

THE DEVELOPMENT OF A CAUSAL RELATIONSHIP MODEL OF FACTORS INFLUENCING TO PROFESSIONAL LEARNING COMMUNITY MANAGEMENT IN SCHOOLS UNDER SECONDARY EDUCATIONAL SERVICE AREA OFFICE 21

การพัฒนารูปแบบความสัมพันธ์เชิงสาเหตุปัจจัยที่มีอิทธิพลต่อการบริหารจัดการชุมชนแห่งการเรียนรู้ทางวิชาชีพในสถานศึกษาสังกัดสำนักงานเขตพื้นที่การศึกษามัธยมศึกษา เขต 21

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ABSTRACT

The purposes of this research were to develop and examine a causal relationship model of influencing factors on Professional Learning Community Management under Schools of Secondary Educational Service Area Office 21 by developing with the empirical data. The research was conducted in 2 phases. The first phase was the conceptual framework construction by a study of document involved and interviewing experts with Delphi technique. The second phase was the hypothesis examination by using questionnaire with five rating scale at the reliability of 0.98. The research was carried out with 584 teacher samples of schools of Secondary Educational Service Area Office 21 which were obtained by purposive sampling. The statistic used for analyzing basic data and Confirmatory Factor Analysis: CFA and Congruence Analysis between hypothesis model and empirical data was computer program. The research findings found as follows:

1) A causal relationship model of influencing factors on Professional Learning Community Management under Schools of Secondary Educational Service Area Office 21 consisted of transformational leadership, organizational structure, knowledge management, organizational culture, knowledge management plan and information technology.

2) A causal relationships model developed had congruence with empirical data by considering to $\chi^2 = 220.18$, df value = 177.00, p - value = 0.15, GFI value = 0.97, AGFI value = 0.95 and RMSEA value = 0.02. The factor of transformational leadership had directly influenced and total in influenced on Professional Learning Community management of schools at the highest level, followed by organizational culture, knowledge management and information technology, respectively. All variances of model developed could describe the variance of PLC management in schools under secondary educational service area office 21 at 68 % and the level of significance is 0.05.

Keywords: Management ; Professional Learning Community ; A Causal Relationship Model

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บทคัดย่อ

การวิจัยนี้มีวัตถุประสงค์เพื่อ พัฒนาและตรวจสอบรูปแบบความสัมพันธ์เชิงสาเหตุปัจจัยที่มีอิทธิพลต่อการบริหารจัดการชุมชนแห่งการเรียนรู้ทางวิชาชีพในสถานศึกษา สังกัดสำนักงานเขตพื้นที่การศึกษามัธยมศึกษา เขต 21 ที่พัฒนาขึ้นกับข้อมูลเชิงประจักษ์ การวิจัยแบ่งเป็นสองระยะ ระยะที่หนึ่ง การกำหนดกรอบแนวคิดในการวิจัยด้วยการศึกษาวรรณกรรม งานวิจัยที่เกี่ยวข้อง และสัมภาษณ์ผู้เชี่ยวชาญด้วยเทคนิคเดลฟาย ระยะที่สองเป็นการตรวจสอบสมมติฐานของการวิจัยด้วยแบบสอบถามมาตราส่วนประมาณค่า มีค่าความเชื่อมั่นทั้งฉบับ เท่ากับ 0.98 กลุ่มตัวอย่างเป็นครูในสถานศึกษาสังกัดสำนักงานเขตพื้นที่การศึกษามัธยมศึกษา เขต 21 รวมทั้งสิ้น 584 คน โดยวิธีการสุ่มแบบเจาะจง วิเคราะห์ข้อมูลด้วยโปรแกรมคอมพิวเตอร์หาค่าเฉลี่ย ส่วนเบี่ยงเบนมาตรฐาน และตรวจสอบความสอดคล้องรูปแบบเชิงสมมติฐานกับข้อมูลเชิงประจักษ์

