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Evaluating Alumni Communication and Curriculum Relevance: A Tracer Study of Tadris Mathematics Department at IAIN Syekh Nurjati Cirebon

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Abstract

Nowadays, tracer studies are widely applied to trace events or facts. In this research, tracer study was used to find out and improve the quality and communication of alumni of the Tadris Mathematics Department of IAIN Syekh Nurjati Cirebon. Improved communication is very useful for the smooth flow of information from alumni to other parties in a reciprocal manner. The objectives of this research are: 1) Explore information about the gap between the education provided and the world of work, 2) Find out the relevance of curriculum implementation, 3) Evaluate the relationship between the curriculum and studies in the department as scientific development. The methodology used is tracer study, with a sampling technique using snowball sampling. Based on the research results, the following results were obtained: 1) There is a gap between the education provided and the world of work. This is proven by the lack of skills courses and practical courses. Of the 29 graduate skills courses, there are only 5 courses that are skills in nature and 5 that contain practicum. 2) There are 53 students who have obtained jobs and which match their competencies. There were 23 students who got jobs and those who were not suitable. Meanwhile, 10 people did not fill out this questionnaire. This means that alumni students majoring in mathematics have competencies appropriate to their type of work. 3) The curriculum developed in the department is still not well integrated. This occurs due to a lack of attention from lecturers to aspects of the curriculum.

Keywords: *Tracer Study, Mathematics Education Department Profile, Snowball Sampling*

A. Introduction

The number of university graduates in Indonesia every year, ranging from diploma, bachelor, master and doctoral graduates, is very large. However, so far in Indonesia not many universities have a track record of their alumni. This condition results in almost no feedback from graduates to improve the quality of education for the tertiary institution itself. In general, feedback provided by alumni can be useful in helping universities improve education systems and management. One method that can be used to help universities improve their education systems and management is to carry out a Tracer Study.

The development of technological progress is very rapid in creating change. Change is a necessary thing in human life. Likewise, the orientation of education which originally relied on the assumption of science for science's sake has changed to become science for the benefit of the lives of many people. The question that often arises after someone completes higher education is what work, where, and for whom. This question indicates a change in awareness as well as the hope that the knowledge and skills obtained at college can be useful for other people through the graduate's real work. Likewise, institutionally, educational institutions are charged

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by stakeholders with their real work in educating the nation's generation in the form of producing graduates who are academically qualified and have good personalities. To implement these noble ideals, educational institutions are required to continue to reorganize themselves and improve the quality of educational services to the public. One of them is through assessing the Department's performance by the National Accreditation Board for Higher Education (BAN PT) and preparing a Self-Evaluation report as a basis for organizational consolidation and development of academic activity programs. One of the points of self-evaluation and filling out the accreditation form is regarding the whereabouts of alumni after leaving college.

The success of higher education is determined by many aspects, one of which is the aspect of relevance. In this aspect of relevance, universities are required to be able to produce alumni (graduates) who have competitiveness and are ready to take part in development. The competitiveness of alumni is shown through the waiting period to get their first job, the success of graduates competing in selection, and the salaries they receive. The relevance (suitability) of alumni education is shown through the job profile (type, place of work, and suitability of salary), the relevance of the job to the educational background, the benefits of the courses programmed in the job, suggestions from alumni for improving graduate competency. Apart from that, the relevance of education is also demonstrated through the opinions of alumni users regarding alumni user satisfaction, alumni competency and alumni suggestions for improving alumni competency.

How much higher education alumni are able to take part in development according to the relevance of their education can be carried out by tracing alumni or graduates (Tracer Study). Tracer Study is an approach that allows higher education institutions to obtain information about deficiencies that may occur in the education and learning process and can be the basis for planning activities for future improvements. The results of the Tracer Study can be used by universities to determine the success of the educational process that has been carried out for their students. Even competitive grant and accreditation programs always require data on the results of the Tracer Study through the parameters of the waiting period for graduates, the percent of graduates who are already working, and the first income earned.

