

Development of Codeigniter-Based Tracer Study Application

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ABSTRACT

Tracer study provides important information on the relationship between higher education and professional work, it assesses the relevance of higher education by comparing aim of learning and data of alumnae, it informs stakeholders about the information of alumnae, and the most importantly, The Tracer Study data information is a complete requirement for higher education accreditation. Urgency of designing this web is : 1) for facilitating the administrative staff to collect data alumnae of the Faculty of Education's students; 2) for giving access administrative staff to fulfill of various accreditation needs and administrative needs about data of alumnae. The research used research development of procedural model by developing product and Test product effectiveness. The first objective of this research is as a function of development and second objectives of this research is as validation function, Data obtained from the media expert get the value of 97.3% and it is declared valid, material experts get the value of 95% and it is declared valid. The results of the limited trial obtained 83.5% and it is declared valid, whereas in the main user data get 89.5%.

Keywords: Website, Social Networking, Tracer Study

1. INTRODUCTION

The value of a higher education is measured by how to lead graduates to future employment and how to establish their sustainable career path. The process that a college students undergo in a higher education institution is not only hone and develop their capacities; but also to prepare them to become productive citizen and dignified member of society.

Tracer study or often referred to as an alumnae survey or a "follow-up" survey is a study of graduates from a higher education institution. This study is able to provide useful information for the purpose of evaluation of higher education outcomes and can then be used to improve and guarantee the quality of higher education institutions concerned. Tracer study is also useful in providing important information about the relationship between higher education and professional work, assessing the relevance of higher education, inform to stakeholders, and most importantly, the Tracer Study data information is a complete requirement for higher education accreditation, because the accreditation process is

requiring information on the first working period profile of the graduates, the suitability of the field of work with the field of study that has been taken and the first working position of the alumnae.

Currently almost all universities in Indonesia have implemented Tracer Study to get input and evaluation for the improvement of curriculum and quality of alumnae. Faculty of Education State University of Surabaya (UNESA) is one of the institutions of state universities in Surabaya which does Tracer Study to the alumnae of students with manual system.

Implementation of Tracer Study at Faculty of Education State University of Surabaya begins with the dissemination of information by telephone, email and social media. All forms of questionnaire as well as questionnaire form are sent with using the delivery service. The using of manual system management that has been used by the management team has many obstacles during collection. These constraints arise when there are a mismatch of questions is given with the parameters required in accreditation, overly complex

forms of submission, and resubmitting of filled forms to the institution is ineffective feedback due to lack of response from alumnae to fill in the submitted questionnaires.

The difficulty of getting feedback from graduates on the questionnaires that have been sent makes the Team of tracer Study tracks the graduates difficultly. Whereas the result of the tracer study is needed to know the success of the educational process that has been done and it is needed in the accreditation process as the parameter of the waiting period of graduates, the percentage of graduates who have worked, and the first income earned. Therefore, the researchers strives to develop a Web-based Tracer Study Information System for Faculty of Education State University of Surabaya to facilitate the alumnae tracking process, so that it can always perform the improvement process to improve the quality of education within the Faculty of Education, State University of Surabaya.

1.1. Related Work

1.1.1. Theory

An essential aspect of quality in higher education is the quality of outcomes achieved. Higher education adds value by developing job-related skills and competencies, that prepares students for the workplace (Ojedokun & Moahi, 2005). (Haider, 2008)) and (Burnett, 2013) opined that institution of higher education has the primary responsibility for equipping individuals with advanced knowledge and skills that is required by government needed, industry needed and other sectors needed. It is essential for any programme of study to constantly evaluate its curriculum to ensure that its content remains relevant, of high quality and is in tune with the demand of the job market and one of the ways institutions do this is through tracer studies (Zainab, Edzan and Rahman 2004; Shongwe and Ocholla, 2011). According to (Schomburg, 2007), tracer studies, also known as graduate studies, alumni research or followup studies, target graduates of an institution of higher education to get information that indicates possible deficits in a given educational programme and to serve as a basis for future planning activities. (Schomburg, 2007) further asserts that the information on the professional success (career, status, income) of the graduates are needed as well as information on the relevance of knowledge and skills, for example, relationship between knowledge and skills and work requirements, area of employment professional position, etc.

