Designing Google Form based Information System for Submitting Students’ Final Assignment’s Title

S R Widodo¹, I D Indrasari², A Y Tripariyanto³, and A Komari⁴

¹Fakultas Teknik, Universitas Kediri, Pojok, Kecamatan Mojoroto, Kota Kediri, Jawa Timur, 64115, Indonesia.
²Fakultas Teknik, Universitas Kediri, Pojok, Kecamatan Mojoroto, Kota Kediri, Jawa Timur, 64115, Indonesia.
³Fakultas Teknik, Universitas Kediri, Pojok, Kecamatan Mojoroto, Kota Kediri, Jawa Timur, 64115, Indonesia.
⁴Fakultas Teknik, Universitas Kediri, Pojok, Kecamatan Mojoroto, Kota Kediri, Jawa Timur, 64115, Indonesia.

Email: silvi@unik-kediri.ac.id

Abstract. In the study of Industrial Engineering, Kediri University, the final assignment for the title of three titles will be proposed. The way of proposing the proposal is, when there is a decree from Kaprodi, it will be presented to students who program the final assignment, then there are three plans of title that must be proposed, then after writing three plans of the title, the data will be entered by the library attendant, then it will be listed. After being listed, the title plans are data files that will be addressed to Kaprodi. Then, Kaprodi will decide which title must be taken by student as well as who the supervisor is. Observing those activities, students should come to the campus to register the plans for the titles of the assignment that must be taken. To ease the student, researchers want to design information system that will facilitate the submission of plans for the title of the final assignment in the form of links, the link is derived from Google form. With this ease, students are expected to save time, do not have to come to the campus during the registration of the final assignment title plans. Designing forms and activities, it will be simulated by system flow and data flow diagrams, to know the details of the activities that occur, because the flow of the system will be compared to conventional systems with new one. The methods are assisted by data flow diagrams, system flow, and PIECES method.

Keywords: google form, link, PIECES.

1. Introduction

In the S1 degree, it is carried out assuming graduation if it is already running 8 semesters without any issue of score in certain courses. In doing so, when stepping on the 8th semester, students begin to be prepared to determine the title of the final assignment proposal for its graduation requirements. In that case, they must perform the final assignment title submission to their study program. When there is an announcement of the final assignment title submission, students should already have an idea of the end assignment, what method they use, and what theme they take. When there is an overview of the final assignment, it is necessary to do a planning collection of the titles of the last assignment of students who program it. In this case, the function of collecting the titles is to determine the supervisor, because each end-assignment title planned by the student needs to have a supervisor who comprehends the title. In the collection of the title, it can be stored to the officers who are given the right to document and save those files relating to the final assignment. In that moment, the student must actively come to the campus to submit the title of the final assignment and meet the documentation officer. The obstacle is that there are transportation activities for students and inefficient activities because they often come to the campus only to submit the title of the final assignment and check if they have had supervisor or not. To overcome this issue, it takes a method or way for students to be able to carry out their final job title submission, or to receive information easily without coming to the campus very often.
Responding to the problems that occurred, it needs to design information systems to facilitate these activities. The function of information system designed is to reduce activities that do not need to be done by removing the excess, can adapt to conditions that are currently fast-paced and can save time and set aside cost for transportation.

The design of the information system used is Google forms, the use of this product from Google is the easiest and no need to do an initial programming [1]. From the product, there is a form that have to be filled inline with what they need to do. After filling the form, it needs to give Gmail address [2]. From that Gmail address, when anyone fills the form, it will be automatically sent to the planned Gmail address. To check incoming messages in Gmail of the user, it can be seen in the central Gmail account data and it will automatically open the message in Google Spreadsheet and also can be accessed by several users simultaneously in a wide network. In Google spreadsheets, it can be seen by anyone who fills the data, if there is data that has not been completed, then it can be completed by user [3]. From those problems, designing this information system will facilitate the students, lecturers, officers in receiving documents and access to information related to the final assignment.

2. Literature Review

2.1 System

Systems are a collection of elements interacting to achieve a specific goal [4]. System usability is to overcome the activities that are done repeatedly in order to identify the problems immediately, because a system is a collection of related components connected to achievement the objectives of System itself [5].

