposes hypotheses as follows:

H4: The accumulation of knowledge stocks and regulation of knowledge flows of an organization mediate the relationship between knowledge-oriented leadership and organizational innovativeness.

Research methods

Population and sample

The population used in this research is derived from the published database of The Thailand Ministry of Finance which is displayed on each internal organization's website. The 1,344 tax administrative organizations are separated into 981 from the Revenue Department (The Revenue Department, 2020), 290 from The Excise Department (The Excise Department, 2017), and 73 from Thai Customs (Thai Customs, 2016), which are selected as the population. The sample size is recommended to be 10 per an observed variable (Nunnally, 1967). This research model consists of 39 observed variables, thus 390 samples are basically considered sufficient for data analysis.

Data collection procedure

A survey approach by mailing a self-administered questionnaire is suitable and effective data collection method for this research as it is a widely-used method for collecting large-scale data in diverse geographical

areas (Dillman, Smyth, & Christian, 2014). This study had taken two months (June to July 2020) to gather data. The main respondents were the chiefs of each tax administrative organization in Thailand. The total number of questionnaires sent was 1,344 packages mailed, 798 questionnaires were returned, 784 were usable, and 14 were uncompleted and unusable. Therefore, the effective response rate was approximately 58.33 percent which was acceptable as the sample size for applying the confirmatory factor analysis and structural equation model.

Measurements

This quantitative research has an empirical analysis that use the primary data received by the survey questionnaire. The knowledge-oriented leadership and organizational innovativeness acquired from the survey is measured by a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Additionally, knowledge management capability is measured by a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Organizational innovativeness is measured by 12 items adapted from the measurement scales of Shoham et al. (2012). Knowledge-oriented leadership is measured by eight items scale adopted from Donate and de Pablo (2015). Two dimensions of knowledge management capability are adapted from the measurement scale of Miranda, Lee, and Lee (2011). The accumulation of knowledge stocks is gauged by 10 items. For the regulation of knowledge flows, it is measured by nine items. The organizational variables that may influence the dependent variables which have to control include organization type and size. Thus, both variables are defined to be dummy variables before statistical analysis.

Validity and reliability

To ensure that the question is fit and good to use for data collection, the questionnaire was tested for validity and reliability to acquire the effectiveness in data-gathering procedures. In the term of validity, content validity and construct validity is examined. Content validity based on the opinions of five experts with experience in this area and the overall index of IOC indicates more than 0.50 which is acceptable (Turner & Carlson, 2003).

For construct validity, the convergent validity of the measurement model can be assessed by the average variance extracted (AVE) which is an evaluation of the degree of shared variance between the latent variables of the model. The AVE value at Table 1 is between 0.484 - 0.570 which almost all values are higher than acceptable thresholds at 0.50 (Fornell & Larcker, 1981). Exclusive of knowledge-oriented leadership, the AVE value is 0.484 which is below the cut-off criterion. However, if an AVE value is less than 0.50 and the CR value (equals 0.882) is more than 0.60, the convergent validity of the variable is enough to accept. Also, discriminant validity is also tested by comparing the square root of each construct's AVE value to the correlation value. The result in Table 2 demonstrates the construct to have discriminant validity due to the square root of all AVE values in the main diagonal surpass the correlations with other constructs (off-diagonal) in the relevant rows and columns (Fornell & Larcker, 1981).

Furthermore, the results of the reliability test of all constructs in Table 1 show Cronbach's alpha coefficients of each construct being in the range from 0.737 to 0.817 which are greater than 0.70 as recommended by Nunnally (1978).

Statistical techniques

To clarify the research questions and affirm the proposed hypotheses, the data derived from the survey is analyzed to test research hypotheses using statistical techniques such as descriptive statistics (e.g., percentage, mean, and standard deviation) and structural equation modeling (SEM).

