

# Development of Total Quality Management Information System (TQMIS) for Model School on Best Practice

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**Abstract**—The model of Total Quality Management Information System (TQMIS) for Model School on Best Practice is composed of 4 main elements: 1) principles of development for information system model, 2) objectives of information system model, 3) process of information system development, and 4) measurement and evaluation of information system. The objective of this research is to 1) develop the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice, and 2) evaluate the said model. The process to develop Executive Information Systems (EIS) employs the method of System Development Life Cycle (SDLC), which includes 1) Problem Recognition, 2) Feasibility Study, 3) Analysis, 4) Design, 5) Construction, 6) Conversion, and 7) Maintenance. The measurement and the evaluation of information system are based on Black-Box Testing, which is the test of total system function in order to see whether the working procedures are correct and in compliant with the desired objectives or not. The 5 experts, after evaluating the information system, agreed that the Total Quality Management Information System (TQMIS) for Model School on Best Practice was appropriate in a good level.

**Index Terms**—Executive information system, total quality management, model school, best practice.

## I. INTRODUCTION

According to National Education Act B.E. 2542 and the amendment (2) B.E. 2545, the quality of education is obviously emphasized, and it is also the goal of educational reforms of all levels. If fundamental education and higher education have no quality, the nation can neither develop nor catch up with other countries [1]. Section 48 of National Education Act B.E. 2542 and the amendment B.E. 2545 states that, “All agencies and education institutes shall provide a quality assurance system within education institutes, and the internal quality assurance system is deemed to be a part of Process of Educational Administration, which must be performed in a continuous manner”. Meanwhile, Section 49 of the same Act says about the external quality evaluation, “The office for National Education Standards and Quality Assessment must be established as a public organization, whose function is to develop criteria and methods of external quality evaluation, and to evaluate educational management so that there shall be quality inspection in the education institutes” [2].

TQM is an organizational management system that

emphasizes on creating the ultimate customer satisfaction. To do this, there is a study of Voice of Customer so that the Production and Service Process could be designed so as to receive the ideal products and services based on customer satisfaction. Lucas, and Ginzberg [3] development of education institutes, especially secondary schools, to become TQM model schools on best practice includes the following concepts, principles, process and procedures. 1) TQM concept that focuses on the ultimate satisfaction of stakeholders, i.e. students, teachers, parents, workplaces, social communities, 2) three principles of TQM: customer oriented, continuous improvement, employee involvement, 3) the management process that brings about TQM in an organization consists of 3.1) leadership, 3.2) information and analysis, 3.3) strategic quality planning, 3.4) human resource development and management, 3.5) management of process quality, 3.6) customer relation management, and 4) the procedures to employ tqm are 4.1) selection and appointment of those in charge of organizational quality development, 4.2) planning for actions, 4.3) operation, 4.4) follow up, inspection, evaluation and correction, and 4.5) reinforcement [4]. Furthermore, the model of education management SIPPO is employed to facilitate the design of quality management process in all model schools. Thereby, Stakeholder: S refers to those who have both advantages and disadvantages in the education institutes, Input: I refers to the educational supporting factors, Process: P refers to the process of learning management and educational management, Product: P refers to the educational products such as results of learning, expertise, skills of administrators in education institutes as well as new knowledge and academic services, and Outcome: O refers to satisfaction of customers and stakeholders [5].

In the management of educational institutes, the administrators are responsible for all management in order to run the organization in the most efficient and beneficial manner [6]. They need to make decisions and set up operation plans so that they could make use of the limited resources as effectively as possible. Therefore, the administrators require enough data and information relevant to the aforementioned issues. Executive information system (EIS) is intended to serve as a tool for the senior administrators. EIS includes information about both internal and external factors, e.g. targets, strategy, policy, tactics, problems and control, etc, for the administrators to manage schools in compliant with the internal quality assurance [7].

Thus, the researcher had an idea to develop the Total Quality Management Information System (TQMIS) for Model School on Best Practice as a tool to support the management process so that the administrators could set up plans and make any decisions more efficiently.

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## II. PURPOSE

- 1) to develop the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice.
- 2) to evaluate the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice.

## III. SCOPE OF STUDY

### A. Population

Population is the experts in the fields of total quality management, education management, executives information system, and quality assurance.

### B. Sample Groups

Sample group is the 5 experts in the fields of total quality management, education management, executive information system, and quality assurance, all of whom are chosen by means of purposive sampling and have at least 5 years of experiences.

### C. Variables of the Study

Independent variable is Total Quality Management Information System (TQMIS) for Model School on Best Practice and Dependent variable is the suitability of the said model.

## IV. METHODOLOGY

### A. The First Phase

The development of the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice has the following steps.

- 1) Study and analyze the documents and researches relevant to the models of total quality management for education, education management, executive information system, and quality assurance in order to synthesize a model.
- 2) Use the obtained data to establish the following conceptual frameworks for the development of the said model: 1) principles of development for information system model 2) objectives of information system model 3) process of information system development, and 4) measurement and evaluation of information system.
- 3) Present the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice to the advisor for revision and amendment.
- 4) Create the tools for evaluating the suitability of the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice.

### B. The Second Phase

The evaluation of the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice has the following steps.

- 1) Present the developed information system model to the 5 experts in the fields of executive information system,

total quality management, education management, and educational quality assurance.

- 2) Analyze the data based on evaluation criteria and suitability criteria of the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice.

## V. RESULT

The results of this research are divided into 2 parts.

*Part 1* The model of Total Quality Management Information System (TQMIS) for Model School on Best Practice

As seen in Fig. 1, the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice consists of the following 4 main elements: 1) principles of development for information system model 2) objectives of information system model 3) process of information system development, and 4) measurement and evaluation of information system.