1.1.2. Alumnae

In a large Indonesian dictionary (Kamus Besar Bahasa Indonesia), alumnae are people who have attended or graduated from a college (KBBI, 28: 1991). In the Journal of Muhammad Saleh and Novi Safriadi entitled Alumnae Tracer Study Faculty of Engineering

University of Tanjung Pura with Web-based Information System, another notion of alumni is the product of an educational institution. The quality of the alumni shows the quality of the educational institution. The fact is increasingly felt, especially for alumni of college (Saleh & Safriadi, 2012)

From some of the above definition, the researcher defines the alumnae as a person who has finished following or has graduated from an educational institution or college. The alumnae tracking study is a process of tracing alumnae to know the description about the profile, performance, and distribution of alumni work location. In addition to universities, alumnae tracer study which will be called tracer study can be used to know the success of educational process to their students, and also as an indicator of the success of education held by the college.

1.1.3. Information Systems

The system is a set of interrelated or integrated elements intended to achieve a goal. As an illustration, if in a system there are elements that do not provide benefits in achieving the same goal, then the element has been installed is not part of the system (Kadir, 2003:54)

Information is data that has been processed so that it has meaning (Fatta, 2007). While according Whitten, information has meaning as data that has been processed or reorganized into a meaningful form. Information is formed from a combination of data that is expected to have meaning (23: 2004).

Information systems have an important role in the process of information management that will be used in any activity. Sutopo suggests that the information system consists of two words namely "system" and "information" (Sutopo, 2012). The system itself means a combination of several components that work together to achieve a single goal. Information means something that is easily understood by the recipient. Another understanding of information systems, Bodnar and Hopwood (Kadir, 2003:11) information system is a collection of hardware and software designed to transform data into useful information. In addition to this understanding, Hall (Kadir, 2003:11) states that the information system is a set of formal procedures in which data are grouped, processed into information, and distributed to the user. While (Paryati and yosef murya, 2008) states that the information system is a system that resides in the organization in which there is a group of people, technology, media, facilities, procedures and controls used for the purpose of obtaining communication channels, routine, alerting management of internal and external events and providing information that can be used as decision-making.

There are the following conclusions can be taken about information system from the exposure of experts is a combination of hardware and software and other

resources that form a set of procedures to process the data grouped in order to become information that can be delivered to the recipient information.

Information systems have components are interconnected in the process of implementation. These components have their respective roles to achieve the objectives of the information system. Information systems will not work properly if one component is not implemented. The focusing of attention on the components of information systems is considered necessary for information systems to run as desired.

1.1.4. Tracer Study

In line with the policy of the Directorate of Higher-Learning Education of Indonesia (Direktorat Pendidikan Tinggi) which requires all universities in Indonesia to be capable of preparing their graduates who are ready to compete in competitive job market amid imbalanced supply and demand in employment opportunity, and in order to improve the quality of human resources produced by the universities, it is necessary to collect thorough information regarding the graduates and their achievement, particularly during transition period from the time they leave the university until they find a job, including the performance of such graduates in performing their job.

To collect such information it is necessary to perform a study called Tracer Study. "Reference[1] describes the Tracer Study as follows: Tracer studies take a retrospective look at the evolution of the situation of a sample of children/students already provided with or exposed to a specific intervention. It is an enquiry approach at a single point in time that generates data on already achieved impact"

Tracer study is the study of graduates of the highest organizational institutions (Scomburg, 2003) other terms often used are "graduate surveys", "alumnae researches", and "follow up study". These terms refer to an almost identical meaning to the tracer study.

The ILO Thesaurus 2005 defines a tracer study as an assessment tool where the "impact on target groups is traced back to specific elements of a project or programme so that effective and ineffective project components may be defined." Further, Schomburg (2003, p. 6) shares that graduate survey results are important for "analysis of relationship between higher education and work." Moreover, (Millington, 2003) states that "they provide quantitative structural data on employment and career, the character of work and related competencies, and information on the professional orientation, and experiences of their graduates." Additionally, the collected data is an important indicator of the quality of higher education. In the Philippines, the Commission on Higher Education requires all HEIs to conduct a tracer study and is equally reflected as one of the required documents by any higher education

accrediting body such as the Accrediting Agency of Chartered Colleges and Universities in the Philippines (AACCCUP), Inc.

