ICVET
4th International Conference
on Vocational Education and Training

PROCEEDINGS

4th International Conference
on Vocational Education and Training 2016

"Strengthening TVET in ASEAN Economic Community"

Yogyakarta State University, Indonesia
September 15, 2016

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INFORMATION SYSTEM MODEL OF SELF-EVALUATION EFFORTS TOWARDS WORLD CLASS TEACHERS' INSTITUTION OF VOCATIONAL EDUCATION AND TRAINING

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ABSTRACT

In the era of Asean Economic Community, Teachers' Institution of Vocational Education and Training (LPTK's) are supposed to produce highly competent and competitive graduations. Otherwise, the teachers from Asean countries will overrun SMK's in Indonesia. There is no Indonesian LPTK's in the category of world-class universities. LPTK's have no idea what are the real problems. The data as results of self-evaluation so far offenly are inaccurate, less comprehensive, obsolote, and not well managed yet. As a result, the development and implementation of programs often misses and not bring improved quality and performance of LPTK's. Computer-based self-evaluation (web based information system) is one attempt to overcome these problems. It is a collection of hardware and software devices as well as human that will asisst in program development, implementation of self-evaluation, data processing, results management and utilization, and other related purposes. Self-evaluation supported by information system is expected to improve the quality of LPTK's toward world-class university, not just for national acreditation purposes. LPTK's are needs to develop a comprehensive and integrated information system that aligned with the level of information systems at Universities, Faculties, and Departments. The steps to develop and use web-based information systems of self-evaluation toward world class LPTK's are: (1) prepare teams of the information system, (2) develop information systems and devices, both hardware and software, (3) develop implementation programs of self evaluation, (4) conduct computer-based self evaluation, (5) manage the self evaluation results, (6) utilize the results of self-evaluation for program development (national, regional, and international), and (7) implement program development.

Keywords: information system mode, self-evaluation, LPTK's, vocational education

I. INTRODUCTION

Implementation of the free access policy of goods and labor in the countries of South East Asia (ASEAN Economic Community/AEC) has implications for many areas of life. ASEAN Economic Community encourage the flow of investment into the country, increase the speed of movement of people and capital. Enforcement of AEC increase the bargaining power possessed by the people in determining their choice of the many products and services offered, and to improve technology transfer from developed countries to developing countries (Ministry of Trade, 2014).

It has also implications for vocational education. Vocational schools in Indonesia need teachers who have competence in the global level. LPTK's should graduate candidates for vocational high school (SMK) teachers who are competent and competitive. Otherwise, teachers from Asean countries will overrun the SMK in Indonesia.

Higher education quality in Indonesia, especially LPTK's still needs improvement. Based on data from the National Accreditation Board of Higher Education by January 2016, only 26 (0.66 %) universities in Indonesia accredited institution A (Ariawan, 2016). Most universities are state universities, especially those that have the status of legal entity (Badan Hukum). In term of the world university rankings based on the methodology for the Academic Ranking of World Universities, or ARWU, since 2009 there is no LPTK's in ARWU rankings. There are only a few universities (non-LPTK's) which entered the ranking as a world-class university, including the University of Indonesia, Bandung Institute of Technology, and the University of Gajah Mada.

In order for LPTK's to play a significant role, the development LPTK's toward world-class universities is very important. According to Jamil Salmi (2009), there are some main aspects related to world-class universities, among others: high-quality human resources, excels in research, quality learning; adequate financing sources; International students who are gifted; academic freedom; lecture supporting facilities; research, management; and student life.

Pertaining to quality, one of the main problems frequently encountered LPTK's is not yet known exactly what kind of quality standards should be established, what components are still lacking, and how to overcome them. Every year LPTK's generally conduct a self-evaluation of the potential and its performance, as well as the opportunities that would be achieved. Self-evaluation that has been done so far tend to be less dynamic and sustainable that development data about the internal state of the institution and external conditions can not be viewed accurately and in real time. As a result, development and implementation of programs LPTK's often missed and yet brings improved quality and performance of institutions significantly. Continuous self-evaluation based computer is one way to overcome these problems.