The Department of Mathematics Education, Faculty of Tarbiyah and Teacher Training (FITK), as one of the educational institutions producing educational staff in higher education, is expected to produce alumni who can be absorbed into the world of work in accordance with the educational competencies they have obtained. This department produces alumni who have pedagogical competence in mathematics subjects in secondary education units. Since 1999, the Department of Education has used the 1998 curriculum and underwent another change in 2007 during the first accreditation. During the period 2003 to 2013, the Department of Mathematics Education graduated 718 students. During this period, there has never been a search for alumni related to the quality of education and the relevance of competence to market needs or the world of work. The quality of education in question is related to the accuracy of the curriculum in the Mathematics Education Department of IAIN Syekh Nurjati Cirebon with its application in the field (job market needs). Apart from that, the quality of alumni can be seen from the suitability of alumni competencies to the needs of the job market, and in accordance with accreditation parameters and competitive funding proposals.

One of the stages of activities carried out in order to find out between competencies and market needs is the Tracer Study. Tracer Study can measure and track alumni performance so that clear indicators can be obtained about the alumni profile of the Mathematics Education Department, especially during the period 2017 to 2018. This graduate profile includes at least

three things required by accreditation requirements, namely the waiting period for graduates, the percentage of alumni who are already working , and the first income earned.

Harald Schomburg (2003: 11) defines Tracer Study as an approach that allows higher education institutions to obtain information about deficiencies that may occur in the educational process and learning process and can be the basis for planning activities for future improvements. Meanwhile, according to Nazir (1988), tracer studies are studies whose main focus is to obtain the whereabouts or information of graduates who are already working or not yet working. The collection of various data related to these graduates can later be used as material for policy making in the context of developing or improving an institution. Nowadays, tracer studies are widely applied to trace events or facts. This tracer study is very useful for finding out and improving communication networks which will ultimately improve communication. Improved communication is very useful for the smooth flow of information from one party to another in a reciprocal manner. A tracing study of alumni needs to be carried out because it is to find out the condition of alumni in relation to their work (Nazir, 1988). Meanwhile Mc. Sikorts (1999:126) states that research studies on university alumni must be carried out by universities as a form of attention to their alumni. This attention will ultimately create a reciprocal and mutually beneficial relationship between alumni and universities, thereby forming a strong foundation in the form of a professional university image.

Information provided by alumni who are successful in their profession is needed, for example information about relevant knowledge and appearance (the relationship between knowledge of skills and job demands, work area, professional position). Apart from that, alumni can also be asked to assess the study conditions they experienced during the education and learning process. Tracer Study can also be used as an activity to find information about stakeholder needs for alumni. Graduate tracing (Tracer Study) is one of the strategic things that must be done by every educational institution. There are at least three benefits that can be obtained from implementing this activity, namely: 1) Knowing stakeholder satisfaction, in this case graduates, related to the learning experiences they have experienced, to be used as a tool for evaluating institutional performance. 2) Obtain relevant input as a basis for institutional development, related to competitive abilities, quality and working experiences of graduates which can be used to seize opportunities and overcome future threats. 3) Improving the relationship between alumni and alma mater, because if you look at the experience of well-known educational institutions, strong ties between graduates and alma mater will bring many benefits to the alma mater along with recognizing the progress of graduates in society.

Based on the opinion above, it can be concluded that an alumni tracer study is a study whose main focus is to obtain information about the employment conditions of graduates, which is a form of attention from universities so that it can be used as material for policy making in the context of developing or perfecting the curriculum in the college. In this research, a tracer study will be carried out on alumni of the Mathematics Education Department, FITK IAIN, Syekh Nurjati Cirebon.

The primary objective of this initiative is to gather pertinent insights and feedback from alumni regarding their "learning and working experiences" to contribute to the enhancement of higher education. As articulated by Schomburg (2003), the overarching goal of Tracer Study endeavors is to assess the caliber of graduates in their professional environments. Within this framework, the specific aims of Tracer Study encompass three key objectives. Firstly, it seeks to delve into the disparities between the education dispensed and the demands of the labor market, thus shedding light on potential gaps. Secondly, it endeavors to ascertain the alignment

of the implemented curriculum in higher education with the requisites of the labor market and the progression of professional competencies within the department. Lastly, it aims to scrutinize the correlation between the curriculum and academic pursuits within the department, discerning its contribution to scientific advancement.