The model of Total Quality Management Information System (TQMIS) for Model School on Best Practice as shown in Fig. 1.

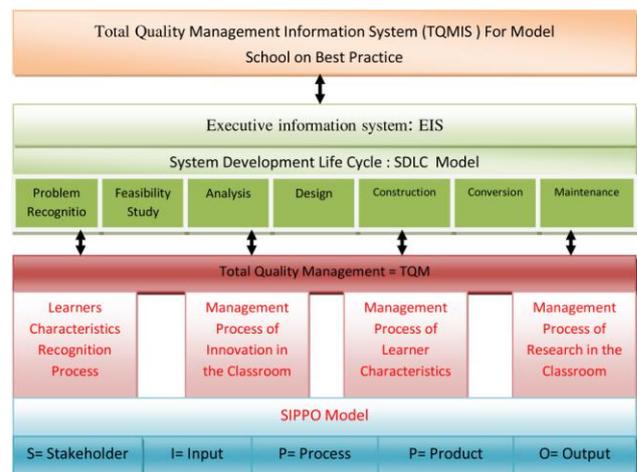


Fig. 1. The model of total quality management information system (TQMIS) for model school on best practice.

### A. Principles of Information System Model Include

- 1) SIPPO is employed to facilitate the design of quality management process in all model schools. Thereby,
  - Stakeholder: S refers to those who have both advantages and disadvantages in the education institutes
  - Input: I refers to the educational supporting factors
  - Process: P refers to the process of learning management and educational management
  - Product: P refers to the educational products such as results of learning, expertise, skills of administrators in education institutes as well as new knowledge and academic services
  - Outcome: O refers to satisfaction of customers and stakeholders.
- 2) The design of Total Quality Management (TQM) focuses on
  - Customer Oriented
  - Continuous Improvement

- Employee Involvement
- 3) The design of process for model school on best practice includes:
- Learners characteristics recognition process
  - Management process of innovation in the classroom
  - Management process of learner characteristics
  - 3.4 Management process of research in the classroom

**B. Objectives of Information System Model**

To develop Total Quality Management Information System (TQMIS) to support the Model School on Best Practice.

**C. Process for Development of Information System**

The development of Executive Information Systems (EIS) employs the method of System Development Life Cycle (SDLC), which includes 1) Problem Recognition, 2) Feasibility Study, 3) Analysis, 4) Design, 5) Construction, 6) Conversion, and 7) Maintenance.

**D. Measurement and Evaluation of Information System**

The measurement and the evaluation of information system are based on Black-Box Testing, which is the test of total system function in order to see whether the working procedures are correct and in compliant with the desired objectives or not.

Part 2 Results of suitability assessment on the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice, which were conducted by the experts.

TABLE I: DEVELOPMENT MODEL OF TOTAL QUALITY MANAGEMENT INFORMATION SYSTEM (TQMIS) FOR MODEL SCHOOL ON BEST PRACTICE

Evaluation Lists	Results		Level of Quality
	$\bar{X}$	S.D.	
1. Principles and concepts	4.67	.53	Very good
2. Objectives	4.32	.58	Good
3. Development model of Information System			
- SIPPO Management	4.30	.53	Good
- Total Quality Management System	4.32	.50	Good
- Development process			
- Output of TQMIS	4.40	.53	Good
4. Measurement and Evaluation	4.41	.58	Good
-Evaluation of TQMIS model			
-Evaluation of TQMIS efficiency	4.42	.55	Good
-Evaluation of satisfaction toward TQMIS	4.32	.58	Good
	4.30	.58	Good
Summary	4.38	.55	Good

Referring to Table I, it is found that the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice has suitability in a good level ( $X = 4.33$ , S.D. = .55 ). Once considering in further details, it is evident that principles and concepts of the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice are of very good level ( $\bar{x} = 4.67$  , S.D. = .53 ), followed by objectives of the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice are of

very good level , development model of Executive Information System, and measurement and evaluation, all of which are of good level.

**VI. CONCLUSION AND DISCUSSION**

According to evaluation by the experts, it is found that the development of model of Total Quality Management Information System (TQMIS) for Model School on Best Practice has suitability in a good Level. This is in complaint with Onwalan Klongsungsrn [4], who found that the development of information system for the administration in universities around the northeast of Thailand enabled the executives to work more easily and conveniently. Also, the results are in accordance to those of Pitsamai Kawcharoenphon [5], who found that the management by means of Total Quality Management in primary schools was in good level.

The schools that employ the model of Total Quality Management Information System (TQMIS) for Model School on Best Practice should be well prepared in terms of fundamental technology, network system, and basic equipment needed for internet connection.

**REFERENCES**

- [1] *Reforming process for learning quality development*, Office of the National Education Commission, 2545.
- [2] *Guide to external assessment*, Office for National Education Standards and Quality Assessment, 2555.
- [3] H. C. Lucas, E. J. Walton, and M. J. Ginzberg, "Implementing Packaged Software," *MIS Quarterly*, vol. 13.4, December 1988, pp. 537-549.
- [4] P. Kawcharoenphon, "A Study of total Quality Management (TQM) of Primary Schools under The Office of Kamphaeng Phet Provincial Provincial Primary Education," Kamphaengphet University, 2002.
- [5] *Design of Classroom Research Management Process for OBE Schools, Samutsongkram Province*, Suansunandha Rajabhat University, 2554.
- [6] O. Klongsungsrn, "The Reform of Executive Information System For The Thai Customs Department," Ramkhamhaeng University, 2007.
- [7] W. Panurag, "The Development of an Executive Information System: A Case Study of Rajabhat Maha Sarakham University," Khon Kaen University, 2007.



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