2.2 System Characteristics

In the system, it is said that it has components that have a specific purpose [6]. Thus, these components are characteristic of a system, which is related to the environment of the system, input, connection, output, and how to process the data and the objectives that they want to achieve [7].

2.3 Information

Information is the result of data processing in useful form for the recipients describing the real activity used for decision making [8]. Thus, in order to obtain an information, at the previous stage the raw data is taken to be processed in achieving the real activity description in order to have decision making [9].

2.4 Data

Data is a reality that depicts event and raw form that has not been able to tell the story since it needs further processing in order to produce information [10]. Thus, if there is any raw data retrieval occurred, it needs to have data processing in an application with the methods according to the objectives achieved in order to produce an information [11].

3. Research Method

In conducting this research, methods of observation, interviews and library studies are used. The function of the method is to know if later the scaffolding of this new information system can be realized, whether it has a positive impact for the user or not.

3.1 Problem Analysis

In the analysis of the problem, the activity is to analyze the problems that are being encountered on the system that is running. By analyzing, it can be known, what problems should be repaired or re-designed on the system.
3.2 Literature Study
In the literature study, it is related to the completion of analysis of the problems that are being encountered by reading, finding, and understanding various sources related to the topic of research. Because the function of the literature study is used for the foundation in research.

3.3 Determining Research Problem
After understanding what is known from the study of literature, it can be determined what method of research is used in resolving problems in the running system. In this research, authors use Google form research methods, because in google form the ways of organizing forms is not difficult, because it is already used by public. With the reference to the use of Google form, it is hoped that the design of this information system can facilitate the submission of plans for the final assignment proposal of industrial engineering student, Kadiri University. Then, in the determination of this method of research, despite Google form, it uses the system requirements table, which contains what is needed by a new system to support the conventional system that is running. It also takes a running system flow table and a new system stream in order to provide a level of information to the design of the system. This stage also required the PIECES (Performance, Information, Economy, Control, Efficiency, Security) methods [12]. The use of this method is for the comparison between the system that is running with the new system designed. From this method, you can know how to design a system that should be used on forms in Google form.

3.4 Design of Information System
In the design of information System submission plan, the final assignment of the student is conducted after knowing the determination of the method used, because in determining the method involves determining the application used and method of analysis to give comparison of the system that is running with the new system [13]. The function of the design and prototype information system is to know the concept that will be used in order to do the designing does not complicate writers [14].

3.5 System Testing
The purpose of this system testing is to know how the impact of the design and prototype developed. A comparison of the system that is running with the new system, in [15] whether the new system can meet the expectations of users or create users of difficulties, and to bring up the weaknesses of the system that must be fulfilled by new system.

4. Result and Discussion
From the research method that has been made, it is necessary to show the flow of information system that is running and the new information system flow. Its purpose is to know how the two streams are different. The flow of the system is depicted in a flowchart for easy understanding. After the flowchart is created, it is also formed data flow diagram, in order to know the data flow on each activity process. From flowcharts and data flow diagrams, analysis can be done to know the weaknesses and needs of the running system. On the knowledge of the needs of the system, according to [16] done the methods of PIECES (Performance, Information, Economy, Control, Efficiency, Service). The use of the PIECES method is to identify problems in the system that need to do analysis on the performance, information, economics, application security, efficiency and service of the user. Explanation of the PIECES method as follows:

4.1 Performance
On the performance factors related to the performance of the system, the problem arising is a goal that cannot be achieved. Delayed delivery due to trouble-taking apps, it is one of the system's performance issues that must be resolved in order not to harm the user.
4.2 **Information**

In the information system presented the information of a product, must be stored appropriately and in place. The order delivery Data should be entered in the Delivery folder, but go to the logging folder. In terms of incorrect information, it will disappoint the user against the system.

4.3 **Economy**

In the economic scope, the cost of designing an information system is the most calculated one.

4.4 **Control**

An information system that has been used, needs supervision, because it is related to important data. Thus, a system of information needs controlling in order to improve the performance of the system itself.

4.5 **Efficiency**

Efficiency is a way of getting many outputs with minimal income. Thus, in the manufacture of an information system should be aware of indications that occur on the system, if the system is unaware, the information provided will be too excessive.

