

# *Strategies of Cluster Based Development of Higher Education in University of Trunojoyo Madura*

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**Abstract**— Cluster-based development of higher education is used to serve as a method of accelerating the development of University of Trunojoyo Madura (UTM). A cluster is an agglomeration of programs that involves actors from upstream to downstream, allowing the incorporation of program scale across faculties and study programs to eliminate some of the weaknesses of the management of the existing study programs. Collaboration of cluster development through six (6) potential sectors of Madura into a curriculum rooted directly in the societal issues can lead to the strengthening of the learning process, curriculum, integration of study programs and graduates' competency oriented to the Indonesian National Qualifications Framework..

**Keywords**—*Mediation Institution, Dispute Resolution, Society*

## I. INTRODUCTION

The cluster approach has been a strategic option in the development of UTM's competitiveness with a focus on six (6) potential sectors of Madura. Those six sectors in question are salt and tobacco sector, food sector (maize, cassava, sugar cane, cows and marine products), energy sector (oil and renewable energy), education sector (formal, informal and non-formal), social sector, labor and women sector and tourism sector and creative economy sector. Clustering is needed to strengthen the fundamentals of the development of higher education in the face of global competition in any field, including management of higher education. The clustering of those six (6) sectors represents UTM's concern with the problems in Madura. The benefits of the existence of universities are supposed to be directly felt by the community. Madura with its entire natural, human, social and cultural resources has tremendous the potentials to be superior in economic competition, at the local, regional, national and even international scope.

The concept of clusters was first introduced by Porter in his book "*The Competitive Advantage of Nation*" as a policy to enhance the competitiveness of the United States. He defines a cluster as a group of interconnected companies, geographically contiguous with relevant institutions in a specific field due to solidarity and complementarity [1]. In corporate (institutional) development the concept of clusters is identified as a sectoral and specialized collection of

companies dominated by a single sector [2]. A cluster is a group of interconnected industrial businesses and a cluster has two key elements: (1) companies within a cluster shall be interconnected and (2) they are located in a place adjacent to each other easily recognizable as an industrial area.

The economic/business sector is also familiar with the term "industrial clusters". In a similar vein, it is identified, among others, as (1) a group of industries with focal/core industries intensively interconnected and forming a partnership, either with supporting industries or related industries (Ministry of Trade of the Republic of Indonesia, 2000); (2) geographic concentration of companies and industries competing, complementary or interdependent, doing business with each other and/or having similar needs for capability, technology and infrastructure; (3) a production network of closely interdependent companies (including specialized suppliers), knowledge-producing agents (universities, research institutions, engineering companies), bridging institutions (brokers, consultants) and customers, interrelated in a chain of increasing value-added production [3]. In sum, (1) the most powerful characteristic of the development of cluster-based higher education is the expected more integrated strength and focus since an interconnected group of research interests will form in it; (2) facilitated utilization as a result of geographical proximity to the relevant institutions in a specific field due to togetherness and complementarity and unity, leading to a clustering of interests and interrelatedness.

Selection of the six sectors was based on the potential and proximity to natural resources, human resources, and the geographical position of competitive industrialization development of Madura. Competitiveness is the value of the capacity of a subject that generates revenue in order to strengthen the subject in the competition. Two aspects of competitiveness that can be owned by a company are a low cost and differentiation. Those competitiveness include: quality of products/services, features, delivery, follow-up service, ease of use, and other non-cost factors representing the factors distinguishing the company from its competitors [1].

