Performance Management Model: A Study in Thai Public Higher Education Institutions

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ABSTRACT

This study developed a model of the essential factors that impacted on the organizational performance of public higher education institutions in Thailand. Data collection involved mixed methodologies: exploratory research was conducted through in-depth interviews from four state-owned higher education institutions using content analysis and empirical research was collected from 430 samples through questionnaires using exploratory factor analysis. Results from the interviews indicated that 35 out of the 50 factors extracted from the literature review affected performance management. Education for All (EFA) classified them into 10 elements as follows: Leadership, Strategy, Information Management and Work Support, Personnel-Oriented Operations, Orientation Towards Customers, Innovation, Leadership and Finance, Customers and Personnel, Learning Carried Out by Students and Alumni and Social Responsibility. The examination of the factors affecting performance management derived from the collection of empirical data was the main contribution of this study and results were developed into an innovation of performance management model.

Keywords: Education Management, Model for Higher Education, Performance Management, Quality Management, Innovation, Thailand

JEL Classification: I2, I23, C38

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INTRODUCTION

Due to rapid changes, worldwide, education in Thailand has adapted and increased in competency through modernisation, liberalisation, popularisation and internationalisation. Generally, higher education institutions operate autonomously in terms of internal management and they are academically independent; thus, an audit system is required for quality assurance. Audit evaluation results can also be used as decision-making criteria for budgets (Phithiyanuwat, 2008; Sinlarat, 2000). The Office of the Higher Education Commission developed education criteria for performance excellence as a tool for efficiently improving the management quality of higher education institutions to achieve international recognition.

Quality improvement of higher education institutions can be achieved by implementing an efficient management structure. The management system should have a strategy stipulating the management process and a control and monitoring system regarding assessments. These factors must be combined to improve performance efficiency. Operational management should be emphasised as well as human resource management to enhance performance. In addition, an information technology system should be utilised to support management and successfully control the overall operational process. The control and management aspect should focus mainly on system design and improvement of the organisational performance (Kahveci *et al.*, 2012; Kueng *et al.*, 2000; Papakiriakopoulos and Pramatari, 2010).

This study proposed an organisational performance model that illustrated the factors affecting the performance management of domestic, state-owned higher education institutions which aimed for maximum performance efficiency.

Research Questions.

1. What are the factors that impact on the performance of higher education institutions in Thailand?

2. What are the results of the reclassification by EFA?

LITERATURE REVIEW

Concept of Educational Quality.

The performance assessment of the education institutes consisted of three aspects as follows: standard of students, standard of process and standard of factors (Puriparinya, 2007). Educational quality assurance is defined as the process that all members in the organisation participate in management and activities to assure that the organisation is able to achieve its goal and provide a quality product which meets the needs of the customers and the community. Additionally, quality assurance is necessary to ensure that customers receive the products and services that meet their satisfaction. Quality assurance in higher education can reflect principles, autonomy and accountability by accepting external quality assessment (Ithirattana, 2003; Nakhornthap, 1997; Sirichana, 1994; Thanaphonlert, 2008).

The study of performance management was used to assess and improve organisation

performance. However, the literature review indicated other factors that affected organisation performance including risk management (Brewer & Walker, 2011), physical resource management (Amaratunga & Baldry, 2000), product innovation and process innovation (Chen & Chen, 2012; Phusavat *et al.*, 2011). These factors were also extremely important for performance management.

Factors Affecting the Performance of HigherEducation Institutions.

Internal Capability

Organisation leadership: This factor signified senior management institution direction, operational guidance and sustainable development for higher education. In addition, the systematic approach to overall operations by the leaders of higher education institutions was assessed. The assessment checked the existence of guidance for monitoring and governing performance and operational guidelines for the institution to follow to achieve its goals. Organisation leadership was based on (1) leadership by senior management, (2) good organisation governing policies and broad social responsibility, (3) form of leadership by senior management, (4) centralisation of decision-making power, (5) revision of organisation performance (6) leadership ethics and (7) support for important communities (Badri *et al.*, 2006; Chen & Chen, 2012; Office of Thailand Quality Award, 2012).

