# Analysis & Design of E-Community Development System in Jakarta, Indonesia

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Abstract - Nowadays, community service becoming essentials in education, but these activities are done manually, as each institution had to find communities and sponsors before opening a class. To support these activities we are analyzing and designing an E-Community Development system to help communities, institutions and also lecturers in completing their responsibilities. Using this system, all registered communities, institutions and lecturers in Indonesia can communicate with each other using a web-based system. We hope the presence of this application can cut down the process of opening a community service class. The method used in analyzing and designing the system are by problem identification, literature study, goal specification, data collection, analysis and data interpretation, and evaluation & report.

Abstrak - Saat ini kegiatan pengabdian masyarakat menjadi kegiatan fenomena yang giat dilakukan oleh banyak institusi. Namun proses pengadaan kegiatan ini masih dilakukan secara manual dimana masing-masing institusi harus mencari komunitas-komunitas yang memang membutuhkan, mencari lembaga-lembaga yang besedia sebagai pendana. Untuk mendukung kegiatan tersebut dibuatlah E-Community Development dimana dalam aplikasi ini terdapat relasi antar komunitas, institusi dan juga para dosen untuk memenuhi catur dharmanya. Dengan begitu kegiatan pengabdian kepada masyarakat dapat dilakukan dengan lebih mudah dan sesuai dengan bidang yang diinginkan. Saat ini proses pencarian komunitas yang sesuai dapat berlangsung selama 3-4 hari. Tujuan dari penelitian ini adalah dilakukannya analisis, perancangan dan pengembangan sebuah sistem yang dapat menghubungkan seluruh komunitas dari berbagai penjuru nusantara guna menyesuaikan antara kebutuhan, tenaga dan juga pendana yang tersedia. Target khusus yang ingin dicapai dari penelitian ini adalah terbuatnya aplikasi E-Community Development yang dapat memudahkan pengadaan kegiatan pengabdian kepada masyarakat dalam tidak lebih dari 1 hari. Metode yang akan digunakan dalam pencapaian tujuan tersebut adalah dengan mengidentifikasi masalah, mencari studi pustaka, menspesifikkan tujuan penelitian, mengumpulkan data, menganalisa dan mengintepretasikan data, dan membuat laporan dan evaluasi penelitian.

Kata Kunci - Analisis, Pengabdian Kepada Masyaraka, Sistem Basis Data, Desain, Teknologi Informasi, Aplikasi Berbasis Web.

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#### INTRODUCTION

The existence of community service activities are expected to elevate the economic development of Indonesian people and improve the lives of the community and uplift the dignity of the community. It is hoped that community service activity can encourage society of academicians to create technological innovations and share their knowledge to help society accepting challenges and problem solving especial within those with poor economic growth, science and culture as well as the development of environmental and natural resources conservation [1].

CSR (Corporate Social Responsibility) is one area which have become academics' or practitioners' main focused. Many higher institutions require CSR as part of their curriculum. Universities work with communities to develop CSR activities as part of their initiative and social responsibility. CSR can improve University's image and environmental sustainability

Community service has important universities/institutions. However, documentation communication process are still done manually. Surely it will take a longer time to record data and also to find an appropriate contributor in the appropriate fields because data are not well integrated and there are many data redundancy. To solve these problems, it would be nice if there is an application that can conduct the process of community service, and therefore communities, institutions, or sponsors can connect easily and communicate well.

In this research we will be analyzing and designing a webbased application that can support community service activities in Indonesia. The procurement process of community service activities that had been done manually will be automated in the hope that the time required for the procurement process is much shorter. The efficiency and also the effectiveness of the new applications can be proven by evaluating the implementation of this application in some institutions, comparing the time used in the current process with the upcoming process.

# RELATED RESEARCH

This E-Community Development Research is done based on the results of research on the importance of Internet technology and Community Development, internet and web

technologies help information dissemination easier and location is not an issue. We can start with a question "What are the advantages of the internet compared to other media form?", Why we want to use the internet as a community development medium, and based on that question there are at least 4 advantages of internet to community development [3]:

- Increased speed: information is more easily communicated and spread than other conventional media such as email.
- Cost reduction
- Possibility of integration and convergence of various media forms. Internet technology integrates different forms of media such as text, audio and video.
- Possibility of interactivity and discussion information. Internet allows interactivity and discussion whenever and wherever you are. Internet eliminate geographic limits.

With more internet aware generations especially Millenial-Generations and Z-Generations participating the community development activities, internet becomes one of important factors for the sustainability of community development. The quality of information and the quality of system of internet like robust network, accurate, clear and easily accessible information affects satisfaction and loyalty to e-community. Good e-community increases interaction between members so increases commitment also. Rewards for member activities can also increases commitment [4].