II. METHOD

This study was conducted by reviewing the literature, either in the form of reference books, research journals, examples of information systems in college, and FGD with colleagues in the Faculty of Engineering University of Yogyakarta. The study provides some ideas of the general information system for self-evaluation in LPTK's.

III. RESULT AND DISCUSSION
3.1. Self Evaluation

Strategic Plan of Directorate General of Science & Technology and Higher Education, year period 2015-2019, among others realize five Indonesian universities included in the top 500 in the world according to the QS World standards, and increase the number of higher education that accredited A, and provide incentives to college to become a world class university. Law No. 12 of 2012 on Higher Education confirmed the integration of Quality Assurance of Higher Education are in a system, the Quality Assurance System of Higher Education (SPM PT), which consists of Internal Quality Assurance System, External System Quality Assurance or accreditation, and a Database Higher Education. Quality Assurance System of Higher Education is a systemic activity to improve the quality of higher education in a planned and sustainable.

One of the components that are essential to the quality assurance system is self-evaluation. According to Chapman and Sammons (2013), self-evaluation is a process to help improve the school or college that is carried out by the institution itself, and integrated with regular management system. Self-evaluation is a process relating to internal assessment institutions (schools, universities, companies), collaborative, inclusive and reflective. Some fundamental questions relating to self-evaluation, among others: How does the current condition of the institution? How do we know this? What evidence do we have? What are our strengths? What aspects need to be improved? How can we fix it?

Self-evaluation is an attempt courses/ colleges to find a picture of the performance and the state itself through assessment and analysis conducted by the study program/ university itself regarding the strengths, weaknesses, opportunities, challenges, obstacles, even threats. Assessment and analysis can be implemented by utilizing peer expert from outside courses/colleges, so that self-evaluation can be carried out objectively (BAN PT, 2010).

Benefits of self-evaluation, among others, to draw up a comprehensive institutional profile with the latest data, plan and improve on an ongoing basis, and prepare to accreditation. Continuous self-evaluation based computer is a process of collecting and processing data about the state/condition and performance of institutions that are designed and carried out in a systematic, computer-based, sustainable, so that the evaluation results are dynamic and accurate .

According to the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 49 Year 2014, the National Standards of Higher Education is the standard unit includes the National Education Standards, coupled with the National Standards Research, and the National Standards Community Service. National Education Standards consist of: competency standards; learning content standards; standard learning process; learning assessment standards; standard lecturers and education staff; standards of learning facilities and infrastructure; learning management standards; and financing standards of learning.

Systemically, Universities consists of several key components that interact with each other. The main components are the components that exist on the National Standards for Higher Education. These components can be grouped into input, process, output, outcome, and impact. Self evaluation conducted by reviewing the whole system of courses/colleges, including inputs, processes, outputs, outcomes, and impacts (input, process, output, outcome, and impact). Feedback includes: vision and mission of study program; goals and objectives; college student; human resources; curriculum; facilities and infrastructure; financing. Process, includes: governance; program management; leadership; learning process; academic atmosphere; research and service/ community service. Output/results includes: graduates. Others output: research publications and research products in the form of patents, designs, prototypes, software, and so on. Impacts includes: information systems; system improvement and quality assurance.

3.2. Information Systems

Information system according to Andreu, Ricart and Valor (Alcamí & Carañana, 2012) is a series of formal processes based data set according to the needs of the organization/company for the implementation of the management and control of the company. The information system is strongly associated with the use of computer technology. Information systems related to the utilization of hardware and software designed to transform data into forms useful information for users. Computer based information system has been developed to meet the information needs of a particular person or group of persons (for example, bank managers or customers of the bank) in order to achieve a predetermined goal. The information system is used to support the overall strategy of an organization, help to do what they want or choose what to do (Cornford, M. Shaikh, 2013). The information system is not just a computer and software, but also people who operate them. The information system is a social system supported by technology.