Strategic planning: This factor signified the production of strategic plans and specification of the strategic objectives of a higher education institution. The outcomes from plans executed by the institution were also assessed together with its adaptation to changeable circumstances and guidance for measuring the progress of the institution. Strategic planning was based on (1) preparation of strategies, (2) execution of strategies and (3) prediction of outcomes (Badri *et al.*, 2006; Chen & Chen, 2012; Dror, 2008; Gil-Padilla & Espino-Rodríguez, 2008; Office of Thailand Quality Award, 2012).

Orientation towards customers: This factor signified the building of good relationships with students and others linked to a higher education institution. This was a marketing approach to build a long-term commitment between students, interested parties and the institution. In addition, there was an assessment of how the institution was open to suggestions and perspectives regarding its operations from students and interested parties and how it used information tools to improve and seek opportunity for innovations. Orientation towards customers was based on (1) voices of customers, (2) customer engagement, (3) number of students and the student ratio to personnel and (4) orientation towards servicing customers (Badri *et al.*, 2006; Chen & Chen, 2012; Office of Thailand Quality Award, 2012; Phusavat *et al.*, 2011).

Measurement, analysis and improvement: This factor signified the management of a higher education institution regarding selection, collection, administrative analysis and efficient improvement of the information system. It also included the management of knowledge and intellectual property from within the institution, together with the administration and management of information technology and operational guidance for improving efficiency. Measurement, analysis and improvement was based on (1) measurement, analysis and

improvement of organisation performance, (2) management of information, knowledge and information technology, (3) readiness for usage of information and data and (4) body of knowledge, or important and essential knowledge regarding the organisation (Badri *et al.*, 2006; Chen & Chen, 2012; Dror, 2008; Office of Thailand Quality Award, 2012). An information system for quality assessment is designed to handle a large volume of data. Data reliability and utility are necessary for successful performance assessment. As a result, a document-based system has fewer documents, information is reliable and access of information sources is convenient and easy. The automation of performance assessment should, therefore, specify two goals: (1) sources and characteristics of information, both qualitative and quantitative and (2) information system design suitable for performance assessment (Bourne *et al.*,2000; Jiao & Tseng, 1999; Kahveci *et al.*,2012; Kueng *et al.*, 2000; Kohlbacher & Gruenwald, 2011).

Orientation towards the workforce: This factor signified the management of personnel capability within a higher education institution. It was based on (1)workforce environment, (2) engagement personnel, (3) incentivisation, (4) characteristics of work, (5) responsibility, (6) focus on achievement, (7) progress of tasks in hand, (8) awareness of work, (9) learning organisation, e.g. management of personnel knowledge, (10) organisation culture, (11) organisation and management of work, (12)development, training and educational qualifications of employees and faculty members and(13)satisfaction and work support for employees and faculty members (Badri *et al.*, 2006; Chen & Chen, 2012; Dror, 2008; Jayamaha *et al.*,2011; Office of Thailand Quality Award, 2012; Phusavat *et al.*, 2011).

Orientation towards operations: This factor signified the planning, administration and efficiency improvement of a work system and work processes within a higher education institution to achieve success and sustainability. It also included the planning for emergency conditions. It was based on (1) operation system, (2) work process, (3) work environment (salary, work safety, administrative policies and systems, government, interpersonal relationships and work conditions) and (4) operational support process members (Badri *et al.*, 2006; Chen & Chen, 2012; Office of Thailand Quality Award, 2012).

Risk management: An educational institution has a complicated operational network and is subject to greater competitive change. Risk management contributed to the success of the institution based on (1) strategic risk and (2) operational risk (Brewer & Walker, 2011).

