โมเดลเชิงสาเหตุพหุระดับที่มีอิทธิพลต่อประสิทธิผลองค์การ
สำหรับมหาวิทยาลัยในไทย สาธารณรัฐประชาธิปไตยประชาชนลาว
และราชอาณาจักรกัมพูชา
MUTILEVEL CAUSAL FACTORS INFLUENCING ORGANIZATIONAL
EFFECTIVENESS FOR UNIVERSITIES IN THAILAND,
LAOS AND CAMBODIA

ภัทราวดี มากมี

Pattrawadee Makmee

Cognitive Science and Innovation Research Unit, Burapha University
corresponding author e-mail: pattrawadee@gmail.com

บทคัดย่อ

ประสิทธิผลองค์การมีความสำคัญที่ใช้ในการพัฒนามหาวิทยาลัยในไทย สาธารณรัฐ
ประชาธิปไตยประชาชนลาว และราชอาณาจักรกัมพูชา วัตถุประสงค์ของการวิจัยเพื่อ 1) ศึกษาปัจจัยที่มี
อิทธิพลต่อประสิทธิผลองค์การสำหรับมหาวิทยาลัยในระดับบุคคล และระดับสาขาวิชาในประเทศไทย
ประเทศสาธารณรัฐประชาธิปไตยประชาชนลาวและประเทศราชอาณาจักรกัมพูชา และ 2) ทดสอบความไม่
แปรเปลี่ยนของโมเดลสมการโครงสร้างพหุระดับของประสิทธิผลองค์การภาครัฐที่เป็นมหาวิทยาลัยของ
ประเทศไทย ประเทศสาธารณรัฐประชาธิปไตยประชาชนลาว และประเทศราชอาณาจักรกัมพูชา จำนวน
กลุ่มตัวอย่างเป็นนิสิต/นักศึกษาได้มาจากการสุ่มแบบหลายขั้นตอนจำนวน 1,200 คน จากจำนวน 120
สาขาวิชาเครื่องมือที่ใช้ในการวิจัยคือแบบสอบถาม สถิติที่ใช้ในการวิเคราะห์ข้อมูลใช้สถิติบรรยายและ
การวิเคราะห์โมเดลสมการโครงสร้างพหุระดับโดยใช้โปรแกรม Mplus ผลการวิจัยปรากฏว่า 1) ปัจจัยที่มี
อิทธิพลต่อประสิทธิผลของมหาวิทยาลัยมีความสอดคล้องกลมกลืนกับข้อมูลเชิงประจักษ์ในระดับบุคคล
และระดับสาขาวิชา ตัวแปรทุกตัวมีความสำคัญอยู่ในระดับใกล้เคียงกัน สำหรับระดับบุคคลตัวแปรที่มี
ความสำคัญมากที่สุดคือการพัฒนาบุคลิกภาพนิสิต/นักศึกษา ในขณะที่ตัวแปรระดับสาขาวิชาที่มี
ความสำคัญมากที่สุดคือความพึงพอใจในการปฏิบัติงานของบุคลากร อย่างไรก็ตามสุขภาพขององค์การมี
ความสำคัญน้อยที่สุดทั้งระดับบุคคลและระดับสาขาวิชา และ 2) โมเดลเชิงสาเหตุพหุระดับมีความ
แปรเปลี่ยนด้านโมเดลระหว่างประเทศไทย ประเทศสาธารณรัฐประชาธิปไตยประชาชนลาว และประเทศ
ราชอาณาจักรกัมพูชา แต่รูปแบบพัฒนาขึ้นสามารถอธิบายความแปรปรวนของสัดส่วนในมหาวิทยาลัย
ไทยได้ดีกว่า

คำสำคัญ: ปัจจัยเชิงสาเหตุพหุระดับการ ทดสอบความไม่แปรเปลี่ยน ประสิทธิผลองค์การสำหรับ
มหาวิทยาลัย

Abstract

Organizational effectiveness is important to the development of the university sectors in Thailand, Laos and Cambodia universities.The main objectives of the present study were: (i) to study causal factors influencing public organizational effectiveness for universities at the individual and departmental levels, and (ii) to test invariance of a multilevel causal analysis model of universities' effectiveness among Thailand, Laos, and Cambodia. A total of samples were randomly multi-stage 1,200 students, 120 departments.The instrument used was a questionnaire of organizational effectiveness. Statistical analyses were made based on descriptive statistics and Multilevel Structural Equation Model (SEM). The results indicated that the proposed multilevel causal model of public organizational effectiveness for universities fitted reasonably well with the empirical data. The analysis also showed that at the individual level, the most important variable was the student personality development while at the departmental level, the most important variable was the staff employment satisfaction. However, organizational health was less important at both levels. Multilevel Structural Equation Model the organizational effectiveness of the public sector for universities in the region has variance the model. That is, the given model could explain a larger proportion of variance in Thai universities.