B. Methods

The population in this study were all mathematics alumni from the 2013-2014 graduation year. Data collection techniques in this research were using telephone, questionnaires and email. The data collection technique using the telephone was carried out with alumni who already knew the telephone number that could be contacted. By using the telephone, we can contact alumni with each other to conduct a study tracer, so that we can determine a place to conduct the questionnaire. The questionnaire technique was carried out by snow balling. Of the people who have had the questions asked, we get some names. We will make these names the next targets, and so on. The number of samples in this research was 76 alumni. This amount was obtained using the Slovin method. Meanwhile, online questionnaires were administered using random sampling techniques. In detail, the population in this study is as follows:

Tabel 1. Population distribution

Graduation year	Number of Students
2017	155
2018	153
Sum	308

The alumni tracing research framework (tracer study) is structured in the following figure:

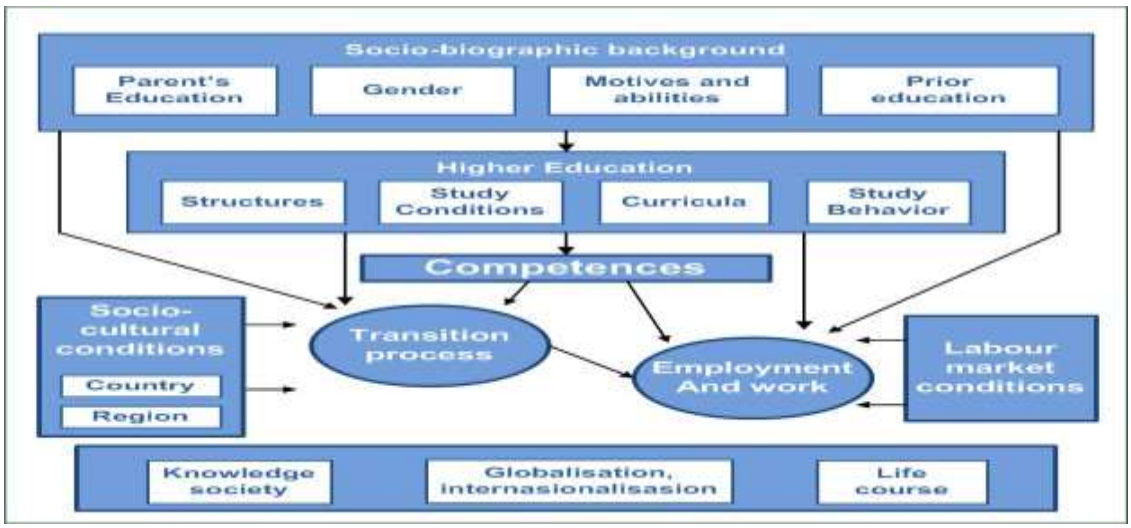

Figure 1. Alumni search framework (Schoumberg, 2010)

This framework can serve as a guide for preparing the main sections in an alumni search questionnaire. Usually alumni search questionnaires contain elements such as alumni's social biographical background; processes and conditions of higher education such as the structure of higher education, learning conditions, curriculum, and learning processes. Apart from that, elements such as: graduate competencies, the transition process from higher education to the world of work, work conditions and work environment, are usually also included in alumni search questionnaires. Of course, the emphasis of each questionnaire depends on the initial objective of conducting the alumni search study. If alumni searches are designed to evaluate the

curriculum, then a larger proportion will of course be allocated to questions about the curriculum. This framework is a guideline for interpreting alumni search data. The results of quantitative analysis cannot be interpreted as they are. In tracing cultural alumni, economic conditions and the workforce, which of course varies greatly depending on location and time. It is not only the process in higher education that influences graduate output but also the alumni's background and experience before entering higher education.