Facility management: This factor signified the management of physical resources by a higher education institution to achieve maximum benefits and sustain user needs. Facility management can also affect work efficiency and increase the competence of the organisation. It is important to recognise the significance of structures, buildings and the environment within a higher education institution because they are all part of its services provision (Amaratunga & Baldry, 2000).

Product and process innovations: This factor signified the management of innovations within an organisation of a higher education institution. Product and process innovations were based on (1) research productivity and well-known published or awarded research results, (2) registration of patents from research results, (3) support for academic visits abroad, (4) quantity

of conferences organised, (5) quantity of foreign students in the institution and (6) quantity of senior professors (Chen & Chen, 2012; Phusavat *et al.*, 2011).

Performance Results

Operational results consisted of overall performance, performance assessment of predetermined aspects and performance measurement compared to other institutions both within Thailand and abroad. In many countries, the ranking and classification of education quality at the higher education level consists of seven elements as reputation indicators, research indicators, input indicators, teaching indicators, teaching-support indicators, output indicators and reward indicators (Phithiyanuwat *et al.*, 2008). In addition, there are two well-accepted university-ranking institutions. (1) Quacquarelli Symonds (QS) takes the following criteria into account: academic reputation, employer reputation, citations per faculty member, faculty member per student ratio, proportion of international students and proportion of international faculty members. (2) The Times Higher Education World University Rankings takes the following criteria into account: teaching, research, citations and industry income. The performance results concerned the following aspects:

- Products (learning of learners) and process outcome: This factor was based on (1) the rate of employment or self-employment of graduates within one year, (2) the quality of bachelor, master, and doctoral graduates according to the framework for national standards of qualification and (3) research results or creations published by graduates (Badri *et al.*, 2006; Office of Thailand Quality Award, 2012; Phithiyanuwat *et al.*, 2008; Times Higher Education World University Rankings, 2012).

- Orientation towards customers: This factor was based on students and interested parties associated with the higher education institution (Badri *et al.*, 2006; Office of Thailand Quality Award, 2012; Phithiyanuwat *et al.*, 2008; Times Higher Education World University Rankings, 2012).

- Orientation towards personnel: This factor was based on academic personnel and operational personnel (Badri *et al.*, 2006; Office of Thailand Quality Award, 2012; Phithiyanuwat *et al.*, 2008; Times Higher Education World University Rankings, 2012).

- Leadership and government of the organisation: This factor was based on (1) results of the performance of the university council in accordance with its roles and duties (2) results of the performance of the management of the university and (3) results of development in accordance with the features and characteristics as reflected by the university's identity (Badri *et al.*, 2006; Office of Thailand Quality Award, 2012).

- Finance and marketing: This factor was based on (1) financial and budget resilience, (2) proportion of attention from prospective applicants to the admission capacity of the university and (3) outcomes of financial support from alumni. (Badri *et al.*, 2006; Office of Thailand Quality Award, 2012).

- Social responsibility: This factor was based on (1) communities or organisations that the university specified and aimed to reinforce through the development of a knowledge base, (2) the number of activities or projects that reinforced the strengths of the community or an external agency and (3) satisfaction of society in the provision of guidance and solutions regarding social problems by the university (Badri *et al.*, 2006).

In conclusion, the differences between the existing framework from the office of Thailand Quality award and this new framework were assessed using the criteria of new factors, namely:

- Internal Capability Dimensions: risk management, facility management and product and process innovation and

- Performance result Dimensions: social responsibility.

