A MODEL OF INFORMATION SYSTEMS MANAGEMENT EFFECTIVENESS
FOR ACADEMIC WORKS OF THE COLLEGE OF AGRICULTURE AND
TECHNOLOGY IN THE NORTHEAST

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ABSTRACT

The objectives of this research were 1) to study the components and indicators of Information Systems Management Effectiveness for Academic of the Northeastern College of Agriculture and Technology. 2) Examine the consistency and suitability of the Information Systems Management Effectiveness for Academic model with empirical data. And 3) create and assess the Information Systems Management Effectiveness for Academic model of the Northeastern College of Agriculture and Technology. This research is mixed-method research. The sample used 425 research, 5 interviews, and 10 experts. The research instruments were questionnaires, and an assessment form for the use of components and indicators, Information Systems Management Effectiveness for Academic. The statistics used to analyze the data are percentage, mean, standard deviation, confirmatory factor analysis, and Structural Equation Modeling.

The results of the research showed that 1) There are 4 components and indicators for the effectiveness of information system management for academic works of the Northeastern College of Agriculture and Technology, which are 15 indicators: Executive competencies, User Competencies, Administration System, and Information Systems Management Effectiveness for Academic, which the measurement model for all elements of Construct Validity and Construct Reliability meets the specified criteria. 2) The results of checking the conformity of the structural equation model found that the Information Systems Management Effectiveness for Academic model of the Northeastern College of Agriculture and Technology is harmonious with the empirical data ($\chi^2=3.175, df=2, \chi^2/df=1.58<2, P-Value=0.093, CFI=1.00, TLI=1.00, RMSEA=0.035, SRMR=0.013$). And 3) the results of the evaluation of the model for the effectiveness of information systems management for academic works of the Northeastern College of Agriculture and Technology are appropriate and feasible at a high level and can be applied.

Keywords: Model, Effectiveness, Information System, Academic Work

I. INTRODUCTION

The success of educational administration depends on preparatory studies and planning. If educational institutions have good planning, it will help educational institutions to have clear operational guidelines, be able to mobilize people and resources of the organization thoroughly, and be able monitor the success of the goals. At the same time, an important element that reduces the risk of mistakes in operational planning is the information system of educational institutions. Because it is a process of thinking and making decisions in advance. The results of what happened in the past that is recorded as data or information are therefore important to be involved in the planning and decision-making process of the administrators to support and improve the quality of education to be efficient. Therefore, the Office of Vocational Education Commission, together with the Office of the Permanent Secretary, Ministry of Education, has integrated the information linking Administration System with a database system for
storing student records, especially the organization of academic information systems that will lead to the most efficient operation (Office of Vocational Education Commission, 2019).

In addition, the Office of Vocational Education Commission has formulated a strategy to optimize the vocational education management system. Developing an integrated system for exchanging information between organizations (Department Database) that focuses on the use of information technology to support the policy driving of the government and the Ministry of Education towards effective integration practices. Development of an individual database of students, students at all levels in government institutions of the Office of Vocational Education Commission can access government information conveniently, quickly, and accurately. Including the storage and management of databases that integrate work links between agencies and provide services to people efficiently, without redundancy, and safely following the policy. The Office of Vocational Education Commission has developed an individual database of students. Students at all levels in the government vocational education institutions, including the history registration database, linking the database system with the work process and providing a completely digital system, linking and integrating work and information between vocational schools, can develop a system Integration to exchange information between organizations and meet such important policies (Office of Vocational Education Commission, 2019).

Systematic effectiveness sets out the right guidelines or does the right things leading to the achievement of goal attainment and satisfaction of stakeholders (Drucker, 2005; Hoy & Miskel, 2005; Kreither, 1983). Therefore, the Model Information Systems Management Effectiveness for Academic will lead to strengthening and developing guidelines for academic management in schools. This is the main task of school administration and helps academic administration to continue under the support of a quality information system.

II. OBJECTIVES

1. To study the components and indicators of Information Systems Management Effectiveness for Academic of the Northeastern College of Agriculture and Technology.
2. To verify the conformity and appropriateness of the Northeastern College of Agriculture and Technology's Information Systems Management Effectiveness for Academic model with empirical data.
3. To create and assess a model of Information Systems Management Effectiveness for Academic of the Northeastern College of Agriculture and Technology.

III. METHODOLOGY

This research is Mixed Method Research, which uses quantitative and qualitative research methods to conduct 3 research phases as follows:

Phase I studied the elements and indicators of Information Systems Management Effectiveness for Academic of the Northeastern College of Agriculture and Technology by analyzing documents and interviewing five experts. The research tool was an interview form.