Table 1 Descriptive statistics, validity, and reliability

Construct	Mean	S.D.	Range of loadings	CR	AVE	Cronbach's alpha (α)
Organizational Innovativeness	4.23	0.523	0.595-0.790	0.927	0.516	0.737
Knowledge-oriented Leadership	4.22	0.476	0.633-0.752	0.882	0.484	0.817
Accumulation of Knowledge Stocks	5.66	0.821	0.656-0.820	0.929	0.570	0.804
Regulation of Knowledge Flows	5.57	0.822	0.695-0.803	0.920	0.561	0.793

Note: All loading are significant with $p < 0.001$

Table 2 Correlation and discriminant validity

Construct	Correlation between constructs			
	OI	KL	KS	KF
Organizational Innovativeness (OI)	**0.718**	-	-	-
Knowledge-oriented Leadership (KL)	0.615**	**0.696**	-	-
Accumulation of Knowledge Stocks (KS)	0.684**	0.603**	**0.755**	-
Regulation of Knowledge Flows (KF)	0.711**	0.598**	0.726**	**0.748**

Note: 1. ** $p < 0.01$

2. The values in the diagonal (i.e., 0.718, 0.696, 0.755, and 0.748) are square root of each construct's AVE value.

Results

Respondents

The survey results of the demographic characteristics of the 784 tax administrative organizations in Table 3 indicate that most respondents' organizations are affiliated organizations of the Revenue Department (70.79%). Most tax administrative offices have located in a regional area (82.90%). In terms of organizational level, a branch office is a majority (70.54%). Most tax administrative organizations have a number of officers less than or equal 30 officers (74.62%).

Table 3 The organizational characteristic of respondents

Variables	Scale	Frequency	Percent
Organization type	The Revenue Department	555	70.80
	Non-The Revenue Department (The Excise Department and Thai Customs)	229	29.20
Organization size (Number of officers)	Less than or equal 30 officers	585	74.62
	More than 30 offices	199	25.38
Location of office	Central area	134	17.10
	Regional area	650	82.90
Organizational level	Bureau/division/group/centre	22	2.80
	Sector/region office	16	2.04
	Province/Area office	158	20.15
	Branch office	553	70.54
	Customs house	35	4.47

Note: N = 784

Hypotheses testing and results

The structural model fitting is assessed by criteria of main fit indices. The value of CMIN/DF equals 1.786 which is lower than 2.00 (Diamantopoulos & Siguaw, 2000). Moreover, the values of other goodness of fit indexes is higher than 0.90 (Bollen, 1989) (i.e., GFI = 0.919, CFI = 0.967, NFI = 0.929, IFI = 0.967, RFI = 0.922) including RMSEA value equals 0.032 which is lower than 0.05. (Schermelleh-Engel, Moosbrugger, & Müller, 2003). The results of the AMOS output reveal that the model has a relatively good fit. Then the hypothesized model is estimated to examine the structural relationships. All hypotheses are tested by analyzing the t-value at a significance level of 0.05. The summary of the relationships in the preliminary structural model with the results of parameter estimation and test of significance (p-value) is shown at figure 1 and Table 4.

Hypothesis 1 tests the relationship between knowledge-oriented leadership and knowledge management capability at p-value < 0.001. Knowledge-oriented leadership significantly and positively influence both the accumulation of knowledge stocks (t-value = 15.069, p-value = 0.000) and regulation of knowledge flows (t-value = 15.355, p-value = 0.000). For estimated regression weight, knowledge-oriented leadership positively influences the accumulation of knowledge stocks and regulation of knowledge flows with path standardized coefficient (β = 0.689 and 0.701 respectively). Thus, hypothesis 1 is supported.