ผลการวิจัยพบว่า 1) รูปแบบความสัมพันธ์เชิงสาเหตุของปัจจัยที่มีอิทธิพลต่อการบริหารจัดการชุมชนแห่งการเรียนรู้ทางวิชาชีพในสถานศึกษาสังกัดสำนักงานเขตพื้นที่การศึกษามัธยมศึกษา เขต 21 ประกอบด้วย ผู้นำการเปลี่ยนแปลง โครงสร้างองค์กร การจัดการความรู้ วัฒนธรรมองค์กร การวางแผนจัดการความรู้ และเทคโนโลยีสารสนเทศ 2) รูปแบบปัจจัยที่พัฒนาขึ้นมีความสอดคล้องกลมกลืนกับข้อมูลเชิงประจักษ์ โดยพิจารณาจากค่า χ^2 เท่ากับ 220.18 ค่า df เท่ากับ 177 ค่า p-value เท่ากับ 0.15 ค่า GFI เท่ากับ 0.97 ค่า AGFI เท่ากับ 0.95 ค่า RMSEA เท่ากับ 0.02 โดยปัจจัยผู้นำการเปลี่ยนแปลงมีอิทธิพลทางตรงและอิทธิพลทางอ้อมต่อการบริหารจัดการชุมชนแห่งการเรียนรู้ทางวิชาชีพในสถานศึกษามากที่สุด รองลงมาคือวัฒนธรรมองค์กร การจัดการความรู้ และเทคโนโลยีสารสนเทศ ตัวแปรทั้งหมดในรูปแบบที่พัฒนาขึ้นสามารถอธิบายความแปรปรวนของการบริหารจัดการชุมชนแห่งการเรียนรู้ทางวิชาชีพในสถานศึกษา สังกัดสำนักงานเขตพื้นที่การศึกษามัธยมศึกษา เขต 21 ได้ร้อยละ 68 อย่างมีนัยสำคัญทางสถิติที่ระดับ 0.05

คำสำคัญ : การบริหารจัดการ ; ชุมชนแห่งการเรียนรู้ทางวิชาชีพ ; รูปแบบความสัมพันธ์เชิงสาเหตุ

INTRODUCTION

Education reform in the second decade (2009-2018) has occurred as intend of National Education Act of B.E. 1999; amended (the second issue) in 2002 and (the third issue) in 2010 focus on Thai for lifelong learning with quality. There are three main purposes i.e. to develop the quality of education standard and learning, to increase an educational opportunity with quality thoroughly and to support participation of educational management in all sectors of society. There are four education reform guidelines : development quality of new age Thai, development of new age teacher, development the quality of new age institutions and learning resources and development of new age administration (Jaroonkiet Pongkulasorn, 2016). Later, the government has provided guidelines and vision of national education plan in 2017-2036 as “All Thai has got education, learning with quality, living life as philosophy of

sufficiency economy and changing of 21st century globe”. Besides, it is relevant to basic education curriculum B.E. 2008 aims to focus on learners to have creative thinking, curious and eager for learning, loving seeking knowledge and having international knowledge, catching up with changing world and civilization, having competency in communication and IT management (Ministry of Education, 2011).

School has an important role in eucational management to address on the quality of learner velopment which has been suitable characteristics with society based knowledge and globalization technology. It has provided a management style to catch up with changing based knowledge, expanding ability and increasing a quality outcome competency, responding a digital technology and an innovation, adapting an organizational structure, changing a working culture, criticising transformational management strategy, adapting and defining strategy to

learning society so as to enhance teachers to have seeking knowledge skills in an exposed system. That means teachers could use technology in digital society network in order to help them criticize, scrutinize, change and develop knowledge to get to the goal of educational management effectively (Wilawan Phothong, 2017). Supporting teacher development to use innovation in learning and teaching management including with supporting digital technology medias could develop teacher skills to acquire learning resources all the times and it has opened an opportunity for teachers to cooperate creating an exchange ideas each other and seeking opportunity continuously.