Management information system (MIS) is structured information and documentation systematically to collect, store, process, analyze, report and disseminate information and data (UNESCO, 2009). There are four stages of work on the MIS, namely data collection, storage and processing of data, either in paper or through computer records, data analysis, and utilization to enhance analytical results for the organization. The management information system is a computer-based system that provides information to users as needed to support the achievement of the objectives of an institution. These systems can help organizations, such as universities in integrating the data, systematizing data processing, and improving the quality of information and the achievement of objectives.

One of the existing information systems in college is academic information systems. The development of MIS can be a tool in managing and searching academic information effectively and efficiently. Academic information system covers all processes ranging selection of prospective students to graduate tracking. The output of the information system is expected to provide relevant information to all relevant parties such as prospective students, faculty, administration, user's graduates, and other related parties.

According to García Bravo (Alcamí & Carañana, 2012) information system consists of hardware, software, telecommunications, databases, human resources, and

procedures. Currently, all companies use computers, usually a personal computer (PC). Large organizations use diverse computer systems and more complex. There are two types of computer programs: system software and application software. System software is used for managing computer system resources and simplifying programming. Application software, such as spreadsheets, word processing, is dirrectly applied by users.

A database is a collection of related data, such as human resources organization or database products. Telecommunications is a means by which information is transmitted electronically. At present, the computer system is generally associated with telecommunications network. A variety of network connections are available to meet the needs of different companies. Human resources can be divided into two, namely: information systems specialists and end users. Specialist information systems include systems analysts, programmers and operators. End users are those who use information systems or the resulting output.

The procedure is the policy and method to be followed when using, operating and maintaining information systems. The procedure should be used, for example, when running a program to build your company's payroll, to determine how many times it should be run, which is authorized to do so and who has access to the reports.

3.3. Model Information System Self-Evaluation

The development of an information system in general include: analysis of system requirements, design or system design that includes database design and the design view, development of a system that includes code generation program and display development, testing the performance of the functional system, implementation, evaluation, and completion. Discussion of self-evaluation information system model here does not cover all the stages, but more towards the needs of the system.

Self-evaluation is primarily performed in order to obtain accurate information about the condition of each component of the implementation of activities in accordance

with the purpose college. Self-evaluation is not just for the sake of accreditation (external), but rather to self-improvement in order to achieve college objectives optimally. The focus of self-evaluation that is just for the sake of accreditation by BAN-PT makes the PT only focused at the local level, and the national level. As efforts to a regional level (ASEAN), and even international level, then the scope of self-evaluation should be more thorough, and with high quality standards as demanded by regional and or international level. Gradually, it is necessary to design a self-evaluation that lead to the regional and international levels. Some non-LPTK's colleges are now doing some sort of international accreditation for some of the study programs.

In accordance with the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 87 Year 2014 About the Accreditation Program and College, in Article 3 (1) states that the accreditation is done to the Study Program, and Universities based on the interaction in the National Standards for Higher Education. National Standards for Higher Education includes competency standards; learning content standards; learning process standards; learning assessment standards; lecturers and education staff standard; standards of learning facilities and infrastructure; learning management standards; and financing standards, the national research standards, and the national standard of community service.

There are seven components subjected to national accreditation (BAN PT), namely: Component A, include: vision, mission, goals and objectives, and strategy achievement; Component B includes: governance, leadership, management system and quality assurance; Component C, include: students and graduates; Component D, include: human resources; Component E, include: curriculum, learning and academic atmosphere; Component F include: funding, facilities, and infrastructure, and information systems; and Component G, covering: research services/ community service, and cooperation.

Leadership is an essential component in improving the quality of higher education.