Phase 2 examines the conformity and harmonization of the Northeastern College of Agriculture and Technology's Information Systems Management Effectiveness for Academic model.

The sample group used in this research consisted of 380 administrators and educational personnel of the College of Agriculture and Technology in the Northeastern region. Since this research uses Confirmatory factor analysis, the sample size should be 10-20 times the observed variable. In this study, 19 variables were used for a sample size equal to 20 times the observed variable (Angsuchoti, S., Wichitwannā, S., and Phinyophānuwat, R., 2008). Hence, a sample of at least 380 people was obtained, however, in this study, the researcher used the actual sample size of 425 people, to minimize the inaccuracies of the question quality test results.

The research instrument used to collect data was a questionnaire divided into two parts: Part 1: Respondents' status information, looks like a checklist. Part 2 Information Systems Management Effectiveness for Academic of the Northeastern College of Agriculture and Technology, is characterized as a five Rating Scale, 74 items, consisting of four components: (1) Executive competencies, (2) User Competencies, (3) Administration System, and (4) Information Systems Management Effectiveness for Academic.
The tool quality was checked by using the corrected item-total correlation method, in which the classification power was between 0.257-0.635 and the total reliability was 0.989. Collecting data from a sample using Google forms.

Data analysis: the researcher analyzed the data by using a ready-made computer program to find various statistics as follows: The basic statistics were frequency, percentage, mean and standard deviation. The reference statistics include confirmatory factor analysis (CFA), to verify construct validity, construct reliability (R²), and causal model of analysis to determine the causal influence of each component.

Phase 3: Creating and evaluating the Northeastern College of Agriculture and Technology's Information Systems Management Effectiveness for Academic model by studying related documents and research work. The results of the research phase 1-2 and presented to 10 experts to consider the suitability and feasibility.

IV. RESULTS

1. Components and indicators of the effectiveness of information systems management for academic work of the Northeastern College of Agriculture and Technology consisted of 4 components and 15 indicators. The measurement model for all components of Construct Validity and Construct Reliability met the specified criteria as follows:

1.1 Executive competencies 4 indicators are 1) technological leadership, 2) technological management, 3) innovative proactive management, and 4) executive vision. The component weights (λ) of the four indicators were statistically significant at the .05 level with the Factor Loading in descending order as follows: Technology Management (0.931), innovative proactive management (0.870), having the vision of executives (0.835), Technology Leadership (0.789). When considering an Executive measure model, it appears that the model has a Construct Validity consisting of $\chi^2 = 4.564 df = 3 \chi^2/df = 1.521 P-Value = 0.102 CF = 0.998 TLI = 0.994 RMSEA = 0.055 SRMR = 0.008$

1.2 User Competencies The three indicators were 1) system skills, 2) system user attitudes, and 3) self-esteem. The component weights (λ) of the three indicators were statistically significant at the 0.05 level which has Factor Loading in descending order as follows: self-esteem (0.798), system skills (0.794), User Attitude (0.653). When considering the User measurement model Competencies, it appears that the model has a Construct Validity consisting of $\chi^2 = 9.038 df = 5 \chi^2/df = 1.807 P-Value = 0.086 CF = 1.000 TLI = 1.000 RMSEA = 0.034 SRMR = 0.020$

1.3 Administration System 4 indicators were 1) Curriculum System, 2) Evaluation System, 3) Registration System, and 4) Information Technology. The component weights (λ) of the four indicators were statistically significant at the 0.05 level which has Factor Loading in descending order as follows: registration system (0.910), Curriculum Work System (0.886), measurement system (0.870), information technology (0.814). When considering the Administration's performance measurement model System appears that the model has a Construct Validity consisting of $\chi^2 = 0.233 df = 2 \chi^2/df = 0.117 P-Value = 0.890 CF = 1.000 TLI = 1.004 RMSEA = 0.000 SRMR = 0.002$

1.4 Information Systems Management Effectiveness for Academic 5 indicators are 1) the speed of the academic administration, 2) the accuracy of the academic administration, 3) the security of the information of the academic administration, and 4) the Satisfaction of users with Administration System found that the component weights (λ) of the four indicators were statistically significant at the 0.05 level which has Factor Loading in descending order as follows: User satisfaction towards Administration System (0.910), information security of academic administration (0.865), the speed of academic administration (0.861), the accuracy of academic administration (0.834). When considering the Information Systems Management Effectiveness for Academic measurement model, it appears that the model has Construct Validity consisting of $\chi^2 = 2.260 df = 2, \chi^2/df = 1.130 P-Value = 0.132 CF = 0.999 TLI = 0.994 RMSEA = 0.054 SRMR = 0.005$