Change of school environment becomes to professional learning community: PLC which is a strategy to develop school to be potential in globalization competition. There is a direction of organizational management as a leapfrogging change of technology and digital innovation development to get to new learning society by learning sufficiently through online medias. And there are to adapt curriculum content which integrates across sciences, focuses on essential skills for the future especially IT knowledge and update program in order to support education, research, management. Besides, schools have to change learning environment by planting teachers and personnel to change working culture cooperatively and building student's positive reaction. Teacher and administrators have cooperated to seek for guidelines to improve learning achievement. It means that increasing teachers' competency as a seeking knowledge in their lifetime, a professional teacher and digital technology skills could enhance the quality of learning management for learner center. As Krongthip Nakwichet (2017) revealed that professional learning community in schools had affected to learners having learning skills, seeking knowledge skills in academic and profession. And teachers and administrators defined a policy about development of learning management, providing a guideline of learning management and providing learning

exchange activity as learning community continuously and effectively.

The development of school management to PLC is a sharing process of learning management supporting culture and vision of teacher and personnel corporately. These affected to expand of investigating, seeking and applying transferring knowledge with friend culture, exchanging of lonely working style to be cooperative culture and positive reaction among students, teachers and administrators in order to build a learning community in school. There were seeking opportunity and increasing an ability with knowledge development to build innovation which enhanced a teaching process as a success key of school management target (Woraluk Chookamnerd, 2014). It is relevant to Chuchart Phuangsomjit (2016) said that PLC in schools is a reaction positive community of administrators, teachers and personnel which live with together pleasantly and faithfully. Besides, friend working could drive and change profession.

PLC Management in schools is to expose a chance for teachers, personnel and administrators to participate in co-thinking, co-doing, co-solving problem and co-making decision. As the literature review found that there were the factors influencing to PLC management in schools such as educational leadership, organizational construction, knowledge management, learning culture, learning management plan and IT innovation. It is relevant to Woraluk Chookamnerd (2014) revealed that factors affecting to PLC in schools composed of co-vision, co-team together, leadership and profession development, friend community and support structure. As Wasana Thongthaweyingyos (2017) studied that factors affecting to PLC in schools were organizational construction, academic leadership, atmosphere and organizational culture. Besides, it involves in the study of Viratchada Tanil (2017) found that the factors of teacher's co-efficacy, transformational leadership and school atmosphere had affected to PLC in schools.

However, even though there were some researches of factors affecting to PLC management in schools, but it did not also appear the study of a causal relationship model of factors influencing to PLC management in schools. Thus, the researchers are interested in studying of a causal relationship model of factors influencing to PLC management in schools under secondary educational service area 21. The results of this research could be helpful to plan of education development to be professional learning community: PLC affecting to administration competency and education management effectively in 21st century.

Research objectives

1. To develop a causal relationship model of factors influencing to professional learning community management in schools under secondary educational service area office 21

2. To examine the congruence between a causal relationship model of factors influencing to professional learning community management in secondary schools with the empirical data.

Research Framework

In this research, the researchers had studied literature review and researches involved of Pongtip Theparee (2014), Worluk Chookamnerd (2014), Wathunyoo Phuklong (2015), Chuchart Phuangsomjit (2017), Saharat Tamwong, (2016) Krongthip Nakvichet (2017), Wasana Thongthaweyingyos, (2017), Lapatsada Wiangkham (2017) and Akapon Yupakdee (2017) including with the results of interviewing experts with Delphi technique to develop the research framework as shown in figure 1.