II. METHOD

The purpose of the present study was to describe and analyze the development of higher education based on the clustering approach. The present study used a descriptive method. The framework of cluster-based higher education development in UTM is presented in the following figure:

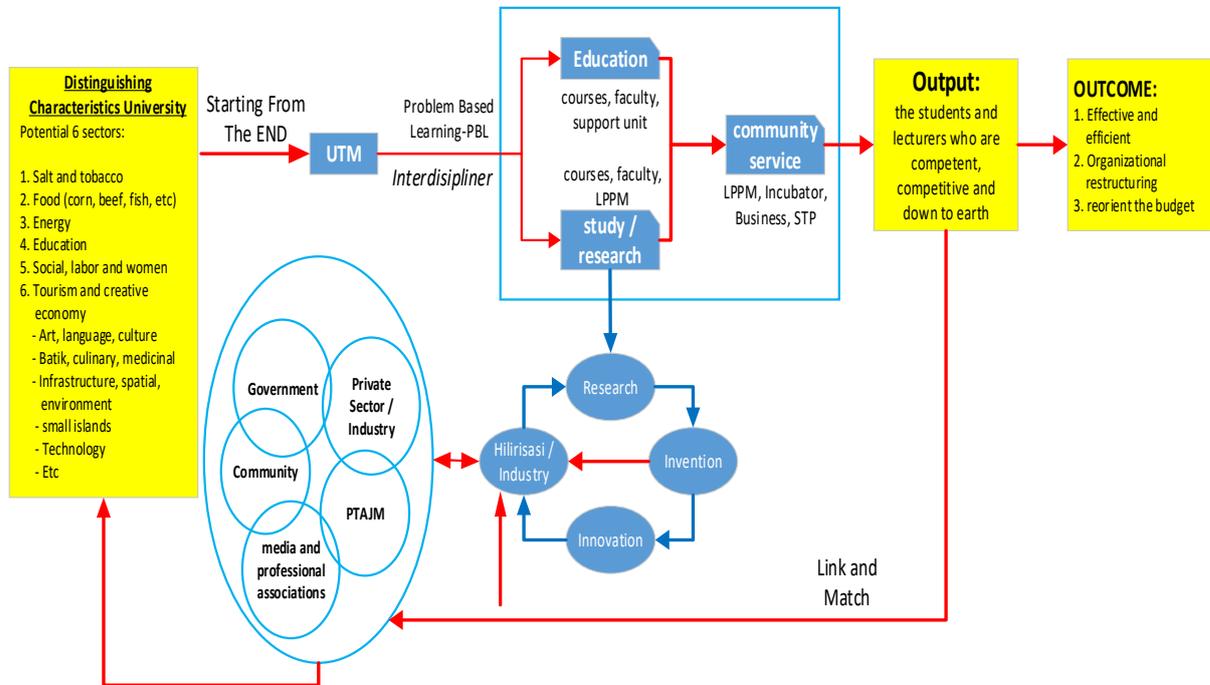


Figure 1. Conceptual framework of cluster-based higher education development in UTM

III. RESULT AND DISCUSSION

Cluster of 6 (Six) Sectors

Science is not pursued for its own sake. Rather, it is used to promote the creation of a more economically prosperous, civilized, sublimely ordered society devoted to God Almighty. Those six sectors identified as the potentials possessed by Madura were used to direct the development of UTM by synergizing the various problems arising in the development of those six sectors into the curriculum. Within this collaboration, the development of sciences along with the entire required superstructure (human resources, curriculum) and infrastructure will run in a linear fashion with the increase in social welfare.

Cluster-based development of higher education is among the alternatives to accelerating the development of UTM since a cluster is an agglomeration of programs that includes actors from upstream to downstream, allowing the incorporation of program scale across faculties and study programs to eliminate some of the weaknesses of the management of the existing study programs. Current

development of clusters is more inclined towards individual faculties and study programs; thus, those clusters will serve more as a center of scientific learning. In order to be more optimal, the development of clusters should be carried out by means of the grouping strategy and participatory approach in all aspects in a comprehensive and sustainable manner. According to Shaidullina, *et al.*, a clustering policy is focused on strengthening the network of relationships among members of the cluster in order to facilitate access to new industries and technology development, knowledge sharing, and continuous and integrated learning process. Clustering allows lecturers and students to work in accordance with the specified professions and qualifications [4].