Keywords: multilevel causal factor influencing, test invariance, organizational effectiveness for universities

Introduction

Problems in effectiveness assessment were found by many researchers such as Stufflebeam et al. (1971), Katz and Kahn (1978), Goodman and Pennings (1980), Harrison (1994), Price and Mueller (1986) and Makmee (2000; 2016a; 2016b). They generally stated that the problems were: i) incomprehensible variables; ii) subjective assessment; iii) insufficient indicators; iv) inappropriate statistical analysis; v) assessment not showing a cause-effect relationship and vi) insufficient and incomplete models of analysis. In previous research, we have found that there were 20 studies relating to the development of the organization effectiveness assessment model, divided into were 18 foreign studies and two Thailand based studies. According to Cameron (1978, 1986), the guideline for the concept of the development of universities organizational effectiveness, it has been found that the assessment model used for studying the development of an organization's effectiveness, especially in the educational institute level is very sparse. Accordingly, the researcher has foreseen the importance of learning and developing the model of organizational effectiveness in the university sectors and educational institutions. To do the research on this topic, it might provide us new knowledge.

Furthermore, the previous researches never directly studied an assessment model which considers the factors that influencing organizational effectiveness, especially of the university sectors. Those studies have two main limitations. Firstly, the research methodology is not based on the real status of organizations that related in descending order, especially education organization such as the individual level, department level or university level, which higher organization has more power than the lower one. This methodology is unable to define which variables it causes or how much it influences on. Secondly, most research faces the problem of selecting an optimal analysis. If the organization is nested or related in descending order, the only personnel analysis level might reach an incorrect conclusion. That is, the result might increase the risk of committing types I error. On the other hand, if the researcher analyses at a higher level, that means the personnel variable is required to aggregate and uses as a higher variable, this would also result in bias and in effectiveness.

To solve the problems mentioned above, the researcher turned the interest to develop universities' effectiveness assessment model in the context of Thai, Laos and Cambodia society. This emphasizes the factors that influence on the effectiveness of university sectors. This was divided by the nature of educational data consisting of small groups, aggregated into the bigger organization. For example, teachers are in a group of a department is in the group of faculty. Therefore, the plan of data analysis should be multilevel data so that we would know how the variety of influences of variables at different levels. Applying the Multilevel Structural Equation Modeling (MSEM) could help to describe which variables were related to different levels of analysis across the university sectors.

The effectiveness assessment model is a modern model to keep up to date of Thailand's education, and it could be based on the development of other universities' effectiveness assessment model. The researcher has applied MSEM which uses normative model development. That means learning about attitude, theory, logical analysis and real situations in an organization and applies it to be a scope for developing an education model with the stakeholder. The principle of a new measurement and assessment are in line with a concept of Steers (1977) and Gibson, Ivancevich & Donnelly (2000) and it was employed in order to find influential variables on organizational effectiveness. Specifically, the principle consists of the background of the information provider, organization nature, environment, personnel, and policy and education management.

Moreover, the multidimensional integration model (Cameron, 1978, 1986) which measures and assesses effectiveness of universities using multi-dimension indicator was widely used in America, England, Australia and Canada. This is properly adapted to use with the Thai, Laos and Cambodia educational setting so that it might

meet requirements of society and sustainable efficiency and keep up to date with the rapid changes. We expect that the research result would be a guideline to develop a university's effectiveness model. This was accordingly an important mechanism leading to the development of education management which was to lift up education standards to be acceptable at an international level. Thus, the present study aimed to study causal factors from influencing organizational effectiveness for universities at individual and department field levels, and to test invariance of a multilevel causal analysis model of universities' effectiveness among Thailand, Laos, and Cambodia.

Methods and Materials

1. Population

Students of universities in Thailand, Laos, and Cambodia

2. Sample

A sample of 1,200 students were randomly selected using multi-stage random sampling from undergraduate students in Thailand, Laos, and Cambodia (400 persons from each country (i.e. Thailand, Laos, and Cambodia) from six organizations including Burapha University, Kasetsart University, Laos International University, Supanuwong University, Royal University of Phnom Penh, and University of Management and Economics.

In terms of sociodemographic profile, 63.40% were women, 62.50% of the participants hold a departmental level in humanities and social science, and 58.40% had less than 3 years of activity experiences.