A conceptual framework was produced from the internal capability factors and performance result factors (Figure 1).
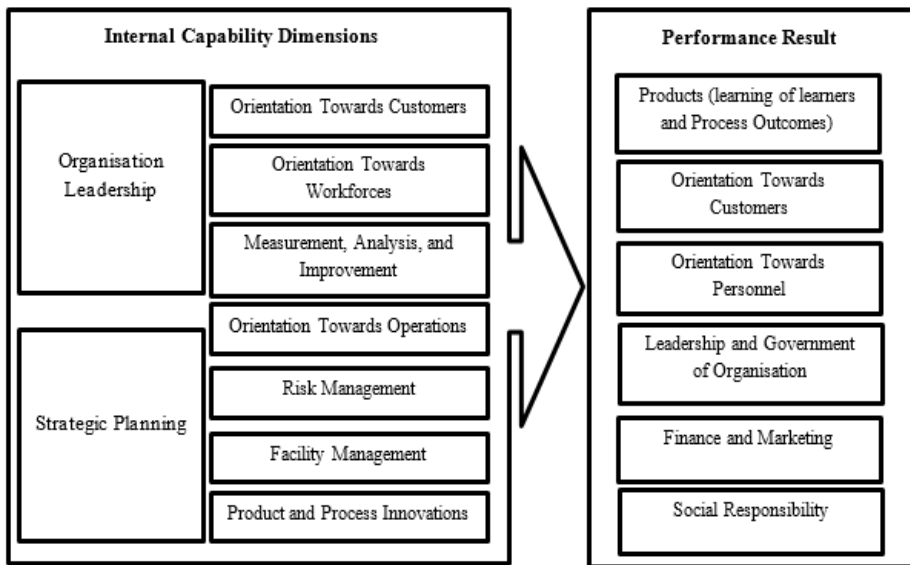

Figure 1. Conceptual Framework

METHODOLOGY

Phase I: Exploratory Research

Through conducting a critical review, the impact factors for the performance of higher education institutions were obtained. Then, additional data were acquired by in-depth interviews with 20 specialists and executive administrators of public higher educational institutes.

Phase II: Empirical Study

The questionnaires concerning performance assessment of higher education institutions were developed from the results of phase I and the research of Badri, Selim, Alshare *et al.* (2006), using a Likert scale as follows: scale 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree. The questionnaire was tested for content validity by five higher education institute assessment experts who found that the questions were valid. The questionnaires were then distributed to 30 samples (pilot survey) and tested for reliability and internal consistency using Cronbach's alpha coefficient. Results were 0.8173-0.9189. An appropriate Cronbach's coefficient should not be lower than 0.6. In this case, the Cronbach's coefficient was higher than 0.7 and therefore the research tool was considered accurate enough to be used in the study (Nunnally, 1997). Based on the Cronbach's coefficient, the research questions were very reliable.

Population and sample group: The population used in this study was 80 higher education institutions in Thailand which consisted of 15 public autonomous universities and 65 public higher education institutes. The sample groups were public autonomous universities and public higher education institutes. The sampling steps can be explained as follows:

- Specification of the sampling groups was investigated using stratified random sampling. The characteristics of the public higher education institutions were used as the criteria and divided into 2 groups: (1) 10 public autonomous universities and (2) 20 public higher education institutes. The specification of the sample was disproportional but suitable and demographically comprehensive (Suttasart, 1984).

- Purposive sampling was performed using the characteristics of the respondents as the criteria. These were academic positions, administrative positions, faculty and supporting positions whose responsibility related to quality improvement of the institutes. Twenty-five respondents were sampled from each higher educational institute. There were 750 samples in total and data collection was conducted over four months.

Data collection: Data collection using research instruments consisted of four channels as follows: data collection from in-depth, face-to-face interviews, data collection using questionnaire delivery by mail, data collection through the quality assurance network of the universities and data collection using E-questionnaires.

DATA ANALYSIS AND RESULTS

According to the literature review, the internal capability and performance result consisted of organizational leadership; strategic planning; measurement, analysis and improvement; orientation towards workforce; orientation towards operations; risk management; product and process innovations; products (learning of learners) and process outcome; orientation towards customers; orientation towards personnel; leadership and government of the organisation; finance and marketing; and social responsibility. Fifty factors affected performance management.