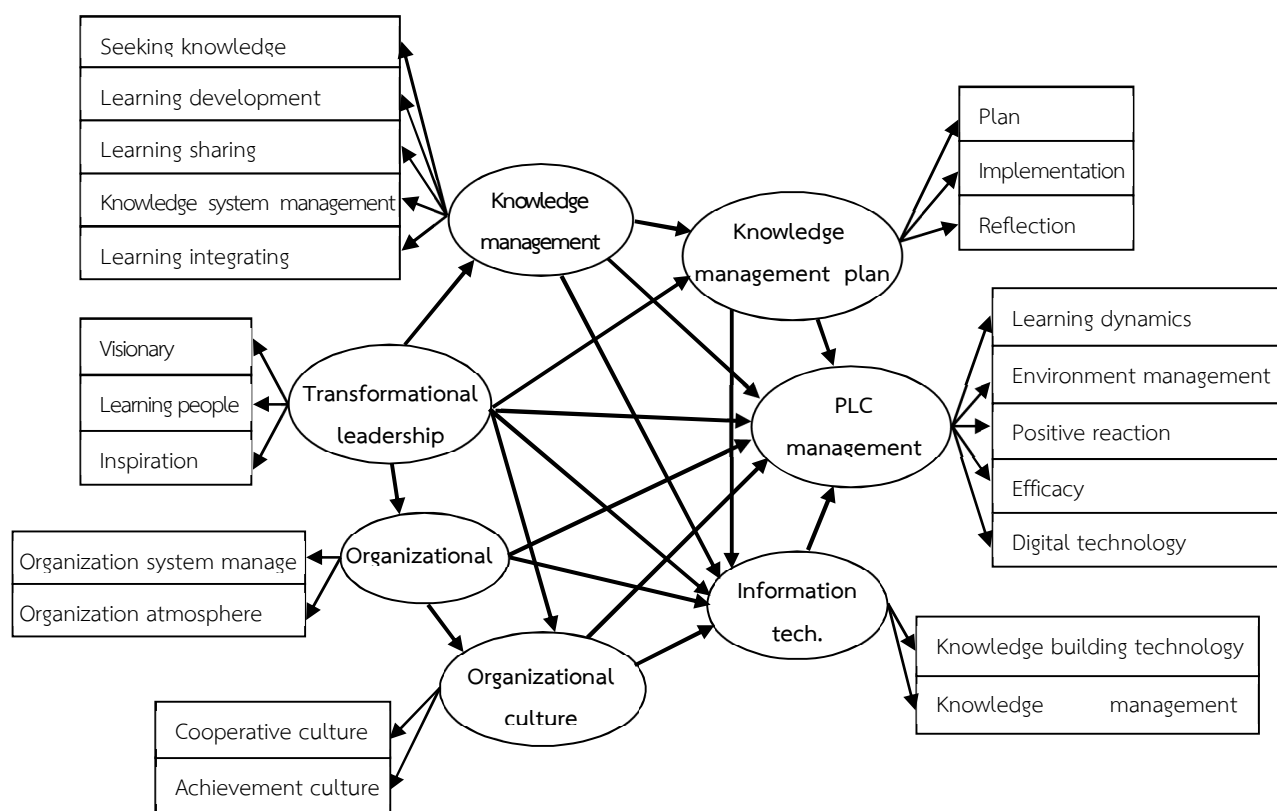


Figure 1 Conceptual Framework

Research Hypothesis

1. The causal factors of transformational leadership, organizational structure, knowledge management, organizational culture, knowledge management plan and information technology system had direct influence to professional learning community in schools.

2. A causal relationship model of factors influencing to professional learning community management in schools developed had congruence with empirical data.

RESEARCH METHODOLOGY

This study was a mixed methods research which was conducted into two phases:

Phase 1 This step was qualitative data by defining conceptual framework which was derived synthesis the literature review and researches involved and developed a model by interviewing experts with Delphi technique. The 17 experts were school administrators and academic person in administration with a doctoral degree. The instrument used for interview was questions line for interview frame.

Phase 2 This step was a quantitative data to examine the hypothesis with empirical data by using a questionnaire as an instrument.

Research subjects

The samples of this research were appropriately defined at 20 times of observed variables in model (Yud Kaiyawan ,2013) This research had 29 observed variables. The low criteria of samples should have at least 580 people. And the 616 samples of this research were obtained by purposive sampling and they were education personnel in schools under secondary educational service area office 21 which composed of 112 administrators, 168 heads of department and 336 heads of the subject group.

Variables Studied

Cause variable as factor influencing to professional learning community management in schools was transformational leadership and endogenous variables: knowledge management, knowledge management plan, organizational culture, organizational structure and information technology.

Effect variable was professional learning community management in schools under secondary educational service area office 21.

Research Instrument

Phase 1 The questions line for interviewing the experts with Delphi technique was to criticize and suggest about a causal relationship model of factors influencing to PLC management in schools with empirical data. The factors composed of transformational leadership, organizational structure, knowledge management plan, organizational culture, and information technology.