3. Instrument

The research instruments used in this study were a questionnaire with five subscales. All items were developed using a 5-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (5). The items were developed in Thai language based on the item analysis and the items showing a low item-total correlation (i.e., a value of 0.2 or lower) were removed from the item pool. This procedure was employed to ensure the item discrimination among them. The subscales and reliabilities were as follows: (1) Organizational effectiveness for Universities (EFF) with 51 items and Alpha = 0.815; (2) department characteristic (CD) with 20 items and Alpha = 0.845; (3) internal environment (IE) with 12 items and Alpha = 0.901; (4) personal characteristic (CP) with 8 items and Alpha=0.832, and (5) policy and management (POLM) with 14 items and Alpha=0.828, respectively.

4. Data analysis

The current research applied a multi-dimension integration model and multilevel SEM techniqueand it was conceptualized that the influences on universities' effectiveness should be divided into two levels – individual and departmental levels.

(i) Individual level means types or characteristics of personnel such as dean, professor and support officer that influence a universities' effectiveness. As studying the concept and related research, we found that there were two factors influencing universities' effectiveness by personal factor which were personal background and component of organizational effectiveness as follows: *Personal background* consisted of 1) Organization nature which hereby meant the organization's structure and technology use; 2) Internal environment which referred to an organization's culture and atmosphere; 3) Personal characteristic consisted of working, organization relationship, and academic behavior; and 4) Policy and management meant leadership, policy and strategy planning, communication, financial management process, and human resource management according to the concept of Steers (1977) and Gibson, Ivancevich and Donnelly (2000). And *Component of organizational effectiveness* in the individual level was personal effectiveness which was the achievement of personnel in the departmental level as the viewpoint of related person (Steers, 1977; Gibson, Ivancevich & Donnelly, 2000). For the guideline to specify effectiveness in the universities sector, we used the concept of Cameron (1978, 1986).

(ii) Major subject factor meant the nature of organization in universities sector related to or influencing the effectiveness perception of the faculty. According to the concept of academics, we found that major subject factor influencing the assessment of universities' effectiveness divided into two factors which were background in major subject level and component of organization effectiveness in major subject level as follows: *Backgrounds in departmental level* were 1) Nature of the organization which meant the organization's structure and technology use; 2) Internal environment which referred to an organization's culture and atmosphere; 3) Personnel characteristics consisting of working, organization relationship and academic being; and 4) Policy and management which meant leadership, policy and strategy planning, communication, financial management process and human resource management according to the concept of Steers (1977) and Gibson, Ivancevich and Donnelly (2000). And *Components of organizational effectiveness in departmental level* were departmental effectiveness which was the achievement of a department as the viewpoint of the related person (Steers, 1977; Gibson, Ivancevich & Donnelly, 2000). For the guideline to specify effectiveness in the university sector, the concept of Cameron (1978, 1986) was considered. Measurement invariance could be used to study whether a given measure was interpreted in a conceptually similar manner by respondents representing different countries. To test the research hypotheses, Mplus version 7 (Muthén & Muthén, 2012) was used to analyse the confirmatory factor analysis (CFA), the multilevel CFA, and the multilevel SEM, respectively.

Results

      The research results found that: (i) Effectiveness assessment model of the university sectors as perceived by students found that all indicators were closely important in individual and academic field levels. For individual level, the most important indicator was the development of student's personality, while the working satisfaction of personnel was the most important for the major level. However, organization health was less important in both individual and academic field levels; (ii) Multilevel casual effectiveness model of university sectors was according to empirical data (χ^2 = 233.812, df = 150, p = 0.052, χ^2/df = 1.559, CFI = 0.990, TLI = 0.985, RMSEA = 0.023, $SRMR_W$ = 0.034, $SRMR_B$ = 0.042). The Predicted variable set in individual level could describe the effectiveness variance of university sectors at individual and academic field levels 70.10% and 72.50% respectively; and (iii) Multilevel SEM had model changes between Thailand, Laos, and Cambodia. A suggestion for further research would be to learn more about the multilevel SEM of university organization in each country and increase the quality of data to find out how to develop in the future detail in Table 1 and Figure 1.