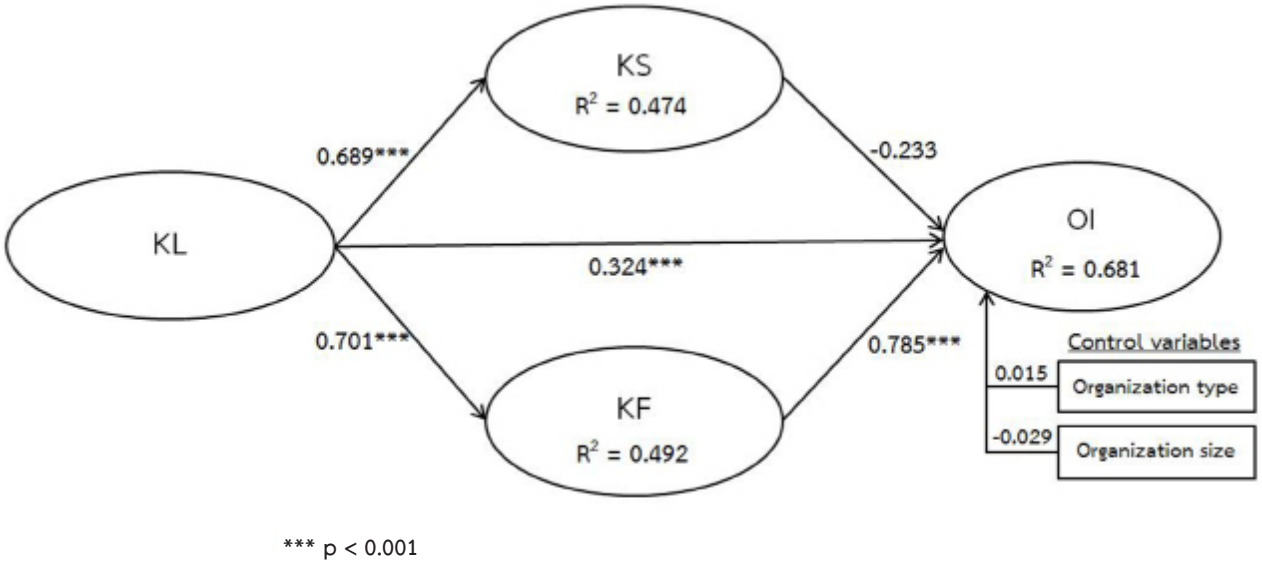

Figure 1 The structural model with standardized parameter estimates and statistical significance

The results of the structural model disclose that the relationship between the knowledge management capability and organizational innovativeness (hypothesis 2) is not significant at the significance level of 0.05 (t-value = -1.579, p-value = 0.114) with the standardized coefficient (β = -0.233) for the accumulation of knowledge stocks. In contrary, the regulation of knowledge flows influence organizational innovativeness that is positively significant at the significance level of 0.001 (t-value = 5.091, p-value = 0.000). The standardized coefficient of the regulation of knowledge flows is high with a positive direction (β = 0.785).

The relationship between knowledge-oriented leadership and organizational innovativeness (hypothesis 3) is statistically significant (t-value = 7.188, p-value = 0.000). The standardized coefficient of knowledge-oriented leadership is in a positive direction (β = 0.324). The result shows knowledge-oriented leadership positively and significantly influences organizational innovativeness at the significance level of 0.001. Thus, hypothesis 3 is supported.

For mediating effect testing (hypothesis 4), the result of this research demonstrates the accumulation of knowledge stocks does not significantly affect organizational innovativeness which does not follow Baron and Kenny's (1986) criteria. Furthermore, the standardized coefficients for the indirect relationship is estimated at -0.161 which is also not significant at 0.05 significance level (t-value = -1.563, p-value = 0.118). On the other hand, the research results show significant mediating effect of the regulation of knowledge flows that meet Baron and Kenny's (1986) criteria, and the standardized coefficients for the indirect relationship is estimated at 0.550 which is significant at 0.001 (t-value = 4.815, p-value = 0.000). These results reveal that the regulation of knowledge flows is a partial mediator.

Table 4 Standardized structural equation parameter estimates and t-value of constructs

Hypotheses/Path	Standardized coefficients						Result
	Total effects	t-value	Direct effects	t-value	Indirect effects	t-value	
H1: KL → KS	0.689	15.069***	0.689	15.069***	-	-	Supported
KL → KF	0.701	15.355***	0.701	15.355***	-	-	Supported
H2: KS → OI	-0.233	-1.579	-0.233	-1.579	-	-	Not supported
KF → OI	0.785	5.091***	0.785	5.091***	-	-	Supported
H3: KL → OI	0.714	7.201***	0.324	7.188***	0.390	4.176***	Supported
H4: KL → KS → OI	-	-	-	-	-0.160	-1.563	Not supported
KL → KF → OI	-	-	-	-	0.550	4.815***	Supported

Note: *** $p < 0.001$

Discussion

From data analysis and hypothesis testing of this research has demonstrated the findings of the relationship among knowledge-oriented leadership, knowledge management capability (i.e., accumulation of knowledge stocks and regulation of knowledge flows), and organizational innovativeness of tax administrative organizations in Thailand. These results can be discussed as follows.