2. The results of the examination of the suitability, conformity, and harmonization of the Information Systems Management Effectiveness for Academic model of the Northeastern College of Agriculture and Technology found that it was consistent with the empirical data($\chi^2=3.175, df=2, \chi^2/df=1.58<2, P-Value=0.093, CF=1.00, TLI=1.00, RMSEA=0.035, SRMR=0.013$). The results of the inspection of the components affecting Information Systems Management Effectiveness for Academic(E) are arranged in order of importance as follows: 1.Executive competencies (L), 2 User Competencies(U), and 3 Administration System (S), the total influence size was 0.842, 0.224, and 0.222 respectively. However, the executive competencies (L) have an indirect influence on
Information Systems Management Effectiveness for Academic (E) through User Competencies (U) and Administration System (S) with a total influence size of 0.239) as shown in Table 1 and Diagram 1

Table 1: Results of the Consistency and Harmony Examination of the Information Systems Management Effectiveness for Academic of the College of Agriculture and Technology Northeast

<table>
<thead>
<tr>
<th>Composition</th>
<th>Indicator</th>
<th>( \lambda )</th>
<th>S.E.</th>
<th>Z-test</th>
<th>R²</th>
<th>Residual Variances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive competencies</td>
<td>1. Technology Leadership</td>
<td>0.789*</td>
<td>0.020</td>
<td>38.615</td>
<td>0.623*</td>
<td>0.377</td>
</tr>
<tr>
<td></td>
<td>2. Technology Management</td>
<td>0.931*</td>
<td>0.011</td>
<td>84.428</td>
<td>0.876*</td>
<td>0.133</td>
</tr>
<tr>
<td></td>
<td>3. Proactive management of innovation</td>
<td>0.870*</td>
<td>0.015</td>
<td>58.290</td>
<td>0.756*</td>
<td>0.244</td>
</tr>
<tr>
<td></td>
<td>4. Having a vision of executives</td>
<td>0.835*</td>
<td>0.017</td>
<td>48.815</td>
<td>0.697*</td>
<td>0.303</td>
</tr>
<tr>
<td>User Competencies</td>
<td>1. System skills</td>
<td>0.794*</td>
<td>0.014</td>
<td>61.883</td>
<td>0.799*</td>
<td>0.201</td>
</tr>
<tr>
<td></td>
<td>2. System user attitude</td>
<td>0.653*</td>
<td>0.017</td>
<td>51.217</td>
<td>0.728*</td>
<td>0.272</td>
</tr>
<tr>
<td></td>
<td>3. Self-worth</td>
<td>0.798*</td>
<td>0.015</td>
<td>63.396</td>
<td>0.809*</td>
<td>0.191</td>
</tr>
<tr>
<td>Administration System</td>
<td>1. Curriculum work system</td>
<td>0.886*</td>
<td>0.013</td>
<td>66.987</td>
<td>0.785*</td>
<td>0.215</td>
</tr>
<tr>
<td></td>
<td>2. Measurement system</td>
<td>0.870*</td>
<td>0.014</td>
<td>60.421</td>
<td>0.757*</td>
<td>0.243</td>
</tr>
<tr>
<td></td>
<td>3. Registration system</td>
<td>0.910*</td>
<td>0.012</td>
<td>78.193</td>
<td>0.829*</td>
<td>0.171</td>
</tr>
<tr>
<td></td>
<td>4. Information technology</td>
<td>0.814*</td>
<td>0.019</td>
<td>43.866</td>
<td>0.663*</td>
<td>0.337</td>
</tr>
<tr>
<td>Information Systems Management Effectiveness for Academic</td>
<td>1. The speed of academic administration</td>
<td>0.861*</td>
<td>0.017</td>
<td>50.992</td>
<td>0.742*</td>
<td>0.258</td>
</tr>
<tr>
<td></td>
<td>2. Accuracy of academic administration</td>
<td>0.834*</td>
<td>0.018</td>
<td>47.464</td>
<td>0.695*</td>
<td>0.305</td>
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<tr>
<td></td>
<td>3. Information security of academic administration</td>
<td>0.865*</td>
<td>0.017</td>
<td>51.095</td>
<td>0.748*</td>
<td>0.252</td>
</tr>
<tr>
<td></td>
<td>4. User satisfaction with Administration System</td>
<td>0.910*</td>
<td>0.013</td>
<td>68.297</td>
<td>0.828*</td>
<td>0.172</td>
</tr>
</tbody>
</table>

\[ \chi^2=3.175, df=2, \chi^2/df=1.58<2, P\text{-Value}=0.093, CFI=1.00, TLI=1.00, RMSEA=0.035, SRMR=0.013 \]

Figure 1: Information Systems Management Effectiveness for Academic model of the College of Agriculture and Technology

3. The Northeastern College of Agriculture and Technology's approach to enhancing Information Systems Management Effectiveness for Academic based on interviews with 10 experts is appropriate, feasible, and consistent, summarized as follows.