4.6 **Service**

In an information system, if what is displayed on the interface is not appropriate and what is requested by the user is not conveyed, then the service in the system is not maximized. A system should be able to produce products according to what it is planned and implemented, if every time the product changes then the quality of the system is said to be bad. In the tables below, it can be seen based on the explanations that are stated.

| Tabel 1. The Flow of Running Information System |
|-----------------------------------------------|

| Kaprodi | Admin | Mahasiswa |
|---------|-------|-----------|
| Start   |       |           |
| Making an announcement submission of Title | Publication information of title of FA | Documents of title submission |
| Data of title proposal of final assignment | Documents of proposal title of final assignment | |
| Data processing and deciding supervisors | Document of the approved title and list of supervisors | Document of the approved title and list of supervisors |
|       |       | Finish    |
Table 2. New System Information Flow

| Kaprodi                          | Administrator                                | Student                                      |
|---------------------------------|----------------------------------------------|----------------------------------------------|
| Start                           | Publication information of title of FA       | Documents of title submission                |
| Making an announcement submission of Title | Database of submission of final assignment title | Data of title proposal                       |
| Data processing and deciding supervisors | Document of the approved title and list of supervisors | Document of the approved title and list of supervisors |

Figure 1. Data flow diagram Level 0
Table 3. List of need of the system

| No. | Kebutuhan sistem |
|-----|-----------------|
| 1   | Displays information related to the planned submission of the final assignment title in a given period quickly and appropriately. |
| 2   | Facilitate the delivery of the final assignment title plans in a given period across all locations on the condition of access to Internet connection. |
| 3   | Displaying information related to the plans of the final assignment title that has been legalized by the head of Prodi and the selection of guidance lecturers in accordance with the title of the final assignment that has been approved by the head in a certain period quickly and Right. |
| 4   | Display and prepare files completeness of final assignment proposal submission quickly and avoid mistakes. The files are: a) Supervising form to the supervisor of final assignment proposal b) Form progress of final assignment proposal c) Record of open seminar of final assignment proposal d) Record of result seminar of final assignment proposal e) Manual book of final assignment f) Record of open examination of final assignment proposal g) Record of close examination of final assignment proposal h) Score form of the final assignment i) Score recapitulation of final assignment |

Table 4. PIECES Method

| Old System | New System |
|------------|------------|
| **Performance** | With the online system through Google form, students who want to register plans for the title of the assignment will not need to come to the campus, just click the link that has been informed by Kaprodi, then fill in the form that has been presented. |
| Registration of the final assignment title plan is performed on working hours at H3 Building, Kadiri University | |
| **Information** | In the design of this information system, a unique link that is distributed to students who program final assignments can see the information that has been presented, does not close the possibility of the WhatsApp Media, University industrial Engineering website Kadiri is also used for information support. |
| In the notification info of the final assignment registration, it will inform via WhatsApp media, website of the Industrial Engineering of Kadiri University, and the bulletin board in the H3 building. | |
| **Economy** | In the new system, it may increase costs during the development of information systems, but for the next will facilitate students in making use in accordance with regulations. |
| When the student is not able to follow the proposal registration because the registration sheet is missing or damaged. Finally have to prepare the registration paper again, reprint. Cost in the beginning is a little, if it is counted for many years, the paper is categorized as expensive, because it accumulates in a space clerk. | |
| **Control** | |

Control
In the conventional registration system, students must come to the campus, then officers must revisit all the data and be shown at Kaprodi. The data in the form of paper, which later if misplaced will be lost, it is necessary to supervise when recap the data to the computer.

In this new system, students are located and connected to the Internet can register the final assignment title plans, then the officer is assignmented with checking the data and depositing the file to Kaprodi, and the data is safe because it can only Known to students, officers and Kaprodi.

**Efficiency**

If the registration of the final assignment title plan uses paper, the paper will accumulate on the desk of the officer, and the student must use the cost of transportation to reach the campus.

With this new system, students can register the title plans of the final assignment everywhere without having to come to the campus if it is not a problem that is resolved.

**Service**

On the conventional system, the service is limited to working hours between 08.00 – 15.00 WIB, as well as officers need to take a break if the student's registration time exceeds the capacity for one business day.

In the new system, students do not have to wait for the working hours to register, because there is already a specified time. They can register at night, if the system in the registration time has not been closed.