Table 1 Effect size both directly and indirectly and effect of predictor variables in individual and departmental levels influence on organization effectiveness.

| Within	Effect			Effect			Effect		
	DE	IE	TE	DE	IE	TE	DE	IE	TE
		$EFEF_W$			$POLM_W$			CP_W	
		$POLM_W$	$POLM_W\&CP_W$					$POLM_W$	
CDw	0.112**	0.132**	0.002*	0.246*	0.314**		0.314**		0.046*	0.046*
IEw	0.126**	0.202*	0.003*	0.331*	0.481*		0.481*		0.070*	0.070*
CPw	0.040*			0.040*						
$POLM_W$	0.419**			0.419**				0.145*		0.145*
Between		$EFEF_B$			$POLM_B$			CP_B	
		$POLM_B$	$POLM_B\&CPb$					$POLM_B$	
CD_B	0.622**	0.032*	0.005*	0.659*	0.211*		0.211*		0.049*	0.049*
IE_B	0.219**	0.030*	0.005**	0.254*	0.198*		0.198*		0.046*	0.046*
CP_B	0.097*			0.097*						
$POLM_B$	0.152**			0.152**				0.234*		0.234*

χ^2 = 233.812, df = 150, p = 0.052, χ^2/df = 1.559, CFI = .990, TLI = 0.985,
RMSEA =0.023, $SRMR_w$= 0.034, $SRMR_B$= 0.042
R^2EFEF_W= 0.701, R^2EFEF_B= 0.725, R^2POLM_W= 0.324, R^2POLM_B= 0.645, R^2CP_W= 0.113, R^2CP_B= 0.218
Average cluster size = 10.000, number of department= 120

Remark *p<0.05 , ** p<0.01, DE = Direct Effect, IE = Indirect Effect, and TE = Total Effect
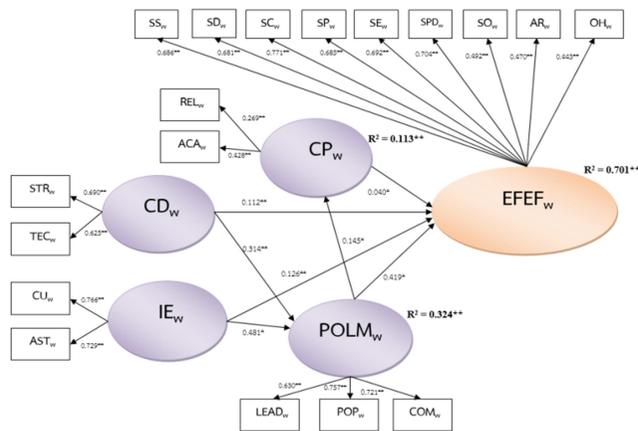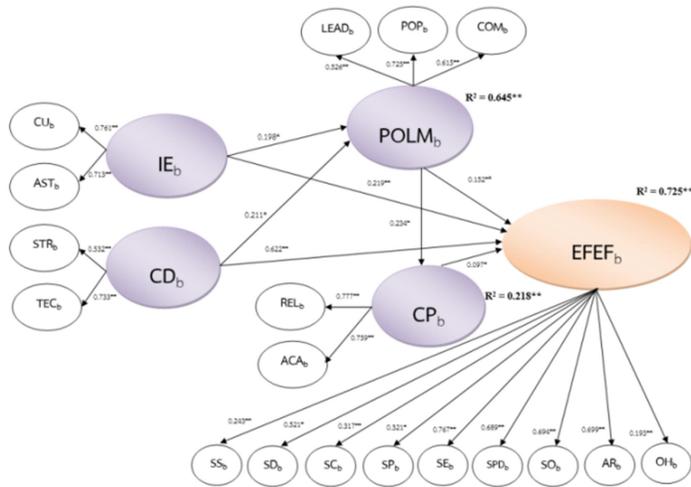
χ^2 = 233.812, *df* = 150, *p* = .052, χ^2 / *df* = 1.559, CFI = .990, TLI = .985, RMSEA = 0.023, SRMR$_w$ = 0.034, SRMR$_B$ = 0.042

Figure 1 Multilevel structural equation model of universities' organizational
effectiveness

(ii) to test invariance of a multilevel causal analysis model of universities' effectiveness among Thailand, Laos, and Cambodia has variance the model. (χ^2 = 423.812, *df* = 150, *p* = 0.052, χ^2 / *df* = 2.825, CFI = 0.980, TLI = 0.995, RMSEA = 0.029, SRMR$_w$ = 0.054, SRMR$_B$ = 0.052)

Discussionand Conclusions

1. Conformity between research result and development concept of multilevel SEM to measure universities' organizational effectiveness.