3.1 System development focused on the integration of information technology, including the integration of information technology with Administration System to cover administrative tasks with quality. Educational
institutions must have a system of administration and education that contributes to the quality of learners. Development of information systems that are efficient, systematic, accurate. Completely up-to-date and able to retrieve information at any time. School administrators can use it to make effective decisions about the implementation of the quality assurance system within the educational institution. Provide promotion and support for personnel within educational institutions to receive training and development in the use of information technology systems and skills training in using programs in information storage.

3.2 Strengthening skills in using technology systems in work planning, including Promote and support personnel within educational institutions in training and development in the use of information technology systems and skills training in using programs in information storage in various fields. Organize a database of educational institutions to be ready and always up-to-date. To see the user's self-worth leading to maximum effectiveness, management must look down on colleagues for focus, equality, warmth, welfare, motivation in every aspect. Administrators must adopt democratic principles and praise the people who should be praised, as this will create value for personnel until the user's attitude is formed. Executives should set a policy for the use of information technology in their operations to facilitate and expedite the work that is responsible for personnel who use the system and is a task that allows them to gain new experiences in information technology.

3.3 The promotion of technology leadership among school administrators includes; Executives should recognize the importance of technology and be more open. School websites and other digital technology channels should be established to communicate positive educational stories to increase the convenience and speed of access to information for students and parents. Technological management of good executives must plan strategies to be up-to-date and always up-to-date, see the importance, necessity of information, information, and technology, be updated and developed to be up-to-date and always up-to-date, accurate, which Strategies must be planned to be up-to-date and up-to-date. Recognize the importance, necessity of information, information, and technology. Have a broad mindset, look ahead with a purpose and have a firm purpose, and then lead the organization towards that goal until it achieves its goal steadily.

V. DISCUSSION

From the research results, there are important issues that should be discussed as follows:

The Information Systems Management Effectiveness for Academic model of the College of Agriculture and Technology was found to be consistent with the empirical data. This may be because the researcher has studied and synthesized the composition from related documents and research papers. and to corroborate elements and indicators with experts to complete the empirical definition. When tested with empirical data, they are consistent and harmonious with empirical data.The results of this research are consistent with the ideas of Wiratchai, N. (2002) who summarized the concepts of Blank (1993); Johnstone (1981); Burstein, Oakes & Guiton (1992), which described the study using the empirical definition as a characteristic. Definitions that are close to theoretical definitions. Because it is the definition in which the researcher determines what sub-variables an indicator consists of and defines a method for combining variables to produce an indicator based on theory and research papers. But the weighting of the individual variables included was based on an empirical analysis of the data, where this definition was appropriate and popular.

When considering the important factors that directly influence the Information Systems Management Effectiveness for Academic of the College of Agriculture and Technology, it was found that Administration System has the most direct influence. This is because the administrative system for academic institutes in educational institutions needs to cover both process factors and outputs, especially information technology systems, which are important mechanisms to link and drive various systems to achieve maximum efficiency. In addition, the systematic approach is a concept used to organize things to achieve a desired goal through the ability to distinguish its essential elements and the arrangement of those elements to complement each other in an orderly way starts with input, process, product, and feedback. The results of this study are consistent with Lussier (2009); Hoy & Miskel (2005); Lunenberg & Ornstein (2004); Robbins & Coulter (2012); Pansawang (2016, 2019), concluding that the system has three major components. These are inputs, processes, and outputs. Which is the system must be checked at every step is to provide feedback or feedback to improve the operation for maximum efficiency.

VI. RECOMMENDATION

Recommendations for the overall practical application of the research findings should encourage the use of the developed model as a guideline for the Northeastern College of Agriculture and Technology's Information...
Systems Management Effectiveness for Academic at the core, subcomponent, and indicator. Since the research results show that the developed model is consistent and harmonious with the empirical data, the model may be used as a guideline for the development of management. It should also take into account the importance of the parent element, the subcomponent, and the indicators found to be weighted in descending order.

In addition, research should be carried out to monitor and evaluate the implementation of guidelines for further improvement. There should be research to study the conditions, problems, and obstacles. Participant action research should be carried out by applying the findings as a guide, such as the development of constituents and indicators found to be of high mean, Including the development of elements with high elemental weights to develop educational institutions to be excellence in the future.

REFERENCES