Therefore, the self-evaluation should also touch the subject of leadership, on the level of Program Studies, Department, Faculties, and Centre (University). During this time the leadership is likely to judge his subordinate. Whereas the assessment by subordinates to the leaders, it is very important to improve the quality of leadership.
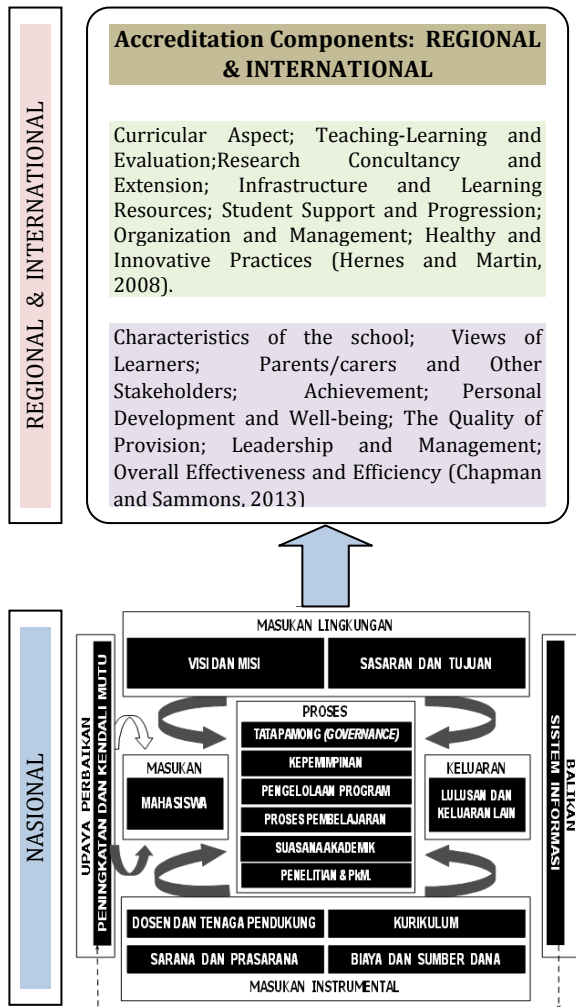

Figure 1. Systemic Components of Self-Evaluation: National-International (Dikti, 2010 Modified)

Keep in mind that self-evaluation should not only for the benefit of a national accreditation. Self-evaluation should also be directed to improvement of higher education at the regional and international levels. In general components of accreditation/ evaluation at national level (Indonesia), Asian countries as well as developed countries (United States) are quite similar, although there are slight differences.

However, to the quality standards of each component is still behind compared to developed countries. As an illustration, accreditation in India at least includes seven major components, namely **Curricular Aspect; Teaching-Learning and Evaluation; Research Consultancy and Extension; Infrastructure and Learning Resources; Student Support and Progression; Organization and Management; Healthy and Innovative Practices** (Hernes and Martin, 2008).

One of the self-evaluation framework coverage in the UK include: **Characteristics of the school; Views of Learners; Parents and Other Stakeholders; Achievement; Personal Development and Well-being; The Quality of Provision; Leadership and Management; Overall Effectiveness and Efficiency** (Chapman and Sammons, 2013). Figure 1 is a picture of model of self-evaluation component to the national level, and its development towards regional and international level.

In general, when seen from its level, management can be clasified as college-level management (Centre/University), Faculty-level management, Department and or Study Program-level management The name and management levels can vary according to the type of college (School, University, etc). MIS in Higher Education can be entirely or almost entirely in Centre (University), and or there is at every level of the Faculty, Department and Study Programs. It depends on the complexity of the University, both the number of Faculty/Department/Study Programs, and substance administered.
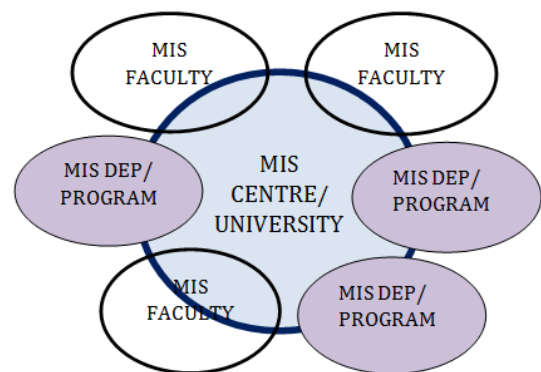