Once the flowchart is created and the data flow diagram Level 0 [17] and the PIECES method analysis, it has described the flow of activities that must be passed, indicating the data that is required by the system. Thus, the next step is to design the user interface, design the form of the fields used, the design of the display in Google spreadsheets.

![Figure 2. Interface](image-url)
Figure 3. After Filling the Form

Figure 4. Google spreadsheet

5. Conclusion

Conclusion of the results of this research is with the ease in the application of proposing final assignment’ title, students of industrial engineering of Kadiri University industry are expected to facilitate the submission of titles, do not waste time and costs of transportation to come to the campus. With the help of technology, it is hoped that all activities can be carried out by technology and it can simplify the design of this information system so that information can be easily captured by user.

6. Reference

[1] Gsuite, “Google Form (G Suite by Google Cloud),” gsuite.google.com, 2019. [Online]. Available: https://gsuite.google.com/intl/en_id/products/forms/?utm_source=google&utm_medium=cpc&utm_campaign=japac-ID-all-en-dr-bkws-all-golden-trial-e-dr-1007173&utm_content=text-ad-none-none-DEV-e-CRE_354992628879-ADGP_Hybrid %257C AW SEM %257C BKWS ~ EXA %257C Forms %25. [Accessed: 21-Jul-2019].
[2] T. L. Wiemken, S. P. Furmanek, W. A. Mattingly, J. Haas, J. A. Ramirez, and R. M. Carrico, “Googling your hand hygiene data: Using Google Forms, Google Sheets, and R to collect and automate analysis of hand hygiene compliance monitoring,” Am. J. Infect. Control, vol. 46, no. 6, pp. 617–619, Jun. 2018.

[3] A. Z. Mansor, “Managing Student’s Grades and Attendance Records using Google Forms and Google Spreadsheets,” Procedia - Soc. Behav. Sci., vol. 59, pp. 420–428, 2012.

[4] W. K. Thomson, “Information Management System,” Inf. Manag. Syst., no. 75, 1997.

[5] Jogiyanto HM, Pengertian Sistem menurut Jogiyanto. 2003.

[6] D. Symes and J. Phillipson, “‘A sea of troubles’ (2): Brexit and the UK seafood supply chain,” Mar. Policy, vol. 102, pp. 5–9, Apr. 2019.

[7] H. Taherdoost, “A review of technology acceptance and adoption models and theories,” Procedia Manuf., vol. 22, pp. 960–967, 2018.

[8] J. C. Kesterson, “Information Management and Secuity System,” Inf. Manag., 1997.

[9] Jogiyanto, “Pengertian Informasi menurut Jogiyanto, HM.,” www.sarjanaku.com, 1999.

[10] P. T. Ward, “The transformation schema: An extension of the data flow diagram to represent control and timing,” IEEE Trans. Softw. Eng., vol. SE-12, no. 2, pp. 198–210, 1986.

[11] Kuswadi and E. Mutiara, “Definisi Pengertian Data,” www.studienewe.com, 2016. [Online]. Available: http://www.definisi-pengertian.com/2016/01/pengertian-data-definisi-menurut-ahli.html. [Accessed: 26-Jun-2019].

[12] W. Boehmer, “Appraisal of the Effectiveness and Efficiency of an Information Security Management System Based on ISO 27001,” in 2008 Second International Conference on Emerging Security Information, Systems and Technologies, 2008, pp. 224–231.

[13] P. B. C. van Erp, V. L. Knoop, and S. P. Hoogendoorn, “On the value of relative flow data,” Transp. Res. Part C Emerg. Technol., no. November 2018, pp. 1–17, 2019.

[14] C. Park, “A Study of Effect of Information Security Management System [ ISMS ] Certification on Organization Performance,” vol. 10, no. 3, pp. 10–21, 2010.

[15] L. Briand and Y. Labiche, “A UML-Based Approach to System Testing. Carleton University,” Softw. Syst. Model., vol. 1, no. 1, pp. 1–57, 2002.

[16] I. Safi’i, “Analisis Metode PIECES,” Universitas Kadiri, 2019.

[17] C. Bejjani, J. Utsch, T. Thiele, T. Meisen, S. Jeschke, and P. Burggräf, “Flow Chart Based Information Modeling for Factory Planning,” Procedia CIRP, vol. 72, pp. 410–415, 2018.