First, the finding reveals that knowledge-oriented leadership strongly influences on both the accumulation of knowledge stocks and the regulation of knowledge flows. This finding is corresponding with the prior research that has emphasized the role of leadership in advocating the accumulation of knowledge stocks by managing knowledge workers effectively (Mládková, 2012) and providing the resources which are necessary for knowledge management activities, especially technology infrastructure, including inspiring employees to accept the implementation of new technology and to understand the purpose of implementing new technology (Schepers, Wetzels, & de Ruyter, 2005) to support achieving individual and organizational goals (Birasnav, 2014). In terms of the regulation of knowledge flows, knowledge-oriented leadership influences in being knowledge management initiator and supporter to encourage shared mental models (i.e., institutionalization or culture) in creating new knowledge and learning commitment (Naqshbandi & Tabche, 2018) and participates in enhancing the internal and external learning processes of employees (Camps & Rodríguez, 2011). Similarly, leadership builds teams and provides them with direction, energy, and support for processes of change and organizational learning (McDonough, 2000) by promoting intellectual stimulation and providing inspirational motivation and self-confidence among organization members (García-Morales, Jiménez-Barrionuevo, & Gutiérrez-Gutiérrez., 2012).

Second, the relationship between knowledge management capability (i.e., accumulation of knowledge stocks and regulation of knowledge flows) and organizational innovativeness is revealed. Although there is evidence to suggest that managing human resources related to the intellectual capital development of knowledge workers (Martins & Terblanche, 2003; Mostafa & El-Masry, 2008), supporting technology used in knowledge management practices (Hult, Hurley, & Knight, 2004) including determining effective knowledge

management strategies (Lumpkin & Dess, 1996) encourages organizational innovativeness. However, in tax administration organizations, it was found that the accumulation of such knowledge stocks did not influence organizational innovativeness. The result derived from the analysis of the data from tax administrative organizations has affirmed that the organizations' knowledge stock accumulation does not encourage innovativeness although the knowledge stocks are continually augmented especially knowledge repositories of individuals through human resource development. According to the limitation, knowledge is solely accumulated within individuals and not circulated or transferred among members to encourage learning (Eisenhardt & Santos, 2002). Likewise, others existing knowledge stocks (e.g., effective technology infrastructure and knowledge management strategic templates) are without consideration to use for the real benefit creation thereby these knowledge stocks do not stimulate innovation outcome to the organization.

On the other hand, the finding of the regulation of knowledge flows on organizational innovativeness shows a positive effect. This finding affirms the regulation of knowledge flows which is the process of acquiring, adjusting, and applying the accumulated knowledge stocks to be used in the organization involving institutionalization and internal and external learning processes positively affect organizational innovativeness. Institutionalization (i.e., organizational culture, collaboration, shared value, etc.), in addition to the capability to integrate daily activities of employees to achieve the planned goals, can also help organizations adapt well to the external environment for rapid and appropriate responses (Nguyen & Mohamed, 2011) to aim possible goals in the future. Furthermore, (internal and external) organizational learning promotes creativity, inspires new knowledge and ideas, and increases the ability to under for orientation to organizational innovation (García-Morales et al., 2012).

Third, the results present a positive role of knowledge-oriented leadership in predicting organizational innovativeness which is supported. Knowledge-oriented leadership displays behaviors integrated between transformational and transaction leadership by focusing the knowledge implement to generate value for the organization coupled with stimulating motivation members to have the creativity and innovative behaviors. Besides, the finding is also consistent with past research (Garcia-Morales, Llorens-Montes, & Verdú-Jover, 2006; Sarin & McDermott, 2003) that has highlighted the role of leadership in promoting the creation and adoption of new ideas by exemplifying the desired activities and stimulating followers to have learned.

Finally, the mediating role of knowledge management capability in the relationship between knowledge-oriented leadership and organizational innovativeness is presented. The result demonstrates that the mediating effect of accumulation of knowledge stocks in the structural model does not occur. This means that knowledge-oriented leadership has a direct impact on organizational innovativeness, not dependent on the organization's knowledge stock accumulation. Knowledge-oriented leadership influences the generation of knowledge stocks in the organization by developing knowledge workers, technology infrastructure, and knowledge strategies. Concurrently, those accumulated knowledge stocks are not used or transferred to encourage the learning processes of the organization's members, therefore innovativeness is not promoted.

The opposite result, the regulation of knowledge flows shows a mediating effect in the above relationship. Similar to previous research that tries to present leadership affects creativity and innovation through knowledge management capability (Naqshbandi & Jasimuddin, 2018) or knowledge management processes (Sadeghi & Rad,

2018). As the interpretation of proposed hypotheses, when an organization has a greater tendency toward a knowledge-oriented leadership position, this organization develops and promotes a larger volume of knowledge management capability with regulating knowledge flows among employees, which, in turn, positively influences its innovativeness.