Internet allows collaboration between members such as collaborative consumption method because it emphasizes peer to peer communication with the use of websites and enewsletters through the high use of social channels and community (can be classified into two typologies: social / community typology or functional / social typology) and certain functional uses and corporate channels. It allows collaboration online, social commerce, sharing online and ideological considerations [5].

Based on integrative research model about internet knowledge, proves that internet knowledge sharing improves co-creation value including learning value, social integrative value and hedonic value to members and it affects member future participation intention in e-community [6]. Study in 2014 suggests the use of internet for small business farming. The using the internet impact better total household income and off-farm income. The using of internet also open farmers to new business opportunities and access and select goods via

One of the emerging internet technologies is IoT (Internet of Things). IoT enables our daily tools connected to internet. IoT enables organizations to collect data from diverse medium and it impact for better information and analysis for sustainability of community development. The use of IoT provides real-time user requirements indentification [8].

#### **METHODS** III.

A well-defined System Development Cycle is essential before you starting the project. A well-defined System Development Cycle increasing the chances of producing good software or application. The complexity of creating software was identified as the most important cause of software problems. The solution to this problem is to break up the process of solving it into stages as shown in Figure 1 [9].

Qualitative research is a method of exploring and understanding the purpose by some individuals or groups of people ascribed to social or humanitarian problems [10]. There are several methods to conduct qualitative research which is:

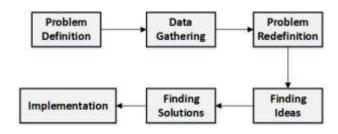


Figure. 1 Problem Solving Process [9].

- Ethnography: Researchers investigate certain cultural groups in the natural environment with a certain length of time and collect primary data, observation data and interview data, research is flexible according to field conditions.
- Grounded Theory: Researchers extract general and abstract theories processes, actions, and interactions with participants' views. This requires researchers to pass through several stages of collecting and filtering information into categories. Grounded theory uses constant comparison of data and theoritical extraction to find similarities and differences of information from different groups to obtain categories.
- Case study: Researchers carefully investigate a program, event, activity, process or group of individuals. Each case is limited by a certain time period and activities the informations are collected by using various data collection procedures. This research is using case studies as a qualitative strategy to collect information in the form of community service data at Bina Nusantara University.
- **Phenomenology:** Researchers identify human experience based on a particular phenomenon, this strategy is done with a long period of time and researchers usually set aside personal views and experience in order to understand the views and experiences of participants.
- *Narrative:* Researchers investigate individuals by asking a person or group of individuals to tell their experiences, then the informations are retold by the researchers in a narrative chronology. At the end of the research, researchers combine their own views with participants' views in a narrative style.

# Problem Definition

This phase is done by interviewing the users to list down certain problems they face. The purpose and focus of the study should be determined as the start of the research. The main purpose of "E-Community Application Analysis and Design Development" research is to produce an E-community Development application design to support community service activities in universities. To simplify the focus of research, researchers need to construct questions. Questions should determine the investigation, direction and limits [11].

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Here are some of the questions researchers put together:

- Are community service activities done in universities done properly?
- What are the difficulties experienced by society of academicians to implement community service activity?
- How do communities connect with society of academicians to improve people's lives?

The purpose and scope of the study are determined based on the research questions made.

# B. Data Gathering

There are several steps that are needs to be done to collect & analyze the data [12] [13]. The steps are as follow:

- 1) Observation Apart from interviewing, observation of current system at Bina Nusantara University is done as one example. The observation results are used to perform analysis and design process.
- Questionnaire Questionnaire are distributed at around 50 users of different roles, which is communities, community development department, and lecturers to collect data.
- 3) Documentation This step is done by collecting data from existing documents.
- 4) Focus Group This process is to gather information in a group setting, either through predetermined interview questions that the moderator asks of participants in turn or through a script to stimulate group conversations.
- 5) Textual or Content Analysis This process is done to investigate changes in official, institutional, or organizational views on a specific topic or area to document the context of certain practices.

# C. Problem Redefinition

These focus on understanding what the problem is about. Research procedures are first decided to get a good solution or design in solving the problem. The research "Analysis and Design of E-Community Application Development" is done with a qualitative approach. Qualitative approach focuses on qualitative phenomena involving quality characterized by several characteristics [14]:

- Descriptive, non-numerical quality, reasoning and using words
- Aims to get a picture of the situation and the meaning contained
- Qualitative data cannot be described with graphs
- Characteristic of search
- Check why and how the decision was taken

# D. Finding Ideas

Literature studies are done to find out ideas and to look up for various possible solution which can be done to solve the problems listed in the previous step.