Phase 2 Questionnaire was to examine research hypothesis with empirical data which was derived from conceptual framework and divided into 7 parts : part 1 was a check list to collect data about general information of answerers, part 2-7 was a questionnaire with five rating scale which had the content involving in 7 factors i.e. transformational leadership, organizational structure, knowledge management, knowledge management plan, organizational culture, information technology and PLC management. The 5 experts examined the content validity (IOC) which was between 0.60-1.00. The hypothesis examination of questionnaire was at the reliability of Cronbach's alpha coefficient at 0.98 (Boonchom Srisa-aad, 2011).

Collecting Data

The researchers collected the data according to research duration with 2 periods as follows:

Period 1 Investigating quantitative data according to two steps:

Step 1: The researchers studied literature review and researches involved in factors influencing to PLC management in schools.

Step 2 Developing a causal relationship model with Delphi Technique which was improved twice by 10 school administrators and 7 academic person in administration with a doctoral degree, totally 17 persons.

Period 2 Studying empirical data, the researchers collected the data by a questionnaire with 616 issues, collected them back and checked 584 issues completed. It was at 94.80%.

Period 1 Content Analysis and concluding of important issue

Period 2 Analysis the data with computer program, the statistics used for analyzing data were mean, standard deviation, Confirmatory Factor Analysis: CFA, and examined the congruence between a hypothesis model and empirical data.

The results of research

1. The factors influencing to PLC management in schools consisted of exogenous variable: transformational leadership and 5 endogenous variables: organizational structure, knowledge management, organizational culture, knowledge management plan and information technology. And effect variable was PLC management in schools.

2. A causal relationship model developed had congruence with empirical data by considering $\chi^2 = 220.18$, $df = 177.00$, $P\text{-value} = 0.02$, $RMSEA = 0.02$, $GFI = 0.97$, $AGFI = 0.95$, χ^2/df value = 1.24 as shown in figure 2