Theoretical and managerial implications

Theoretical implications

This study contributes to the theoretical development of a conceptual model for explaining the relationships among these constructs and clarifies three important relationships. First, the effects of the relationship model have displayed the direct effect of knowledge-oriented leadership on knowledge management capability in the tax administrative organization context. Knowledge-oriented leadership influences two components of knowledge management capability by motivating, communicating, and rewarding employees who conduct required knowledge management activities.

Second, the direct effect of knowledge management capability on public organizational innovativeness is confirmed. In the knowledge management capability literature, the researcher has studied knowledge management capability in various dimensions. Most knowledge management capability researches have focused on knowledge management infrastructure and knowledge management processes or practices. This research confirms to the study of Miranda, Lee, and Lee (2011) which divides knowledge management capability into two components: accumulation of knowledge stocks and regulation of knowledge. These components seem to be appropriate and comprehensive for an examination of the relationship between knowledge management capability and public organizational innovativeness in the tax administrative organization context.

Finally, the literature on the linkage between knowledge-oriented leadership and innovativeness has not received much attention in leadership and innovativeness literature including exploring the indirect effect of leadership on innovativeness through two dimensions of knowledge management capability. To contribute and expand the literature in the concerned field, the indirect effect between knowledge-oriented leadership and organizational innovativeness is investigated through knowledge management capability (i.e., accumulation of knowledge stocks and regulation knowledge flows) as a mediator of the relationship.

Managerial implications

This study obtains two practical implications for public organizations. Firstly, this research indicates the public organization may have to be aware to implement knowledge resources to encourage innovativeness for the value creation to the organization. Knowledge management helps to manipulate the stocks and flows of knowledge efficiently. Hence, public organizations participated in knowledge management by adopting the innovativeness model, to leverage knowledge resources and to stimulate learning both within their organizations and externally to their service receivers. As a result, tax administrative organizations can enhance their innovativeness through the regulation of knowledge flows.

Further, this study recommends that leadership role should be emphasized for public organizations, therefore proposing knowledge-oriented leadership in this conceptual framework. Leadership is one of the most important resources which can lead an organization to the expected goals of innovation and competition through the knowledge management initiative. Furthermore, knowledge-oriented leadership is accepted to be an initiator in knowledge management and innovativeness through motivating, communicating, and rewarding

the organization's members. Based on the results of this study, public organizations could support leaders who have knowledge management orientation and skills including innovation commitment.

In summary, innovation is aimed at enhancing the efficiency of public organizations and the quality of service delivery. The leaders who express the behaviors of knowledge-oriented leadership help to promote innovativeness to public organizations via regulating the knowledge flows. Knowledge flows can be regulated by supporting organizational culture or institutionalization, for example, employees' commitment, effective communication, collaboration among employees, so forth. Furthermore, encouraging internal and external learning processes of public organizations are essential for expanding knowledge flows.

Limitations and future research directions

This research has a number of limitations. First, since the data were drawn only from a single population as the tax administrative organizations in Thailand, the findings may not be generalizable to other contexts. Thus, future studies can test the research model in other contexts of public-sector organizations or private service organizations both in similar and different cultural contexts to validate and compare the results of a broader spectrum of cultures. Second, a cross-sectional study is the research design of this study. Although findings are corresponding with theoretical reasoning, the research design is unable to affirm the causal relationships determined in the hypotheses. Future research can modify this issue by applying a longitudinal design. Finally, this study indicated a constructive type of leadership knowledge-oriented leadership which is a specific characteristic of knowledge-based leadership, especially in promoting knowledge management capabilities and innovativeness for tax administrative organizations. In fact, there are other styles of leadership that need to be verified for knowledge management capability and innovativeness. Therefore, other types of leadership should be further investigated in the future.

Conclusion

According to the knowledge-based view, knowledge is the most strategically important resource of an organization and is also a critical resource in organizational strategy formulation leading to organizational competence outcomes. Innovativeness is enhanced by effective knowledge management which has been accepted for creating value to the organization and promoting organizational performance for the public sector. Based on the results of this research, it is inferred that tax administrative organizations that are capable of managing their knowledge resources effectively by accumulating the knowledge stocks and regulating the knowledge flows are enablers in exploiting their knowledge resources. This can occur when organizations contain capable knowledge experts in managerial positions who know how to develop knowledge stocks, enhance knowledge flows, and apply new ideas. Knowledge-oriented leaders are the fundamental unit of overall knowledge management capability creation of organizations by being a role model, motivators, communicator, and facilitators in supporting the success of knowledge management in organizations.

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