The main challenge in the development of clusters in UTM is to develop of social capital/togetherness among the actors within the cluster and to resolve conflicts arising among those actors. This can be resolved by means of capacity building of the actors involved in the cluster. Implementation of the Problem-Based Learning (PBL) program represents an appropriate approach to achieving the Tri Dharma (the Three Pillars) in UTM. PBL emphasizes an active student learning center (ASCL) where students are

challenged to examine, explore, investigate, reflect, understand the meaning science in a context relevant to their future professions. ASCL is learning centered on student learning activities, not only on the lecturers' teaching activities.

Collaboration of cluster development through the six sectors into the curriculum would easily resolve the contemporary problems faced by communities. Indeed, curriculum development is also inseparable from KKNI-based curriculum as stipulated by the Government. According Alhamuddin, KKNI constitutes a reform pursued by the government in order for domestic graduates' recognition and equalization to graduates of various universities in the world [5]. This will lead to a strengthening of the learning process, curriculum, study program integration and graduate's competence oriented to the development of the six (6) sectors and the KKNI. Alhamuddin asserts that the curriculum is the heart that affects the competence of graduates. Furqan argues that curriculum represents an undeniable link in quality improvement of higher education [6]. According to Hamalik, curriculum is not only limited to the subject matters to be given in the lecture hall, but also what is important to be experienced by students [7].

#### *Approaches to the 6 Sectors*

Development of Madura is directly proportional to the complexity of problems it creates, requiring treatment different from the previous ones. The problems encountered are multisectoral and interlinked. These complex issues cannot be solved only by using a single discipline or approach, but it requires a merging of various disciplines through an interdisciplinary approach and a problem-based learning approach. In a narrow sense, an interdisciplinary approach is one to solve a problem by reviewing the viewpoints of a cluster of relevant or appropriate sciences in an integrated manner. A cluster is certain sciences grouped together, namely the cluster of natural sciences, the cluster of social sciences, and the cluster of humanities. Interdisciplinary is intensive interactions among two or more disciplines, whether directly related or not, through programs of teaching and research aimed at integrating the concepts, methods and analysis. With this approach, social issues are to be approached, analyzed and examined by means of various disciplines of social science simultaneously. In accordance with the subsystem of problems, complex social issues are investigated from various academic disciplines, such as sociology, economics, anthropology, politics, geography, psychology, history and others and, perhaps even beyond the academic disciplines of social sciences.

The problem-based learning (PBL) program is a community-oriented, human-focused educational philosophy, emphasizing interdisciplinary approaches and problem-based learning. Problem-based learning is an educational approach which uses stimuli to help students discuss

important questions or issues. According to Pinho (2015), with the problem-based learning experience, students face problem situations [7]. They ask: What do we know? What do we need to know? And, how can we know? Problem-based learning (PBL) is a method of education that encourages students and lecturers to get to know how to learn and work in teams to find real and concrete solutions to problems. The PBL approach is capable of developing the capacity for greater retention and recall of knowledge, developing interdisciplinary skills, accessing and using information from a variety of subject domains, better integrating knowledge, integrating classroom and field learning, developing lifelong learning skills, creating a learning environment capable of improving critical thinking skills and solving problems and improving students' motivation and satisfaction, student-student interaction, and student-lecturer interaction.

#### *Implementation of the Three Pillars of Higher Education*

Education and teaching is the first and main pillar of the *Tri Dharma* (the Three Pillars) of Higher Education. It is primarily to prepare highly qualified graduates. The second pillar, research, is essential to the advancement of higher education and society. Research and development will encourage lecturers and students to continue to develop science and technology in order to undertake their roles as agents of change. The third pillar, public service, is defined in the framework of the application of science and technology that has been developed in universities, especially as a result of the process of education and research. Those three pillars are closely related to each other, since research must support the two other pillar of higher education.

#### *Downstreaming of Research*

Downstreaming of research should be carried out in order for the UTM research to actually benefit the community. To enhance the progress and welfare of the community, UTM programs should be able to increase the added value or productivity. Universities should be directed to clustered universities in accordance with the knowledge, skills and conditions of each university. With their results of research, universities should contribute to the development of the surrounding environment, not only to their own campuses. To support the development and implementation of research, universities can cooperate with the Government and private sectors.