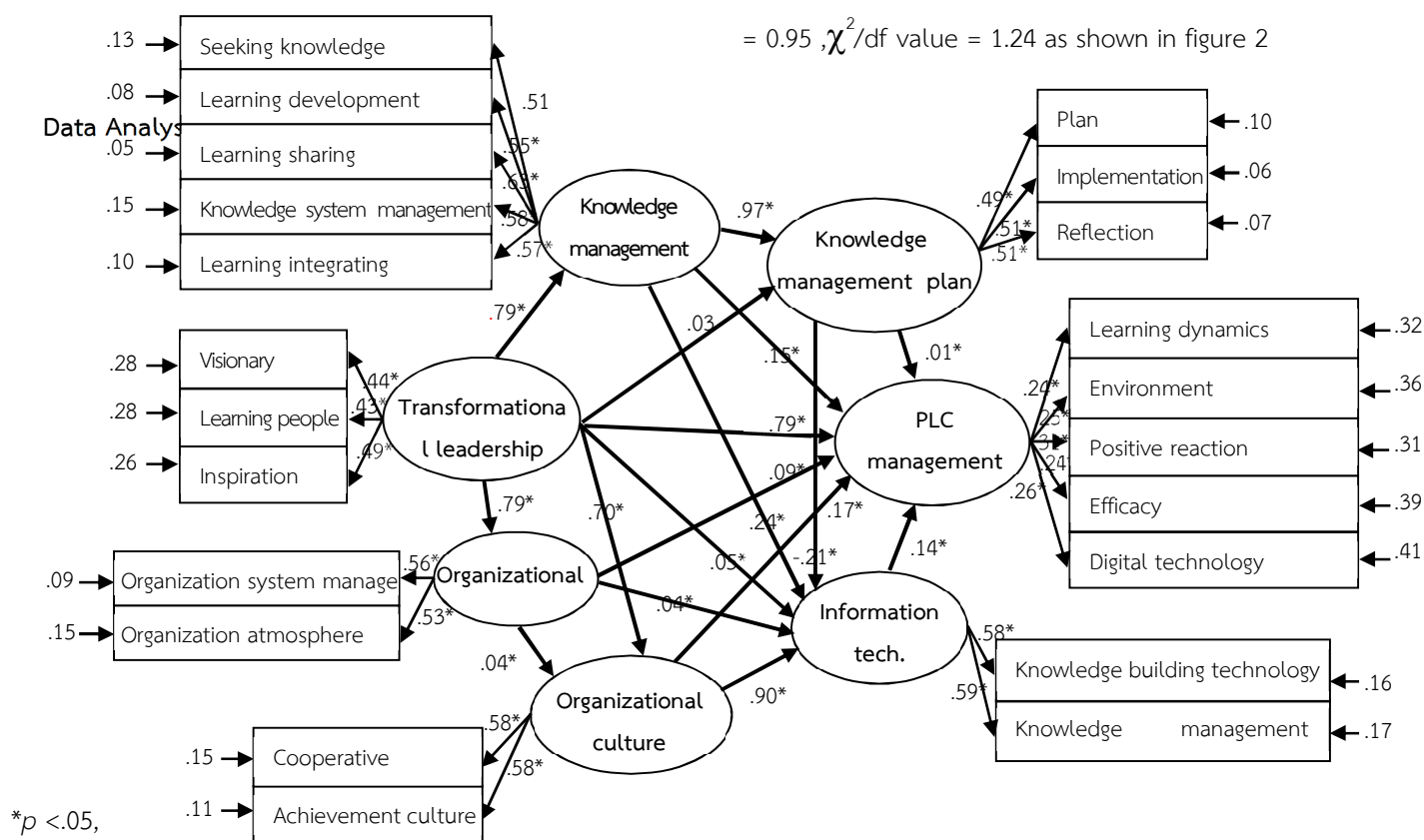


Figure 2 A causal relationship model of factors influencing to PLC management in schools ha congruence with empirical data.

Examining influencing of all variables in a causal relationship model to PLC management in schools were as follows:

1. Transformational leadership (TRANS) had direct influence to PLC management in schools (PLCM). Factor loading was 0.79 and it had indirect influence through knowledge management (MANAG), organizational structure (ORGAS), organizational culture (ORCUL), and information technology (TECHN). Total influence to PLC management in schools (PLCM) had factor loading as 1.23. The level of significance is 0.05.

2. Organizational structure (ORGAS) had direct influence to PLC management in schools (PLCM). Factor loading was 0.12 and it had indirect influence through organizational structure (ORGAS). Total influence to PLC management in schools (PLCM) had factor loading as 0.14. The level of significance is 0.05.

3. Knowledge management (MANAG) had direct influence to PLC management in schools (PLCM), factor loading as 0.15. And it had indirect influence through Knowledge management plan (STRAT) and information technology (TECHN) and it had total influence to PLC management in schools (PLCM), factor loading as 0.16. The level of significance is 0.05.

4. Organizational culture (ORCUL) had direct influence to PLC management in schools (PLCM), factor loading as 0.17. And it had indirect influence through information technology (TECHN) and it had total influence to PLC management in schools (PLCM), factor loading as 0.16. The level of significance is 0.05.

5. Information technology (ITEC) had directly influenced to PLC management in schools (PLCM), factor loading as 0.14. The level of significance is 0.05.

All variables in this model could explain the variance of PLC management in schools (PLCM) were at 68%, the level of significance is 0.05. It was shown total influence coefficient (TE), direct influence (DE), and indirect influence (IE) as shown in Table 1.