By conducting a survey on the cohort of graduates from a specific institution, profession, discipline, level of education, their employment characteristics, competencies and skills development, and have a comparative analysis, the information gained from these can be used by the graduate's alma mater and other education stakeholders for curriculum development and other emerging reforms.

Tracer information alumnae information system is an information system designed to be able to assist the work of an institution either in collecting, managing data to provide complete data through the availability of web-based information services.

2. METHOD

The research design used in this research is using procedural model development research design. Procedural model is a descriptive model, which uses the steps to be followed to produce the product. The chosen procedural model adapts Borg and Gall's research and development (In Surjono, 2009 : 148) model and procedural model developed by McKenny (In Surjono, 2009 : 148). Sukmadinata explained that in research and development there are basically two main objectives, namely (1) Developing the product and (2) Testing the effectiveness of the product (In Surjono, 2009 : 148). Same with explanation about main objectives that have been explained, this research have two main objectives, that is : (1) Objective of developing, that is this research has objective to developing a tracer study from manual-based to be codeigtiner web-based application (2) Objective of validation, that is this research has objective to validate the codeigtiner web-based tracer study application for getting validation of the feashibility of theory, feashibility of practic, and feashibility of product.

This researh is using modified research stage of 10 steps of R&D research from Brog and Gall. The essence of the 10 steps of R&D research from Borg and Gall is taken into 3 steps and it is using in this research. The 3 steps that used in this research is same with explanation from Mckenny (In Surjono, 2009 : 148) namely that : (1) Step of preliminary study, (2) Step of developing, (3) Step of testing product

The developed model is following the system flow cycle. There are several system flow cycles from experts, among others, Sander (In Suryana, 2007 : 49) identifies the system flow cycle into 5, including "problem definition, system analysis, system design and system implementation (system implementation) ". Meanwhile, Davis (In Suryana, 2007 : 49) mentions there are 7 stages of the cycle in system development, namely "problem definition, feasibility study, analysis, system design,

detailed design, implementation, and maintenance". While Scott (In Suryana, 2007 : 49) explains about the flow system, namely: preliminary studies, system analysis, system design, and implementation.

There are the following conclusions about development model with system flow cycles can be taken from the exposure of 3 experts:

1. The first cycle is defining problem, this cycle contains the process of understanding a problem deeply. In this research, researcher is trying to understanding a problem that arise because a tracer study manual-based.
2. The second cycle is preliminary studies, this cycle contains the process of finding problem's theme of this research, the elements are will be needed at this research, and the right solution for the problem of this research. In this research, researcher is collecting data about tracer study manual-based in faculty of education state university of surabaya with using a documentation studies, observational studies and interview studies.
3. The third cycle is system analysis, this cycle contains an explanation about problem and problem solving. In this research, researcher explain about the problem of tracer study manual-based.
4. The fourth cycle is designing system, this cycle contains a product or application for solve about tracer study manual-based at faculty of education state university of surabaya.
5. The fifth cycle is implementation, this cycle contains the product or application that is created by researcher. At this research, researcher implements a tracer study code igntiner web-based.

2.1. Data Collection Instrument

In the study there are tools or techniques used in data collection. According Rihey and Klein (Sugiyono, 2015 : 157) said that researchers who do research and development tend to use a variety of instruments for data collection. From the statement, in this study using the method of documentation and questionnaire method or questionnaire.

Documentation method is the method used in finding data about things or variables in the form of notes, transcripts, books, newspapers, magazines, inscriptions, meeting minutes, agenda, and so on (Arikunto, 2010 : 274). Documentation method conducted by researchers in the preparation of social networking website tracer study Faculty of Education includes student data that will and have done graduation, data alumnae who have completed lectures at the Faculty of Education.

Questionnaire method or questionnaire is a technique of data collection did by giving a set of questions or statements written to the respondent to answer (Sugiyono, 2016: 216). Methods questionnaires or questionnaires conducted by researchers to measure

program indicators that include the display program and information content. Questionnaire uses 4 points from the Likert scale that has a choice of answers of Very Good (4), Good (3), Not Good (2), and Very Not Good (1) (Sugiyono, 2016: 166).