In-depth interviews with specialists and management from 20 state-owned higher education institutions were conducted to verify the factors affecting the performance management of higher education institutions in Thailand. Results indicated that only 35 factors were relevant. For internal capability, the most referenced factor was measurement, analysis and improvement (reference count 20), followed by preparation of strategy (reference count 14), information management (reference count 14) and leadership by senior management (reference count 11).For performance results, the most referenced factor was orientation towards personnel (reference count 27), followed by leadership and governance (reference count 20), learning carried out by students and processes (reference count 17) and social responsibility (reference count 17). The analysis for this step used NVivo and results are shown in Figures 2 and 3.
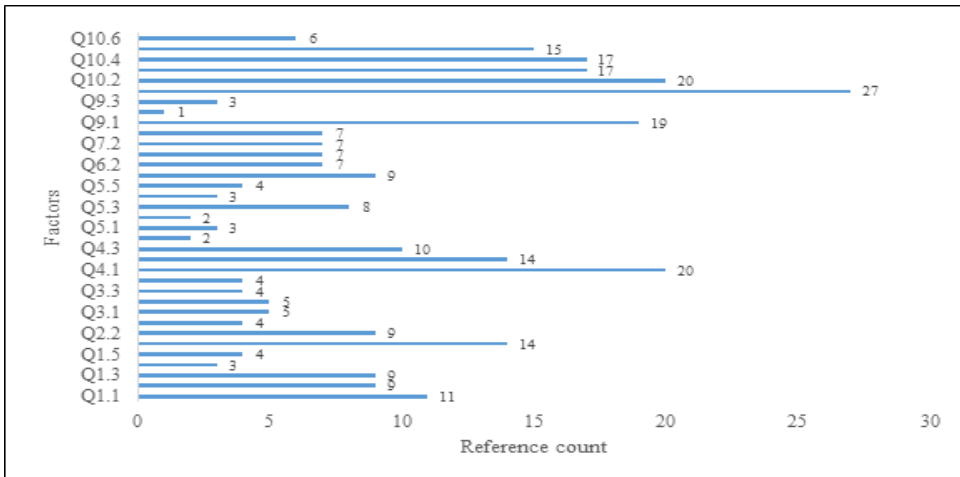

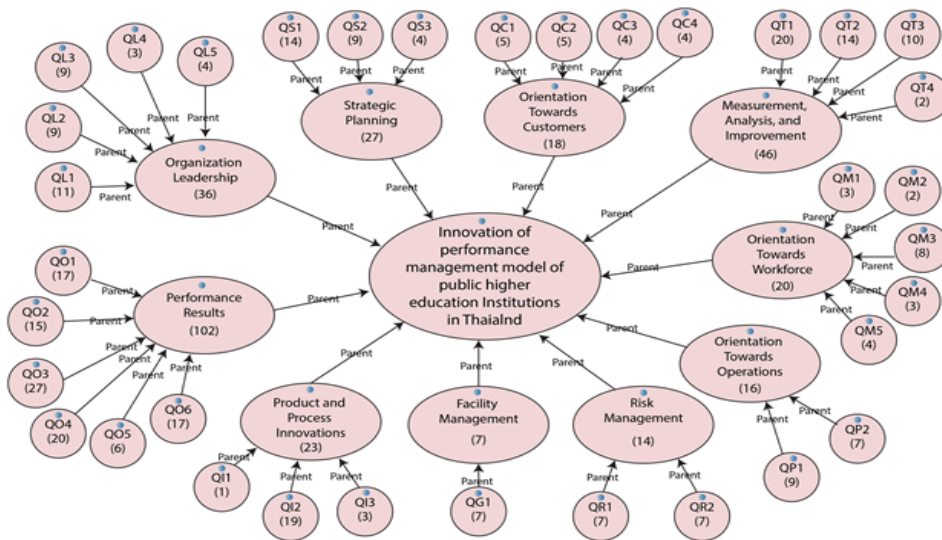Figure 2. Reference count for each factor