C. Findings and Discussion

Alumni Profile Tracer Results

The profile referred to in the results of this research is a description of the profile of the research instrument distributed to alumni. The alumni profile is based on gender, region of origin and based on year of graduation. For gender, there were 43 people and 33 men. From this data, 76 alumni filled out the tracer study questionnaire or 24.68% of the population. The origin of the respondents who ranked second came from the Majalengka area, followed by Indramayu and Kuningan. The data distribution is quite representative of the distribution of respondents from region 3 of Cirebon. There were 40 alumni who graduated in 2014, while in 2013 there were 36 people. The proportion of this amount of data is quite good, because the amount of data is balanced.

Curriculum Relevance

Of the six types of courses, the most useful according to respondents are Professional Skills Courses and curriculum development. These two courses are really needed in the Field Skills Course. Apart from that, curriculum analysis analyzes the course content in the Tadris Mathematics curriculum, based on information from alumni about relevant and irrelevant courses. For courses related to religion, in the future it will be necessary to merge religious courses with other courses. This was done not to eliminate but to simplify and adjust the suggestions of stakeholders and alumni who provided a lot of input about increasing practical and basic mathematics courses. MKK courses that are included as irrelevant courses should be reviewed by the department to be merged with other courses or eliminated and replaced with practical courses. Meanwhile, elective courses included as irrelevant courses are reviewed and replaced with new courses that are adapted to the demands of work culture.

In the realm of employment for alumni specializing in mathematics education, an analysis of the data reveals several noteworthy observations. Firstly, concerning the suitability of their chosen field, it is discerned that 59 individuals have secured positions commensurate with their competencies. Conversely, 23 alumni found themselves employed in roles misaligned with their skills. Notably, 10 respondents abstained from completing the questionnaire. This indicates that alumni from the mathematics program possess competencies relevant to their respective vocations. Furthermore, the analysis indicates that the longest waiting period for alumni to secure employment is less than three months, with some even obtaining jobs before graduation. Additionally, while mastery of a foreign language is deemed an additional skill requirement for students and alumni of IAIN Cirebon, 76% of respondents assert its insignificance in the professional sphere, particularly within the context of domestic educational institutions. Conversely, 24% deem it necessary, reflecting the diverse perspectives on this matter. Moreover, mastery of information technology emerges as another crucial requisite for both teaching and non-teaching roles. An analysis of alumni responses indicates that 63% acknowledge the

necessity of honing these skills, while approximately 37% perceive them as non-essential. This underscores the imperative to enhance and cultivate technological proficiencies within the Tadris Mathematics Department, as these competencies are integral to the career success of educators (Saluky, Riyanto, & Rahmah, 2022).

Lecture Process

The lecture process is a benchmark for whether an institution is good or not, especially the Mathematics Department. The lecture process or classroom learning process includes pedagogical, professional, social and personality aspects of the lecturer. Apart from that, the curriculum and campus facilities and infrastructure are also important indicators in measuring the quality of the lecture process in the IAIN Syekh Nurjati Cirebon Mathematics Tadris Department. The learning environment will increase concentration and learning outcomes (Ilmi, 2023)

Alumni feedback regarding the teaching processes within the Tadris Mathematics Department is categorized into three score ranges: 3.6-3.7, 3.0-3.5, and less than 3.0. Notably, seven indicators received scores falling within the 3.6-3.7 range, indicating a favorable response from alumni. These indicators encompass academic activities, lecturer competence, course content, thesis examination services, graduation services, seminar implementation services, and exam implementation services. Within the score range of 3.0-3.5, alumni responses were deemed adequate across fourteen indicators, including PPTQ services, facilities and book collections, practical course content, and IT services, among others. However, indicators pertaining to opportunities for alumni to participate in departmental policy determinations and engage in projects received comparatively lower scores, below 3.0 on average. Addressing these concerns should be prioritized by the department to ensure alumni engagement and satisfaction.

Curriculum Analysis

Arabic and English courses are included in relevant and irrelevant courses. This happens due to different student perceptions. For this reason, foreign language skills must actually be relevant according to stakeholder suggestions, so that these two courses must be improved.

