Synthesis Components and Electronic Information Data Interchange Model for Knowledge Management in Educational Administration

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Abstract—This research has objective to synthesis components and model development for electronic information interchanges for knowledge in Educational Administration between Higher Education Institutions. The research method were to study and related research and Development Electronic Information Data Interchange Model for Knowledge Management in Educational Administration between Higher Education Institutions and to evaluate model by experts. The research result as follow: 1) Educational Administration 2) Knowledge Service Management 3) Electronics Information Data Interchange Standardization 4) Electronics Information Data of Educational Administration 5) Electronic Data Interchange System. The results has been evaluated by 7 experts that reasonable is high level.

Index Terms—synthesis components, electronic information data model, educational administration

I. INTRODUCTION

Nowadays, In developing countries have focused on the use of information and communication technology or ICT 2020 the government has set the standards for the preparation of the data link between government agencies .As part of the e-Government development projects under the framework of national electronic government or linking Thailand e-Government Interoperability Framework or TH e-GIF [1]. Intended to offer practical guidance to lead to the goal of creating electronic transactions that can be centrally managed at the same integration. Integration of information between government agencies. The policy response of the government to encourage the link between information and co-operation of electronic information systems of government departments and agencies are different automation. By focusing on the enterprise architecture used to build an understanding of the business aspects of information systems and technology. Now and in the future. To analyze the differences to bring the framework to connect Service agencies within and connect with service agencies outside together.

Higher education is educational agency [2] be under Office of the Higher Education Commission in Thailand, so that systems of education degree. In which each unit of the Institute of Education has prepared a standard electronic data prepared for the inside of the - data in the agencies themselves. The link between higher education institutions can use the - data in other formats, such as fax to email, etc. is attributed to - in between higher Education Institutions. Are developed on different databases. Policy of each institution. Using different reference code. Data formats and data types are different. Including electronic information, there are many. Therefore unaware of the need to exchange actual data. It cannot track the information exchange between higher Education Institutions [3].

This paper is organized as follows: Section II present objective of the research; Section III presents a proposed conceptual framework provides a knowledge management (KM), educational administration, and ICT tools; Section IV presets research methodology; Section V presents results of research shows the model development ;Section VI presents evaluation stage by experts; State paper finally concludes and future works.

II. THE PURPOSE OF THE RESEARCH

- To synthesis components and Electronic Information Data Interchange for Knowledge Management in Educational Administration between Higher Education Institutions.
- To development Electronic Information Data Interchanges model for knowledge management the administration between higher education institutions.
- To evaluate the Electronic Information Data Interchanges model for knowledge management the administration between higher education institutions.

III. THE PURPOSE OF CONCEPTUAL FRAMEWORK

The researcher studied the conceptual framework and related theories including Thailand e-Government Interoperability Framework (TH e-GIF) [1], National Information Exchange Model: NIEM [4], the knowledge Service Management [5], Administration of Educational Organization and Personal [6], and information technology [7] and [8] including Electronic Document Database for education administration, Electronic data Exchange for knowledge Management between Higher Education Institutions run on cloud computing technology [9] and SOA [10]. The Conceptual Framework of this research is shown in Fig. 1.
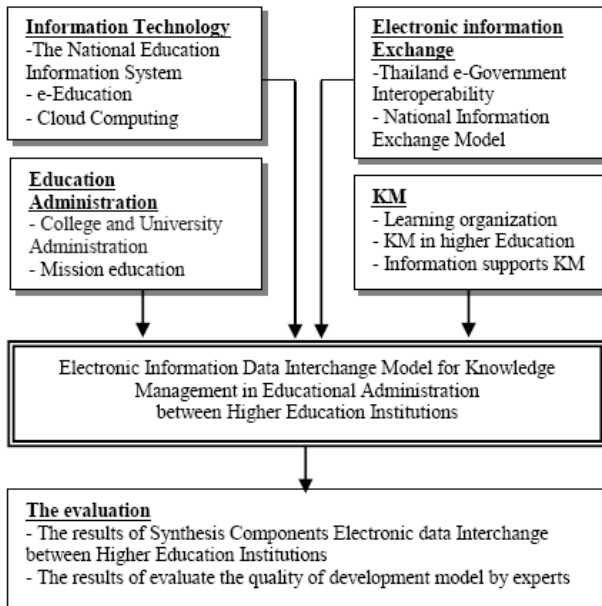

Figure 1.   A conceptual framework of this research.