Figure 3. Reference count for each factor processed with NVivo

Additional data pertaining to the factors obtained from the exploratory study were collected in an empirical study. Questionnaires were used as a collection tool for 750 samples. Results from 475 questionnaires were returned and 430 were analysed.
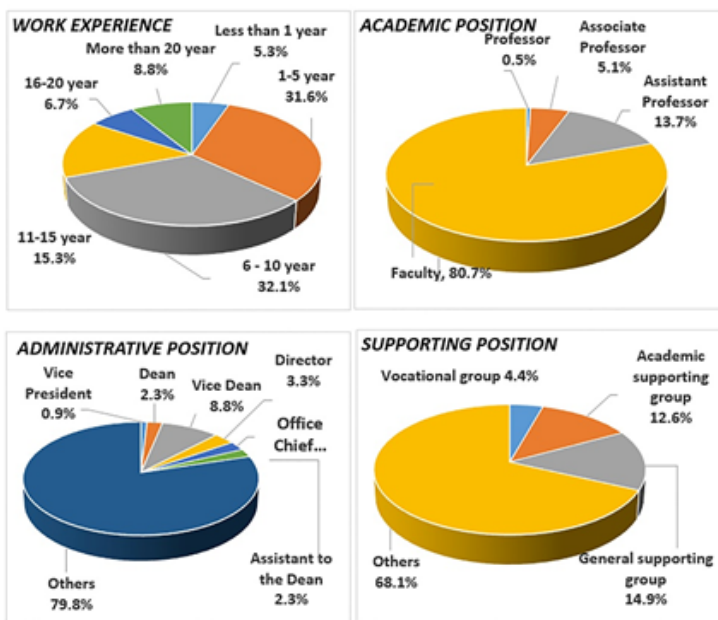

Figure 4. Respondent Information

From 475 completed questionnaires (response rate = 63%) 430 were eligible for analysis. This result concurred with Comrey and Lee (1992) who stated that a factor analysis sample size of 300 was considered as good and 500 samples as excellent. The data analysis showed that the most frequent length of work experience was 6–10 years (32.1%), followed by 1–5 years (31.6%), 11–15 years (15.3%), over 20 years (8.8%), 16–20 years (6.7%) and below 1 year (5.3%).Regarding academic positions, the most frequent was faculty (80.7%), followed by assistant professor (13.7%), associate professor (5.1%) and professor (0.5%). For administrative positions, the most frequent was others (79.8%), followed by deputy dean (8.8%), director (3.3%), head of office (2.6%), dean and assistant dean (2.3%) and vice president (0.9%). Supporting staff positions were ordered as follows: others (68.1%), general support group (14.9%), academic support group (12.6%) and vocational group (4.4%) (Figure 4).

Exploratory Factor Analysis

The analysis of the relations among the variables was conducted to determine the Pearson's product moment correlation coefficient and the matrix correlation among the variables was examined using Bartlett's test of sphericity. If the statistical significant is 0.01, then the matrix correlation is the identity matrix to which the variables are related. It can then be used for the factor analysis (Vanichbancha, 2001). The Kaiser Meyer-Olkin (KMO) test for sampling adequacy must be higher than 0.05 and approach 1 for the data to be considered as suitable for factor analysis (Vanichbancha, 2001). This step used packed statistical program analysis.

From the literature review and the in-depth interviews with the specialists and executive administrators of public higher education institutes, the researcher collected the variables that impacted on the performance of higher education institutions. The questionnaires and exploratory factor analysis for grouping the variables employed the principle components of extraction together with orthogonal rotation using varimax rotation which emphasised on each component and focused on the differences or variations between them. By differentiating the most diverse components the variable groups were obtained. The criteria for considering each component was that its Eigenvalue must be equal or more than 1.00 (Vanichbancha, 2001) and each variable in each component must have a factor loading equal or more than 0.05 (Pongwichai, 2004).