For courses related to religion, in the future it will be necessary to merge religious courses with other courses. This was done not to eliminate but to simplify and adjust the suggestions of stakeholders and alumni who provided a lot of input about increasing practical and basic mathematics courses. MKK courses that are included as irrelevant courses should be reviewed by the department to be merged with other courses or eliminated and replaced with practical courses. Meanwhile, elective courses included as irrelevant courses are reviewed and replaced with new courses that are adapted to the demands of work culture.

Stakeholders

From the research results, it was found that approximately 95% of users are alumni from educational institutions. This is understandable because the Tadris Mathematics Department prepares its graduates to become teachers. But there are also alumni who work outside the teaching profession. Meanwhile, the importance and quality aspects according to stakeholders are based on the average value of the importance aspects with the quality of alumni according to stake holders being higher, as well as the standard deviation value. This shows that the quality of alumni in terms of competency needs to be improved. Indicators that need to be prioritized for improvement are the ability to communicate in a foreign language, the ability to work under pressure and being visionary.

Suggestion Analysis

The analysis of suggestions referred to in this research is suggestions given by alumni and stakeholders to the institution, especially the mathematics education department. To analyze this suggestion, we use opportunity analysis based on the number of suggestions from alumni and stakeholders which are divided into four aspects, namely learning, campus facilities and infrastructure, services and academic quality of graduates. Based on the research results, it was found that the greatest opportunity value according to alumni was the facilities and infrastructure aspect of 0.26 or 26%. Meanwhile, the lowest is the quality aspect at 0.11 or 11%. This is different from stake holders who pay attention to the academic quality of graduates who have an opportunity value of 0.23 or 23%. The value of this opportunity shows that the greater the value, the greater the priority in improving it.

The findings of the research suggest the development of a priority scale for four distinct aspects. Firstly, the aspect of academic quality and graduates emerges as paramount. Second on the scale is the evaluation of facilities and infrastructure. Following closely is the assessment of the learning process, and finally, the examination of academic services. Delving deeper into each aspect reveals specific details pertinent to their prioritization and improvement.

Tabel 2 Aspect of Tracer

No	Aspect
1	Academic quality and graduates a. Improved learning with more practical courses b. Foreign language competency c. Umbrella research was held d. Mastery of mathematical material e. Organizational abilities f. Personality
2	Facilities and infrastructure a. Increase classroom space b. Provision of a mathematics lab (not a computer lab) c. Expansion of parking space d. Provision of department libraries
3	Learning a. Lecturer attendance level b. Lecturer competency c. Relevant courses d. Varied learning methods
4	Academic services a. Increase student friendliness b. Online scoring system c. Thesis guidance has been further improved d. Speed up student administration services

D. Conclusion

Based on the results and discussion, it can be concluded that: 1) There is a gap between the education provided and the world of work. This happens because the learning process in the mathematics department at IAIN Syekh Nurjati is still not research oriented. This is proven by the lack of skills courses and practical courses. Of the 29 graduate skills courses, there are only

5 courses that are skills in nature and 5 that contain practicum. 2) There are 53 students who have obtained jobs and which match their competencies. There were 23 students who got jobs and those who were not suitable. Meanwhile, 10 people did not fill out this questionnaire. This means that alumni students majoring in mathematics have competencies appropriate to their type of work. 3) The curriculum developed in the department is still not well integrated. This occurs due to a lack of attention from lecturers to aspects of the curriculum. Therefore, the curriculum and studies in the department as curriculum development have not yet shaped scientific and professional development.

Several recommendations emerge from the findings of this study. Firstly, students should be afforded opportunities to contribute suggestions in shaping departmental policies and engage in lecturer-led research projects. Establishing an umbrella research framework can facilitate this process effectively. Secondly, courses within the Mathematics Education Department that lack relevance should be substituted with skill-oriented alternatives, particularly practical courses. Thirdly, priority should be given to enhancing alumni competency in key areas such as foreign language communication, ability to work under pressure, and fostering visionary thinking. Lastly, for future tracer studies, it is imperative to refine the research instrument to align with the specific aspects to be analyzed, ensuring the collection of accurate data and thereby enabling the formulation of pertinent recommendations.

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