Figure 2. The Scope of MIS Model at Higher Education

Figure 2 is an example of the scope of MIS Self-Evaluation model that is partially shared. In this model, MIS-level University covers all matters pertaining to the central level, covers some faculty affairs, and affairs Department/Study Program. MIS-level Faculty covers all affairs at the faculty level, partly sharing/connected with the affairs of the University and the Department /Study Program. MIS-level Department/ Study Program covers all affairs departments/ study programs, and sharing/ connected with the affairs of the University and Faculty. The advantages of this system are data can be updated and shared through 'the system partition' so that it does not require too much memory, and simple.
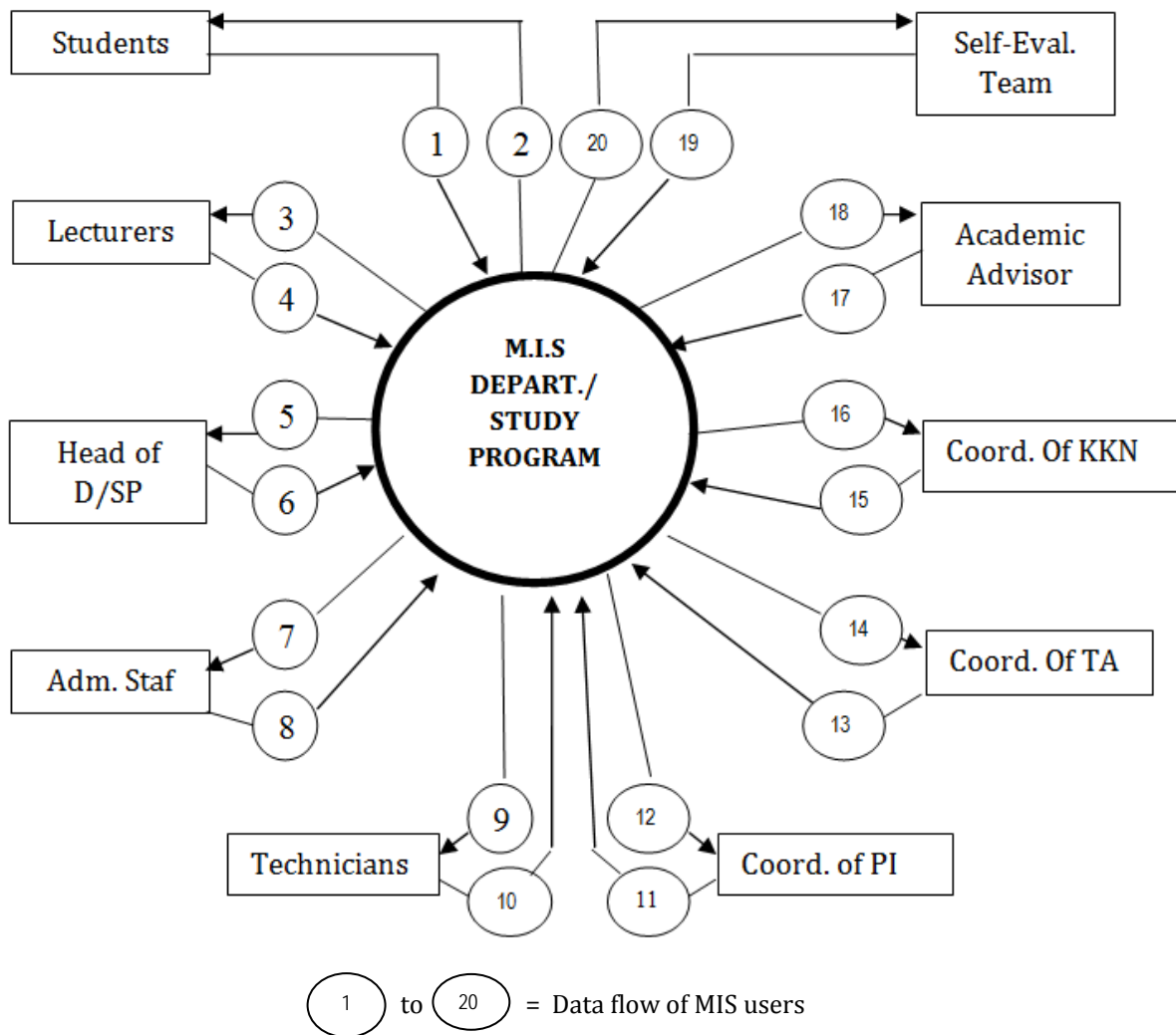

