Design of social media-based information systems for higher education alumni

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Abstract. This study aims to produce information systems design and alumni data of Universitas Negeri Jakarta (UNJ) based on social media that can be accessed anywhere, facilitate the processing of alumni data, store alumni data and be able to convey information to alumni. This research emphasizes the development of information system designs whose output is user requirements and use case diagrams that can be implemented into social media-based information systems. The method used to formulate user requirements is through survey techniques and interviews with several alumni and relevant stakeholders, then the data obtained are analyzed qualitatively to be synthesized into the final user requirements. From the results of the study it can be concluded that the alumni information system is considered to be very effective in attracting alumni who have been scattered. The habit of Indonesian people who often use social media to publicize their activities unconsciously has provided information about themselves to the wider community, which can be used as a database that can be used for the benefit of the campus.

1. Introduction
As is known web-based information systems are very commonly used by various educational institutions, but information related to the current situation of alumni is still difficult to obtain. The Tracer Study system that was built was also not effective for updating alumni data, especially regarding the latest jobs and positions. Information systems tend to be abandoned by users if they are unable to accommodate user needs. On the other hand, Indonesian people are very accustomed to using various social media to communicate with their groups and publicize their daily activities. Unwittingly, social media users have provided their data to social media service providers through profile update activities, data updates, and status updates.

Social media is grouped into 6 (six) types [1], namely: 1) Collaborative projects allow for collaboration in content creation carried out by several users simultaneously, for example Wikipedia. Other forms of collaborative projects are social bookmarking that allows group-based collection and ranking of internet links or media content; 2) Blogs are one of the earliest forms of social media that grew as a personal web and generally displays date-stamped entries in chronological form. Very popular
types of blogs are text based blogs; 3) Content communities have the main objective to share media content among users, including text, photos, videos, and PowerPoint presentations. Users do not need to create a personal profile page; 4) Social networking sites allow users to connect by creating personal profile information and inviting friends and colleagues to access profiles and to send e-mail and instant messages. Profiles generally include photos, videos, audio files, blogs and others. Examples of social networking sites are Facebook, MySpace and Google+; 5) Virtual games worlds is a platform that replicates the environment in a three-dimensional form that makes users appear in the form of personal avatars and interact according to game rules; and 6) Virtual social worlds allow inhabitants to choose their behavior freely and to live in the form of avatars in a virtual world that is the same as real life. An example is Second Life.

Social media has several special characteristics including: 1) Reach, namely the reach of social media from a small scale to a global audience; 2) Accessibility, namely social media more easily accessible to the public at an affordable cost; 3) Usability, which is social media, is relatively easy to use because it does not require special skills and training; 4) Actuality (immediacy), namely social media can provoke audiences’ responses more quickly; 5) Permanent, i.e. social media can replace comments instantly or easily make the editing process [2].

Jan H. Kietzmann, Kritopher Hermkens, Ian P. McCarthy and Bruno S. Silvestre, 2011 [3] described the honeycomb framework relationship as presenting a framework that defines social media by using seven function building boxes namely: 1) Identity describing setting the identity of users in a social media concerning the name, age, gender, profession, location and photo; 2) Conversations describe the settings of users communicating with other users on social media; 3) Sharing describes the exchange, sharing, and acceptance of content in the form of text, images, or videos made by users; 4) Presence describes whether users can access other users; 5) Relationship describes the users connected or related to other users; 6) Reputation describes the user can identify other people as well as himself; and 7) Groups describe users who can form communities and sub-communities that have backgrounds, interests, or demographics.

Based on the underlying theories about social media above, alumni-based social media information systems are very likely to be developed to support the implementation of tracer studies at Universitas Negeri Jakarta (UNJ).

2. Methods
Design of Social Media-based Information System for Alumni State University of Jakarta using the Waterfall Software Development Lifecycle Model. User needs are determined through the interview method. Interviews are a commonly used technique where users, stakeholders, and domain experts ask to get information about the needs or requirements associated with the new system. Interviews are usually organized based on questions asked by the discussion room for users. They can also be used as part of task analysis [4].