## E. Finding Solutions

This step is more concerned with understanding more about the nature of the problems and possible solutions.

#### F. Implementation

Designing phase started with the solutions found in the processes with the flowchart shown in Figure 2. previous step.

Before starting with the development, it is needed to understand well the business processes, to get a good algorithm. Flowchart is one of the most popular and an intuitive method of representing the flow of control in an algorithm [15]. Flowcharts are easy to use due to its pictorial form and the user of standard symbols

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#### IV. RESULT AND DISCUSSIONS

The system designed to provide three important different roles. Each role has its own features. The features available for each role are:

#### 1) Community

- Features to register as a community by filling in the required fields
- Open the class according to community needs
- Change the details of the classes that have been opened
- Cancel a class
- See available classes opened by universities
- Participate in classes opened by the university
- Viewing the university profile data
- View university contact
- Viewing community profile data
- Change community profile data
- Change password
- View today's activities
- See history activity

#### 2) University

- Features to register as a university by filling in the required fields
- Open class as needed
- Change details of the classes that have been opened
- Cancel a class
- · See available classes opened by the community
- View community profile data
- Viewing community contacts
- View university profile data
- Change university profile data
- Change password
- Upload new lecturer data to join lecturers to have logic
- See inquiry of lecturers' activities that have done community services activities
- View lecturer's activity chart per department
- See today's activity
- View history activity

#### 3) Lecturers

- See classes opened by the university
- Seeing classes opened by the outside community
- Can participate as a contributor to available classes
- View details of the class
- See history activities
- View the profile of each lecturer
- Change password

The system created will simplify existing business processes with the flowchart shown in Figure 2.

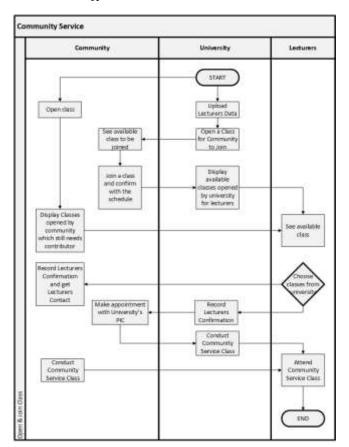


Figure.. 2 Open and Join Community Service Flowchart.

The new design system will help to solve several problems:

- Communities can easily connect with various universities and see available classes
- Universities can easily open classes and search for communities that need class
- Lecturers from each department can easily registered in any available activities
- Lecturers can easily upload training implementation
- Data well integrated, which can facilitate each university to see report of lecturer's activities

This case has some design results of each pages. Design sample of the webpage can be seen on appendix.

Questionnaire had been given to 50 community development staffs & communities. The questionnaire resulting a 91% telling that this application is really helping staffs conducting community development and helping communities to find classes for self development. Further development of this application is needed to make it even better, for a better Community Development activities in Indonesia.



Figure. 3 Home Page as Guest



Figure. 4 Login Page

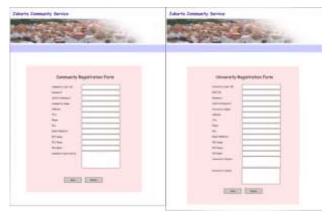


Figure. 5 Registration Page

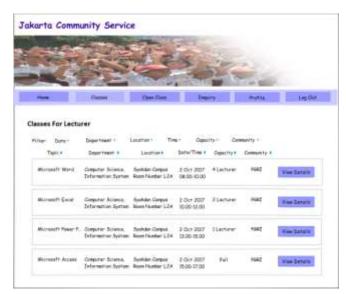


Figure. 6 Classess Page



Figure. 7 Offered Classes



Figure. 8 Open a New Class Form



Figure. 9 Inquiry Page for University

#### **CONCLUSIONS**

Communities problem is being solved with the development of Community Development E-Application, with the use of problem solving methods [9]. The survey result have shown that internet and communication technology in the development of E-Community Development application help to accelerate the dissemination of community service information among society of academicians so as to increase participation of community service. Not only that, this application had an important role in assisting community service data processing to create innovations and initiatives needed by the society. Apart from that, it also helps universities to increase the competency in the society of academician. The results shows that 91% people indicate that this E-Application really helping staffs conducting community development and helping communities to find classes for self development.

This research need to be continued by developing the design made to a web-based application that will be used by communities, universities & lecturers in Indonesia.

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