An exploratory factor analysis on 97 variables found that intra-organisational capability variables had six common elements which contributed to their variance at 61.154%. The Kaiser-Meyer-Olkin measure was 0.964, higher than 0.50 and the data was suitable for the factor analysis technique. Bartlett's test of sphericity rated the significance at 0.001, showing that all variables were interrelated at an acceptable level for exploratory factor analysis (Table 1).

Table 1. Results from Factor Analysis of Intra-Organisational Capability.

Element	Number of Variables	Percentage of Variance	Factor Loading	Alpha
1.LEADER	22	46.38	0.765-0.384	.9593
2.STRATEGIC	16	4.763	0.640-0.398	.9506
3.IFM	12	3.117	0.801-0.429	.9320
4.OPR	17	2.460	0.650-0.420	.9542
5.CUST	16	2.313	0.701-0.414	.9454
6. INNO	14	2.118	0.728-0.428	.9326
Total	97	-	-	

Kaiser-Meyer-Olkin measure of sampling adequacy = .964 with significance at 0.001 from Bartlett's test of sphericity

- The 'LEADER' element consisted of variables whose factor loadings ranged from 0.765 to 0.384. The variable with the highest factor loading was (1) one representing that leaders demonstrated trust in planning participation to achieve specified policies and strategies, followed by (2) one representing that leaders specified operational plans to achieve strategic objectives and (3) one representing that leaders communicated with personnel regularly.

- The 'STRATEGIC' element consisted of variables whose factor loadings ranged from 0.640 to 0.398. The variable with the highest factor loading was (1) one representing that the university made decisions for long- and short-term plans that were consistent with strategic plans, followed by (2) one representing that the university checked the progress of operational plans regularly and (3) one representing that the university operated processes that specified important indicators in predicting the outcomes of long-, medium- and short-term planning.

- The 'IFM' element consisted of variables whose factor loadings ranged from 0.801 to 0.429. The variable with the highest factor loading was (1) one representing that the university was well-equipped in terms of hardware and software that was convenient and easy to use, followed by (2) one representing that the university was well-equipped with software that was efficient and (3) one representing that the university was well-equipped with software that was highly secure.

- The 'OPR' element consisted of variables whose factor loadings ranged from 0.650 to 0.420. The variable with the highest factor loading was (1) one representing that the university organised activities pertaining to maintenance of the environment, followed by (2) one representing that the university organised activities pertaining to conservation of energy and (3) one representing that the university specified how operational processes could be made efficient.

- The 'CUST' element consisted of variables whose factor loadings ranged from 0.701 to 0.414. The variable with the highest factor loading was (1) one representing that the university provided modern contact channels for stakeholders to complain about curriculums and services, followed by (2) one representing that the university took into account data pertaining to the number of students and ratio of students to supporting personnel when carrying out an analysis for the purpose of increasing the efficiency of learning and services for students and stakeholders and (3) one representing that the university took into account data pertaining to the number of students and ratio of students to lecturers when carrying out an analysis for the purpose of increasing the efficiency of learning and services for students and stakeholders.

- The 'INNO' element consisted of variables whose factor loadings ranged from 0.728 to 0.428. The variable with the highest factor loading was (1) one representing that the university encouraged publications on a national and international level, followed by (2) one representing that the university encouraged its personnel to produce quality research and (3) one representing that the university provided support pertaining to learning, training and domestic and overseas research presentations to its students and personnel.

- An exploratory factor analysis on 28 variables discovered that performance result variables had four common elements which contributed to their variance at 67.249%. The Kaiser-Meyer-Olkin measure of sampling adequacy was .958 and higher than 0.50, meaning that the data was suitable for factor analysis. Bartlett's test of sphericity determined the significance at 0.001 showing that all variables were interrelated to an acceptable extent for exploratory factor analysis (Table 2).

Table 2. Results from Factor Analysis of Performance Result.