1.1 Development of multilevel SEM of organizational effectiveness of universities.

The research result found that multilevel SEM for measuring the organizational effectiveness of universities was consistent with empirical data and in accordance with the research's conceptual idea. The model was developed from theory and related research. This showed that the main causes of variables which were the main causes were the organization's characteristic, internal environment, personal characteristic and policy and management. Those variables which influenced the organizational effectiveness of universities included major effectiveness of organization of the university which was an achievement of departmental level from the viewpoint of related person (Steers, 1977; Gibson & Donnelly, 2000). This model of effective assessment used the concept of Cameron (1978, 1986) as the guideline to specify organizational effectiveness in universities measured by 51 dimensions (components) and nine indicators. To be in accordance with the basic agreement of the sample group of multilevel SEM, we changed to 51 indicators and nine items which were the perception model for students to achieve the main missions in terms of the educational institute, including education, research, academic management and culture maintenance which was according to the way of Office of Education Standard Assurance and Educational Quality Assessment in Thailand.

    1.2   Examining result of multilevel SEM.

The research result found that there was a confirmation with empirical data in individual level and found the most effective policy variance and management in the departmental level on the organizational effectiveness of universities. This was in accordance with the research of Cameron (1978, 1986) that research on effectiveness and variance or factors that influenced the organizational effectiveness of universities and in accordance with the concept of Steers (1977) and Gibson, Ivancevich and Donnelly (2000). This variance was called "managerial strategies" and it was the factor most impacted on the effectiveness of a university. We can see that the research result was agreed with the concept of Steers (1977) and Gibson, Ivancevich and Donnelly (2000) who stated that organizational effectiveness would be successful or developed when the manager has used managerial strategies in accordance with the organization.

2. Relationship of structural equation influence on organizational effectiveness in individual and department field levels in universities

According to the hypothesis that individual and departmental level factors could significantly predict organizational effectiveness of universities, we found that it was in accordance with the hypothesis. The research result found that the multilevel SEM for measuring organizational effectiveness of universities was in line with empirical data and with the conceptual framework. That meant *the factors influencing personal background* consisted of; i) organizational nature, ii) internal environment, iii) personal

characteristic, and iv) policy and management. Furthermore, *factors influencing backgrounds in departmental level* consisted of: i) organization nature, ii) internal environment, iii) personal characteristic, and iv) policy and management. This reflected different from organizational effectiveness. This relationship of structural culture factor impacted on the organizational effectiveness of universities shall describe the effect size on the organizational effectiveness of universities based on the individual level because it was the factor influenced on the departmental level background as individual level.

3. Multilevel SEM for measuring organizational effectiveness was invariance across universities in Thailand, Laos, and Cambodia.

Multilevel SEM of the organizational effectiveness of the public sector for Universities in the region had varied among Thailand, Laos, and Cambodia. The recommendations for future research should use the Multilevel SEM to study the effectiveness of the public sector in each country separately and add qualitative information to find ways to develop further (Makmee, 2000; 2016a; 2016b).

References

Cameron KS. Measuring organizational-effectiveness in institutions of higher-education. *Administrative Science Quarterly*, 1978; 23(1): 604-632.

Cameron KS. A study of organizational effectiveness and its predictors. *Management Science*, 1986; 32(1): 87-112.

Gibson JL, Ivancevich JM, Donnelly JH. *Organizations: Behavior, Structure, Processes*. 10th ed. Boston: McGraw-Hill; 2000.

Goodman PS, Pennings JM. Critical issues in assessing organizational effectiveness. In Lanler, E.E., & Seashore, S.E. (eds.). *Organizational Assessment Perspective on the Measurement of Organizational Behavior and the Quality of Work Life*. New York: John Wiley & Son; 1980.

Harrison MI. *Diagnosing Organizations Methods, Models and Process*. London: Sage Publications; 1994.

Katz D, Kahn RL. *The Social Psychology of Organizations*. 2nd ed. New York: John Wiley & Son; 1978.

Makmee P. Measurement for faculties of education: An application of multilevel causal analysis. *Journal of Research Methodology,* 2000; 23(1): 55-75.

Makmee P. Development of a model of public organizational effectiveness measurement: Multilevel structural equation model analysis. *Journal of the Association of Researchers*, 2016; 21(1): 34-48.

Makmee P. Multilevel structural equation model of universities effectiveness in Thailand. *Journal of Management & Innovation*, 2016b; 3(1): 43-53.

Muthén LK, Muthén BO. *Mplus: The Comprehensive Modeling Program for Applied Researchers user's guide, Version 7.00*. Los Angeles, CA: Muthén & Muthén; 2012.

Price JL, Mueller CW. *Handbook of Organizational Measurement*. Massachusetts: Pitman; 1986.

Steers RM. *The Organizational Effectiveness: A Behavioral View*. Santa Monica: Goodyear Publishing; 1977.

Stufflebeam DL, Foley WJ. Gephart WJ. *Educational Evaluation and Decision Making*. Bloomington: Phi Delta Kappa; 1971.