3. RESULTS AND DISCUSSION

3.1. Presentation of Product Display

The tracer study website page can be accessed through the website of the Faculty of Education at <http://fip.unesa.ac.id/tracer-study>. researchers design a tracer study codeigntiner-based product with two main views, first the front end view and the second is the back end view. The following is an explanation of both views.

3.1.1. Front End

Front end view was created for tracer study website visitors from students, alumni, lecturers, and other parties to be able to get information related to basic things about tracer study of the faculty of education. not only that, the front end was also created to make it easier for alumni to be able to fill in their tracer study data starting from basic contacts, work history, income, residency and other required information.

In this page displays a queryer tracer study that includes: 1) Learning Process, 2) Waiting Period, 3) Alumni Work. The form page alumni fill the identity according to the Department in Faculty of Education. After filling the form is sent in the system to do recapitulation.

3.1.2. Back End

The back end display is created with more complex features and greater power than the front end, where this display can only be accessed by administrative staff, lecturers or other parties who are given access by administrative staff. From here administrative staff can more easily access and manage existing information, because the function of the backend is to facilitate monitoring and operating the website

3.2. Material Data Expert Analysis

After the data validation of material experts then the next data needs to be analyzed to get the conclusion of the quality of products that have been made and tested.

The formula for the analysis of this data in accordance with the formulas that have been determined and reference interpretation of data assessed based on predetermined criteria.

3.3. User Data Analysis (Limited Trial)

After the limited test data (small group) is obtained as Table 4.3, then the next data needs to be analyzed to get the conclusion of the quality of the product that has been made and tested. The formula for the analysis of this data

in accordance with the formulas that have been determined and reference interpretation of data assessed based on predetermined criteria. Analysis of limited trial data can be seen of the limited trial assessment can be explained as follows:

$$\text{Percentage overall} = 83.5\%$$

3.4. User Data Analysis (Primary Trial)

After the main test data (large group) then the next data needs to be analyzed to get the conclusion of the quality of products that have been made and tested. The formula for the analysis of this data in accordance with the formulas that have been determined and reference interpretation of data assessed based on predetermined criteria.

$$\text{Percentage overall} = 83.9\%$$

3.5. Product Revisions

There are several revisions to the product that the researcher has made. Revisions were made in accordance with qualitative data that have been collected through media expert validation, material expert validation, limited trials, and major trials. Qualitative data in the form of comments and suggestions for products that have been created and tested.

No	Test Result	Expert Test Result	Revision I	Result of Main Test User	Revision II
1	Media Expert test	The absence of menu additions - Absence of menu deletion - The link to the form tracer study looks	Changes in the navigation of the tracer page corresponding to the expert test input, otherwise the form page is located on the FIP site without going to the provider site of the form page.	Form pages can be used well, may be prefaced on the form page as a hint of charging or biodata filling benefits.	The form page is instructed to fill.
2	Expert material test	- The need to add email address on Biodata	Biodata alumnae is added address		
3	Trial limited test	- Selection of job type is still less	Various types of work added not focusing on education on the initial form.		

4. CONCLUSION

The design of tracer study codeigniter-based is created by researchers to make a solution of tracer study manual-based problems. The design of the Unesa FIP website for Tracer Study can be accessed at www.fip.unesa.ac.id/tracer-study/ by filling out the form provided.

The data obtained from the media expert value of 97.3% declared valid, only needed a simple revision such as: no addition of menu and menu deletion and link to form tracer study. In the material experts get the value of 95% included in the category valid. The input provided needs to be added email address on biodata. The results of a limited trial obtained 83.5% in the valid category get input on the need for additional types of work. In the main user data get 89.5% get page correction with form filling instructions.

The researchers hope that with this research a coteigniter-based tracker will make several administrative matters easily. And can be a continuing solution for tracking alumnae. The result of form filling can be used by administrative staff of the institution in collecting data of alumnae of Faculty of Education students.

The form page that has been created can be used properly by FIP Unesa in institutional development. Website development can be done various interests besides tracer study. Establishment of research permit, validation test validation and all requirement in service or institutional development.

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