Interviews in this study were conducted with 20 respondents by giving several main questions. This interview will be used as input in the process of system analysis, system planning, system design, system design and further implementation of the system to create alumni information systems at Universitas Negeri Jakarta. After having the data from the interviews then the data are analyzed qualitatively to be synthesized into the final user requirements. Table 1 displays a list of questions used at the interview.

| No | Question |
|----|----------|
| 1  | Explain what you know about alumni information systems and tracer studies? |
| 2  | In your opinion, what is the importance of conducting tracer studies conducted by educational institutions to their alumni? |
| 3  | Based on experience from various campuses including Universitas Negeri Jakarta, feedback from Alumni through tracer study is relatively small. In your opinion, why did this happen? |
Table 1. Cont.

| No | Requirement of Admin                                                                 | No | Requirement of Alumni Users                                      |
|----|--------------------------------------------------------------------------------------|----|------------------------------------------------------------------|
| 4  | Do you have social media accounts like Facebook, Tweeter, Instagram, Path, or others? |    |                                                                  |
|    | How often do you use social media?                                                    |    |                                                                  |
| 5  | For what purpose do you usually use social media?                                      |    |                                                                  |
| 6  | To facilitate the implementation of tracer studies and to seek information about the  |    |                                                                  |
|    | development of alumni of Universitas Negeri Jakarta (UNJ), UNJ intends to develop a  |    |                                                                  |
|    | social media-based information system. What do you think?                             |    |                                                                  |
| 7  | In your opinion, what features need to be prepared in the UNJ alumni information system |    |                                                                  |
|    | that will be made?                                                                     |    |                                                                  |

3. Results and discussion

Based on the interview results obtained information that the alumni are very knowledgeable about what is information systems and tracer studies. In general it can be concluded, according to alumni, the information system is an alumni database system that contains various information related to alumni such as graduation, residence, employment, and alumni data, while tracer study according to alumni is an effort to graduate graduates conducted by educational institutions to measure the success and quality of alumni after completing studies from these educational institutions.

The alumni also consider the importance of the implementation of tracer studies conducted by educational institutions to their alumni because to measure the success of educational services carried out by these educational institutions. Regarding the relatively little feedback from alumni, according to the alumni because they do not feel the need to have an attachment to their alma mater after graduating from the educational institution. Alumni feel that those who need tracer study data are educational institutions, not alumni, so providing feedback to educational institutions is voluntary, not obligation.

Nearly one hundred percent of UNJ alumni have social media accounts, but not all are always actively using their own social media. Most alumni use social media to publicize their daily activities, find information and communicate with friends through personal communication or limited networks, and find new friends.

Most of the alumni strongly support the development of social media-based alumni information systems because they can communicate and make friends with fellow alumni in a limited community. The alumni also think, sometimes they need privacy, so in a limited community, they feel that their privacy can be more secure. Some also argue that with alumni information systems, they do not need to find information about their college friends through other media, because all alumni are automatically connected through the information system.

The alumni proposed that the features needed in the alumni-based social media information system included: 1) personal communication facilities between friends (chatting); 2) communication facilities with friends in a group, for example one generation or one class; 3) job vacancy information facilities; and 4) facilities for sharing information both academically, employment and other information that is useful for fellow alumni and for institutions. Based on the results of the analysis of the data obtained during the interview, a list of user requirements is compiled as shown in Table 2.