Table 1 Influenced Coefficients of Congruence Model

cause Variables	Influence type	Variables					
		PLCM	TECHN	STRAT	ORCUL	MANAG	ORGAS
TRANS	DE	0.79* (0.28)	0.05* (0.08)	0.11* (0.04)	0.70* (0.10)	0.79* (0.07)	0.79* (0.07)
	IE	0.44* (0.17)	0.66* (0.12)	.76** (0.09)	0.04* (0.05)	-	-
	TE	1.23* (0.19)	0.71* (0.11)	0.87* (0.09)	0.74* (0.07)	0.79* (0.07)	0.79* (0.07)
ORGAS	DE	0.12* (0.10)	-	-	0.04* (0.06)	-	-
	IE	0.02* (0.04)	-	-	-	-	-
	TE	0.14* (0.11)	-	-	0.04* (0.06)	-	-
MANAG	DE	0.15* (0.36)	0.24* (0.28)	0.97* (0.10)	-	-	-
	IE	0.01* (0.25)	-	-	-	-	-
	TE	0.16* (0.10)	0.24* (0.28)	0.97* (0.10)	-	-	-
ORCUL	DE	0.17* (0.25)	0.90* (0.19)	-	-	-	-
	IE	0.12* (0.32)	-	-	-	-	-
	TE	0.29* (0.32)	0.90* (0.19)	-	-	-	-
STRAT	DE	0.01* (0.25)	-	-	-	-	-
	IE	-0.03 (0.08)	-	-	-	-	-
	TE	-0.02 (0.24)	-	-	-	-	-
TECHN	DE	0.14* (0.36)	-	-	-	-	-
	IE	-	-	-	-	-	-
	TE	0.14* (0.36)	-	-	-	-	-

*p < .05

RESEARCH CONCLUSION

Researchers created a causal relationship model of factors influencing to PLC management in schools under secondary educational service area office 21 by interviewing experts with Delphi technique in order to draft a research hypothesis framework, then it was analyzed in the second part. The findings of PLC management in schools model divided into 4 parts by in order the effects of analyzing the structure relationship of influence factors as significantly at 0.05 level to PLC management in schools found as follows:

The factors of total influence to PLC management in schools (PLCM) of significance at 0.05 level showed as follows: transformational leadership (TRANS) was in 'very much' level as 0.1.23, followed by organizational culture (ORCUL) as 0.29, knowledge management (MANAG) as 0.16 and information technology (TECHN) as 0.14 respectively.

The factors of direct influence to PLC management in schools (PLCM) of the significance at 0.05 level showed as follows: transformational leadership (TRANS) was in very much' level as 0.79, followed by organizational culture (ORCUL) as 0.17, knowledge management (MANAG) as 0.15 and information technology (TECHN) as 0.14 respectively.

The factors of indirect influence to PLC management in schools (PLCM) of significance at 0.05 level showed as follows: transformational leadership (TRANS) was in 'very much' level as 0.44, followed by organizational culture (ORCOL) as 0.12 and Organizational structure (ORGAS) as 0.02 respectively.

DISCUSSION AND IMPLICATIONS

1. Factors influencing to PLC management in schools composed of transformational leadership, knowledge management, knowledge management plan, information technology. All factors had direct influence

and indirect influence to PLC management in schools congruencing with the hypothesis 1 as follows:

1.1 Transformational leadership had direct influence, indirect influence and total influence to PLC management in schools. This implied that due to management in schools focused on PLC which was a process of building a school culture. These focused on teacher's leadership development to change management, information technology management and knowledge management both in and out of school in order to support PLC in schools effectively. It is relevant to the study of Wathunyoo Phuklongna (2015) found that transformational leadership affecting to professional learning community: PLC in 'high' level. And the research of Inprang Ob-un (2015) revealed that leadership - learning center affecting to effectiveness on teacher profession development in school.

1.2 Knowledge mangement had direct influence, indrect influence and total influence to PLC management in schools because knowledge management was a process to develop teacher's knowledge and to build quality and performance of working in school which focused on learning as friend network affecting to school quality as learning community. As Kanok-on Somprach (2016) refered that the success factors of knowledge management consisted of seeking knowledge for needs of suitable job, communication applied for using knowledge, technology for working, storing knowledge for working and getting learning outcomes developing to quality PLC in schools, and building culture to contribute learning of local knowledge in schools affecting to be sustainable learning community.

1.3 Knowledge mangement plan had direct influence to PLC management in schools. As the study of Lapasada Weingkhum (2017) said that organization development plan affecting to operation of PLC effectively because the situation of globalization change always had learning development and new innovation, so schools had to define strategic for database system which critized

environment in and out of schools properly and modernly for plan management, defining working direction clearly and comprehensive vision and mission, defining activity of development and reflection to personnel involved so as to have recognition and implementation to get to the goal. As Chuchart Phuangsomjit (2017) revealed that guidelines quality of PLC in schools could follow into 4 steps: firstly, planning composed of defining co-vision, co-mission, co-goal and defining development activity, secondly, doing as implementation in group followed the plan, thirdly, observing the result of implementation, each member got the results to discuss and carried on conversation by comparing with the goal setting. Normally, this step had a check and review during working which was an instrument of performance observation, lastly, reflection was listening opinion about results of teacher's learning and teaching development across stake holders.