IV.   RESEARCH METHODOLOGY

The research and Development (R&D) approach were used three phases study:

1)   The first phase is to study and related research.
- the analyzed and synthesized the concepts principles, related research concerning existing information Components of knowledge management, components of education administration.
- to study tools supported data interchange between Higher Education Institutions such as: infrastructure and information technology supports knowledge management.

2)   The second phase is to development electronic information data interchange model for knowledge management in educational administration between higher education institutions
- Define conceptual Framework of research.
- Define Electronic Information Data Interchange Model for Knowledge Management in Educational Administration between Higher Education Institutions.

Define Input system includes Philosophy, Vision, Mission, and Policy and Strategy.

Define process system for operation of Electronic Information Data Interchange Model for Knowledge Management in Educational Administration between Higher Education Institutions.

Define output system includes competence of Information data interchange in Educational Administration between Higher Education Institutions and system supports.

3)   The third phase is to evaluate model by experts.
- The Model has been evaluated by 7 experts' opinions on the quality.
- Corrective recommended by the experts.

V.   THE RESULTS OF RESEARCH

The research results from the study of the model to develop shown in Fig. 2
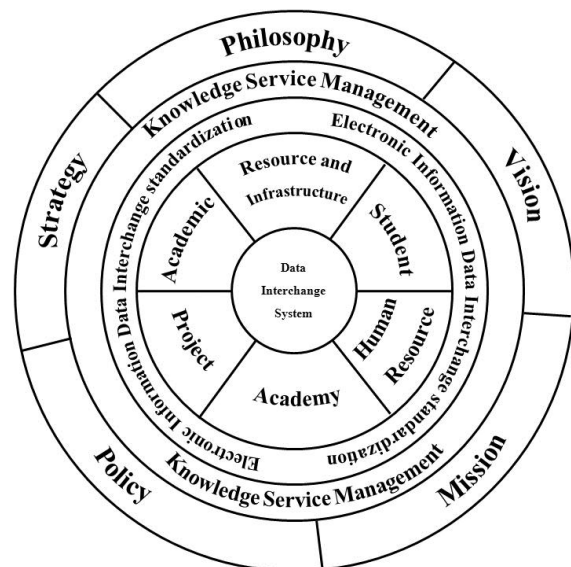

Figure 2.   Proposed of electronic information data interchange model for knowledge management in educational administration between higher education institutions.

The Electronic Information Data Interchange Model for Knowledge Management in Educational Administration between Higher Education Institutions which is consisted of five stages:

1)   Educational administration
The competence of five elements:
- Philosophy
- Vision
- Mission
- Policy
- Strategy

2)   Knowledge service management
- Capture and Codify Knowledge the storage and management of higher education institutions
- Share Knowledge the disseminate management of higher education institutions with using Information technology tools to supported access to information data in database system and it using in middleware for groupware to

collaborative management of higher education institutions.

3) Electronics information data interchange standardization

- The data standard specification: define data set, data structure and data prosperities for data interchange between Higher Education Institutions.
- The interconnection Specification the define requirements or approach, terms of data communications.
- Data Exchange Specification: The define data structure and data coding for data interchange.
- The storage and presentation specification: The define presentation data standard and data storage at interchange between higher education institutions.
- The security specifications are standard and supported technology data interchange included security data encryption and decryption.