Table 2. Requirement of admin and alumni users.
Table 2. Cont.

|   |   |
|---|---|
| 7 | Admin can update job vacancies |
| 7 | Admin can delete news |
| 8 | Admin can delete job vacancies |
| 8 | Admin can update job vacancies |
| 9 | Admin can delete job vacancies |
| 9 | Admin can delete job vacancies |
| 10 | Admin can update job vacancies in the form of photos |
| 10 | Admin can update the news in the form of photos |
| 11 | Admins can comment on the news |
| 11 | Admin can update job vacancies in the form of photos |
| 12 | Admin can give comments on job vacancies |
| 12 | Admins can comment on the news |
| 13 | Admins can delete news comments |
| 13 | Admin can give comments on job vacancies |
| 14 | Admins can delete job comments |
| 14 | Admins can delete news comments |
| 15 | Admins can send messages to alumni |
| 15 | Admin can delete job comments |
| 16 | Admin can edit Alumni data |
| 16 | Alumni can send messages to alumni |
| 17 | Admin can delete alumni data |
| 17 | Alumni can see alumni data |
| 18 | Admin can add alumni data |
| 18 | Alumni can search for alumni data |
| 19 | Admin can search for alumni data |
| 19 | Alumni can add photos to the gallery |
| 20 | Admin can see alumni data |
| 20 | Admin can download photos in the gallery |
| 21 | Admin can export alumni data into excel |
| 21 | Admin can download photos in the gallery |
| 22 | Admin can import alumni data into the website |
| 22 | Admin can import alumni data into the website |
| 23 | Admins can add photos to the gallery |
| 24 | Admins can add photos to the gallery |

3.1. System analysis

Based on observations made at the UNJ Student and Alumni Affairs section, the current process is that alumni have graduated to fill out an alumni/graduation form and then submit it to the faculty-student affairs when registering graduation. Furthermore, the data is processed to be published into a Book of Graduation Memories for each graduation period, while softcopy data is stored in excel form. Such a system is very difficult for the university if you want to find information about alumni.

3.1.1. Analysis of existing system

- Complete alumni data is only owned by the student and alumni section in the form of an excel file every graduation period that is stored in a standalone computer so that it is prone to damage and virus.
- Data backup is in the form of a Book of Graduation Memories which is also prone to missing.
- If at any time the latest alumni development data is needed, the student and alumni section seeks information about the alumni through social level sites such as Facebook.

3.1.2. Analysis of new system

- Alumni data can be accessed easily anywhere and anytime by the admin if at any time needed.
- The system must be able to bridge the information needs between alumni and between alumni and universities.
- The system created is also able to prepare a tracer study model that is integrated with alumni information systems.

3.1.3. Analysis of the situation to be developed. Following are the specifications or capabilities of the application program to be built:

- Consists of two main applications, namely the user page (alumni of UNJ) and admin (in charge of
User page is a page that can be accessed by the user. This page consists of various features for registering users, logging in users, changing login accounts, filling and changing user data, viewing the profiles of other users’ profiles, updating statuses, commenting on statuses, and search members. To be able to do the join process on the website, the user must register first.

Admin application is used to manipulate (insert, update, and delete) all existing alumni data, updating information about information technology education programs and computer updates. This page can only be accessed by users who log in as ADMIN.

3.2. System planning
The design phase is the stage of translating requirements into a software representation, before starting the implementation in the program code. This research uses the Unified Modeling Language (UML) in the design of systems and software. UML is a set of diagrams that already have standards to describe the design of object-oriented software. UML diagrams used are use case diagrams, activity diagrams, and class diagrams. Figure 1 shows the Use Case Diagram for the system to be developed, and Figure 2 shows the Class Diagram.

![Use Case Diagram](image-url)

Figure 1. Use case of admin dan alumni.
4. Conclusion
The conclusion can be said that the design is in accordance with the method used, namely using the waterfall method. The next step will be the implementation and developing stages. Based on the results of the needs analysis and system design, the result variable used in questioner can be a percentage value above 80%. It can be concluded after this alumni information system is developed, later all alumni can be connected to the alumni network through the information system. Each alumnus will also be able to update the status and send job information to the system that will be created. By using this alumni information system, UNJ will more easily find out the position and career positions of its alumni as long as alumni are always updating their profiles.

The habit of Indonesian people who often use social media to publicize their activities unconsciously has provided information about themselves to the wider community, which can be used as a database for the benefit of the campus.

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