Through the Ministry of Research, Technology and Higher Education the Government has mapped out or assigned universities to assist the resolution of environmental problems or the surrounding areas. As the follow up of the policy, the Government should revitalize the campus facilities and infrastructure, carry out institutional restructuring and change the budget policy.

### *Multi-Stakeholder Partnerships*

In order to realize the idea of Cluster-Based Education Development with the main focus on the development of the potentials of Madura with the six sectors in question, UTM needs to make a pentahelix cooperation involving the five pillars of stakeholders in order to improve the quality of the Three Pillars of Higher Education in the areas of teaching, research, and community service. The pentahelix cooperation is done to achieve UTM as a transformative university that can have developmental impacts on the community, as well as establishing interdependent cooperation with various parties. Multi-stakeholder partnership becomes a necessity and consequence for UTM in the context of downstreaming of research. UTM is called for to undertake a pentahelix cooperation involving the five pillars of stakeholders in order to improve the quality of the Three Pillars of Higher Education in the areas of teaching, research, and community service (link and match). The pentahelix cooperation is done to achieve UTM as a transformative university that can have developmental impacts on the community, as well as establishing interdependent cooperation with various parties. With this collaboration, UTM invites those involved in the pentahelix cooperation to participate and interact in the academic field. One that can be done is to invite stakeholders to contribute directly to the various programs of the Three Pillars of Higher Education in UTM.

### *Outputs*

The main purpose of university management is the satisfaction of customers, namely companies and communities. Therefore, universities need to prepare ready-to-work outputs. In order to be successful, Kraipetch suggest that every university needs to perform a systematic process of continuous improvement. The concept applies here is the PDCA (plan-do-check-action) cycle, comprising the steps of planning, implementation, evaluation of implementation, and corrective actions. With this collaboration, UTM invites those involved in the pentahelix collaboration (the government, industry/private sector, communities, universities, media, and professional associations) to participate to interact in the academic field [9]. One that can be done is to invite stakeholders to contribute directly to the various programs of the Three Pillars of Higher Education in UTM. With the Cluster-Based Development of Higher Education, the outputs to be achieved by UTM are: (1) An increased quality of teaching and learning; (2) Students' and lecturers' application of integrated theory and practice to the community; (3) Qualified theses dissertations (for students), journals, articles (for lecturers); (4) Improved accreditation; (5) Evaluated quality of teaching and learning process; (6) Implemented intensive collaboration of stakeholders

### *Efforts to Enhance Improved Outputs*

Some of the steps to be taken by UTM in the future in an attempt to enhance improved outputs are: (1) Establishment of Accreditation. Implementation of accreditation needs to be optimized; thus, the assessment should be based on actual conditions in order to prevent less qualified universities from acquiring good scores. Universities should be accountable for the community, so that the entire implementation of education in universities can be held accountable to the community; (2) Application of Total Quality Management (TQM). TQM refers to the organization's continuous improvement of quality in order to satisfy the entire customers (users and recipients); (3) Designing and using marketable or demand-oriented curriculum/study programs. This is in order for university graduates to be absorbed by the labor market; and (4) The management of universities, especially the leaders, should have high professionalism, especially in management; (5) Improvement to the quality of lecturers, especially those teaching the disciplines required by the community; (6) Development of a network networking of universities and stakeholders, especially in terms of curriculum development and channeling of university graduates; (7) Provision of university facilities with laboratories and libraries that support students' capabilities and skills; Development of students' ethos of entrepreneurship in order for them not to rely on only the jobs available, but to create jobs for the community.

## IV. CONCLUSION

Clustering of 6 (six) sectors representing the potentials of Madura serves to direct the development of UTM by synergizing the various issues into the structure of curriculum to be developed. The collaboration can externally raise the level of people's lives and internally provide an understanding and scientific basis of competencies possessed by every graduate of UTM. The clustering method is used to serve as an alternative to accelerating the development of UTM since a cluster is an agglomeration of programs that involves actors from upstream to downstream, allowing the incorporation of program scale across faculties and study programs to eliminate some of the weaknesses of the management of the existing study programs.

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