Figure 3. Model of MIS-Self Evaluation Context at Department Level Jurusan di LPTK

As an illustration to design a web-based information systems of self-evaluation at study program/departmen, Figure 3 shows at least 10 terminator or users of information systems, i.e Students, Lecturer, Head of Departmen/Study Program, Administration, Technician, Coordinator of Industrial Practice, Project Coordinator, Academic Advisor, and Self-Evaluation team. The number of users can be developed in accordance with the conditions of each college.

The steps that need to be done by LPTK's in developing and utilizing web based information systems for development LPTK at the national, regional, and international are: (1) setting up a team of information systems, (2) develop information systems,

both hardware and software, (3) develop a program of implementation of self-evaluation, (4) conduct a self-evaluation based computer, (5) performing data processing, (6) manage the results of self-evaluation, (7) utilizing the results of self-evaluation for program development (national, regional, and international), and (8) implement the development program.

IV. CONCLUSION

Based on the results and discussion can be concluded that: (1) Self-evaluation can be designed and well implemented if supported by web-based information systems that are connected systematically, comprehensive, and easy to use by the user, (2) Self-evaluation should not only be in the interests of national accreditation, but also to improve the overall quality of higher education, and lead to the accreditation of regional and international (a world-class university), (3) LPTK's need to develop a web-based information system that is integrated, and aligned with the level of information systems at the University, Faculty and Department/Study Program.

REFERENCES

Ariawan Andi Suhandana. (2016). *Mendongkrak Mutu Perguruan Tinggi Indonesia.* Direktorat Jenderal Kelembagaan IPTEK dan DIKTI. http://kelembagaan.ristekdikti.go.id/index.php/2016/05/09/mendongkrak-mutu-perguruan-tinggi-indonesia/ Diunduh 10 Agustus 2016.

BAN PT. (2010). *Pedoman Evaluasi-Diri Untuk Akreditasi Program Studi Dan Institusi Perguruan Tinggi*

Chapman, Christopher and Sammons, Pamela. (2013). *School self-evaluation for school improvement: what works and why?* Copyright CfBT Education Trust: Manchester, UK.

Cornford, M. Shaikh. (2013). *Introduction to information systems.* University of London: London, UK.

Hernes, Gudmun and Martin, Michaela. (2008). *Accreditation and The Global Higher Education Market.* International Institute for Education Planning: Paris.

Jamil, Salmi. (2009). *The Challenge of Establishing World-Class Universities.* The World Bank, Washington DC, USA

Kementerian Pendidikan dan Kebudayaan Direktorat Jenderal Pendidikan Tinggi Direktorat Pembelajaran dan Kemahasiswaan. (2014). *Pedoman Sistem Penjaminan Mutu Pendidikan Tinggi.*

Kementerian Pendidikan Nasional Direktorat Jenderal Pendidikan Tinggi (2010). *Sistem Penjaminan Mutu Perguruan Tinggi.*

Kementerian Perdagangan. (2014). *Menuju Asean Economic Community 2015.* Seminar Nasional. Malang 10 Juni 2014.

Peraturan Menteri Pendidikan Dan Kebudayaan Republik Indonesia Nomor 87 Tahun 2014 Tentang Akreditasi Program Studi Dan Perguruan Tinggi.

Peraturan Menteri Pendidikan Dan Kebudayaan Nomor 49 Tahun 2014 Tentang Standar Nasional Pendidikan Tinggi.

Peraturan Menteri Pendidikan Dan Kebudayaan Republik Indonesia Nomor 50 Tahun 2014 Tentang Sistem Penjaminan Mutu Pendidikan Tinggi.

Ruairi Quinn, TD. *School Self-Evaluation. Guidelines for Primary School*

Undang-Undang Nomor 12 Tahun 2012 Tentang Pendidikan Tinggi

UNESCO. (2009). *Developing Management Information Systems for Community Learning Centres; A Guide Book.* Bangko