Element	Number of Variables	Percentage of Variance	Factor Loading	Alpha
1. LEFI	9	53.026	0.812-0.502	.9484
2. CUPE	9	5.486	0.744-0.443	.9115
3. PROAL	7	5.117	0.833-0.541	.8825
4. SOCI	3	3.621	0.833-0.799	.9109
Total	28			

Kaiser-Meyer-Olkin measure of sampling adequacy = .958 with significance at 0.001 from Bartlett's test of sphericity

- The 'LEFI' element consisted of variables whose factor loadings ranged from 0.812 to 0.502. The variable with the highest factor loading was (1) one representing the results of the development that aimed to achieve the missions and objectives of the establishment of the university, followed by (2) one representing the results of the performance of the management of the university and (3) one representing the results of the performance of the university council in accordance with its roles and duties.

- The 'CUPE' element consisted of variables whose factor loadings ranged from 0.744 to 0.443. The variable with the highest factor loading was (1) one representing the number of curriculums the employment found acceptable, followed by (2) one representing the rate of graduation and (3) one representing the rate of student retention.

- The 'PROAL' element consisted of variables whose factor loadings ranged from 0.833 to 0.541. The variable with the highest factor loading was (1) one representing research results or creations of graduates that were published, followed by (2) one representing the results of quality assessments of graduates by their employers and (3) one representing the number of research studies implemented for the benefit of society.

- The 'SOCI' element consisted of variables whose factor loadings ranged from 0.833 to 0.799. The variable with the highest factor loading was (1) one representing the number of activities or projects that reinforced the strengths of the community or an external agency, followed by (2) one representing that the university specified a community or an organization with which it aimed to reinforce or develop a knowledge base and (3) one representing the satisfaction of society by the provision of guidance and solutions to social problems by the university.
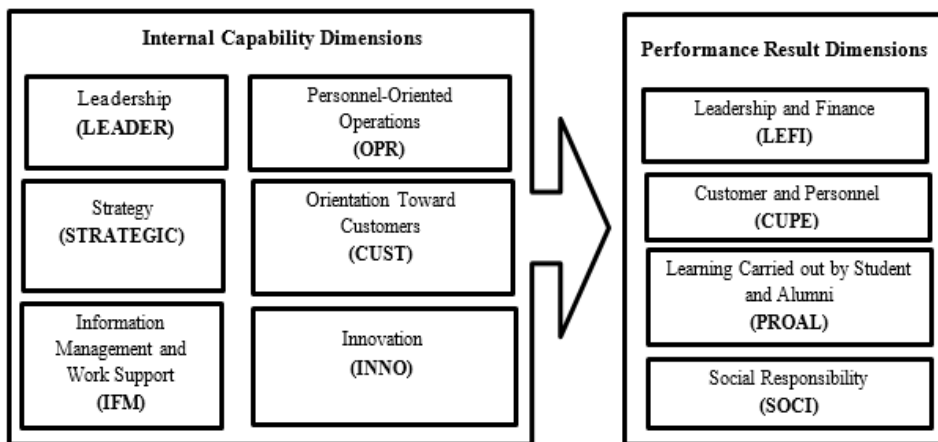
CONCLUSIONS

Figure 5. Proposed Model; Innovation of performance management model of the Public Higher Education Institutions in Thailand

This research aimed to develop a performance management model of public higher education institutions in Thailand (Figure 5). In-depth interviews indicated that 35 out of 50 factors from the literature review affected performance management. After these factors had been reclassified, the EFA classified them into 10 elements as follows: LEADER, STRATEGIC, IFM, OPR, CUST, INNO, LEFI, CUPE, PROAL and SOCI. The leaders were the most important people for higher educational institution management which agreed with research by Augustus (2007). Findings regarding the 35 factors affecting the performance management of state-owned higher education institutions in Thailand were consistent with a study by Chen, Wang, & Yang (2009), regarding the key performance indicators of universities. Their subject matter included the customer perspective, internal process perspective and learning and growth perspective. Therefore, improving the quality of an organisation was related to the previously mentioned factors, consistent with the findings of Sabella, Kashou & Omran (2015).

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