1.4 Information technology had direct influence to PLC management in schools. It implies that educational management in schools of digital society had to enhance teachers and personnel building online network, lifelong learning development by using IT for searching knowledge, seeking knowledge from open resources which affected to change in team working style to learning society as exchanging information and communication by database in team working. These could help organizational competency effectively and get result of success to the gold. As Wijarn Panich (2012) indicated that teacher development to have lifelong learning skill by using technology could help teacher access learning resources by ownself on their own needs. And it is always a self-development continuously and get to PLC in schools that the teachers had teaching preparing skills, innovation development skills for teaching affecting to efficient teaching and education quality.

1.5 Organizational structure did have not direct influence to PLC management but it had indirect influence to PLC management in schools. It implies that schools had management structure in bureaucratic system or formal management which should adapt structure system of

learning management to learning society in order to be consistent with the prosperity of electronic and digital technology communication. This supported teachers and personnel to get new knowledge and new information applying to their own situation. And it could help them get to the goal dynamically. Besides, it was positive reaction and organizational engagement, creating morale and increasing quality of operation to PLC in schools. As Akapon Yupakdee (2017) found that organizational structure was a management factor affecting to PLC of teachers in schools.

1.6 Organizational culture did not have direct influence to PLC management in schools but it had indirect influence across information technology factor. This indicated that culture was a guideline to set behavior of members in organization because a school culture had been defined values and attitudes in different dimensions. Furthermore, official culture did not make teachers and personnel adapt themselves to changing environment. They focused on rule, method, appointment order following to satisfaction of boss or administrators. These were weakpoints to education development and it was difficult to get new knowledge to apply PLC in schools which was helpful to education reform. Thus, administrators should change ownself as transformational leadership such as reducing barrier of official culture and paying attention to community culture thoroughly. As Pongthip Theparee (2014) told that thinking learning culture was a factor of PLC for teachers. And it was relevant to research of Paweena Charoenphum (2017) indicated that achievement culture related to PLC in schools in 'very much' level.

2. A causal relationship model of factors influencing to professional learning community management in schools under secondary educational service area 21 developed had congruence with empirical data by considering $\chi^2 = 220.18$, $df = 177.00$, $p\text{-value} = 0.15$, $GFI = 0.97$, $AGFI = 0.95$, $RMSEA = 0.02$. Factors of transformational leadership and knowledge management plan had direct influence and indirect influence to PLC management in schools.

And factors of organizational culture, organizational structure had indirect influence to PLC management in schools This indicated all factors could predict PLC management in schools at 68% because a model developed by review literature and many researches including with Delphi technique of interviewing experts. Thus, this affected to content validity and structure validity and to have congruence between a causal relationship model and empirical data. As Wasana Thongthaweyingyos (2017) referred that factors of professional learning community in schools consisted of academic leadership, organizational structure, organizational atmosphere and organizational culture. And the results of study of Worluck Chookamnerd (2016) revealed that factors affecting to PLC for teacher in 21st century composed of co-vision, co-leadership, support structure, knowledge management and profession development and friend community.

SUGGESTIONS

1. Suggestions of the results for using research

1.1 Schools should support digital technology system for teachers and students to search for knowledge and build new knowledge affecting on learning skill development continuously.

1.2 Education affiliations should support administrators as transformational leadership to develop thinking skill, principles of administration to catch up with change stream.

2. Suggestions for future researches

2.1 The samples of this research was teachers and personnel in schools under secondary educational service area office 21, the next research might select other subjects to get a suitable guideline congruence with context of each organization.

2.2 The next research should study about learning achievement which will effect of PLC in schools in order to increase higher standard level of learning management in schools.

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