4) Electronic information data for educational administration

- The academic Management the operation Concerned learning and teaching including, Research, Course information. Evaluation information, Student recruitment.
- The student Management the operation Concerned Students including Student records student activities, student admission, student alumni.
- The human Resource Management the operation Concerned person including person records, person position, Educational level, Development plan of person.
- The academy Management the operation Concerned development academy including organization plan, the estimation included building, classroom, Information technology system, dormitory.
- The project Management the operation under the scope of the works and budgets included project planning, evaluation project.
- The resource and Infrastructure Management A tool or utility to assist in the implementation of educational attainment.

5) Electronic data interchange system.

The Components of Electronic Data Interchange System as:

- Virtualization Technology in computing refers the act of creating a virtual version of something, including but not limited to a virtual hardware platform, operating system or OS, storage device, or network resources.
- Cloud Computing Service : refers processing and data storage included using information system so that user can be learning because the cloud computing run on internet the element as software as a service, platform as a service, infrastructure as a service, especially element data as a service or Cloud service so that important of system for data storage at element education administration were: Academic Management, Student Management,

Human Resource Management, Academy Management Project Management and Resource and Infrastructure Management.

- Knowledge Information Tools is enables and provides knowledge portal is connect end user for share knowledge education administration for education manager or related. The web content management system including electronic document management system: EDM and database management used records management for collaboration between Higher Education Institutions. The Knowledge warehouse is database management in system for searching edit and addition data education administration that enable efficiency.

VI. EVALUATION STAGE

The results can be seen as follows:

- Results evaluation quality of main system by 7 experts as shown in Table I.

TABLE I. PROPOSED EVALUATION MAIN SYSTEM

No.	Topics	Mean	S.D	Quality Level
1	Educational Administration	4.14	0.37	High
2	Knowledge Service Management	4.43	0.53	High
3	Electronics information data Interchange Standardization	4.57	0.53	Very high
4	Electronic information Data for Educational Administration	4.57	0.57	Very high
5	Electronic Data Interchange System	4.71	0.48	Very high
Average		4.48		High

TABLE II. PROPOSED EVALUATION SUBSYSTEM

No.	Topics	Mean	S.D	Quality Level
1	**Educational Administration**			
	1.1 Philosophy	4.14	0.37	High
	1.2 Vision	4.86	0.37	Very high
	1.3 Mission	4.43	0.53	High
	1.4 Policy	4.29	0.48	High
	1.5 Strategy	4.86	0.37	Very high
2	**Knowledge Service Management**			
	2.1 Capture and Codify Knowledge	4.43	0.53	High
	2.2 Share Knowledge	4.71	0.48	Very high
No.	Topics	Mean	S.D	Quality Level
3	**Electronics information data Interchange Standardization**			
	3.1 data standard			

		Specification	4.57	0.53	Very high
		3.2 Interconnection Specification	4.57	0.53	Very high
		3.3 data Exchange Specification	4.29	0.48	High
		3.4 storage and presentation specification	4.29	0.48	High
		3.5 security specification	4.43	0.53	High
4	**Electronic information Data for Educational Administration**				
		4.1 Academic Management	4.29	0.48	High
		4.2 Student Management	4.57	0.53	Very high
		4.3 Human Resource Management	4.14	0.37	High
		4.4 Academy Management	4.43	0.53	High
		4.5 Project Management	4.43	0.54	High
		4.6 Resource and Infrastructure Management	4.29	0.48	High
5	**Electronic Data Interchange System**				
		5.1 Virtualization Technology	4.29	0.48	High
		5.2 Cloud Computing Service	4.57	0.53	Very high
		5.3 Knowledge Information Tools	4.57	0.53	Very high

- The evaluation quality of subsystem as shown in Table II

VII. CONCLUSION AND FUTURE WORKS

The electronic data information interchange model is interoperability between higher education for education administration that allows an application run on different architecture. Also focused the methods interchange is based on cloud computing technology. The Result of this research to model can be save cost, time and addition Internal Quality Assurance System in Thailand.

The future work, Researcher plan to design a prototypical and implement system of electronic data information interchange for Knowledge Management in Educational Administration between Higher Education Institutions and system evaluation.

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