



## Development of E-Office Information System in Administration Faculty of Engineering, State University of Padang

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**Abstract:** Office management plays a very important role in an organization or institution that provides many information and data management services. As a result, management services often have time, energy, and cost inefficiencies. Therefore, we need an information system that can support the management process so that it can be executed effectively and efficiently. The method used to develop this system is the method of software development using the DevOps (Development and Operations) development model. This model consists of several stages including the planning stage, the needs analysis stage, the design stage and the implementation stage. This model allows system administrators to integrate with IT professionals during the system development process. This system architecture is based on Model-View-Controller, which uses the Yii2 framework in the PHP programming language. The result of this final project is the creation of an E-Office information system that includes several services such as human resources and student affairs. This information system is expected to reduce problems and improve the process of government services.

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## Introduction

The importance of information and data management has been shown in the rapid development of technology in the modern era. So that more and more use of information technology that can support effectiveness, productivity and efficiency. Information technology includes many things and integrated methods for use in data management. The use of this technology has also resulted in various organizations or agencies competing with each other in providing services to increase access to information management. Currently, it is not only the development of information technology, but computer technology is also experiencing very rapid development, causing work to be completed quickly, especially in the office administration service system (Pardede et al., 2017).

The office administration system is a system that handles planning, organizing (regulating), operating and controlling an office or administrative work. The use of technology greatly impacts the office administration system, such as services that were originally carried out manually and are less responsive, can now be carried out in an information system effectively and efficiently. In addition, the information provided can be viewed quickly (L. Endang, E. Ardianto, 2015; Anwar & Sabrina, 2020). Administrative services at the Administration of the Faculty of Engineering, Padang State University have not been fully accommodated in one system. There are still some services that are done manually, causing many problems related to the use of time, cost and energy. These services include staffing and lecturer services as well as student services. As is the case in gathering requirements that require a lot of energy and time in the process of checking the completeness of these requirements. And also in terms of providing information related to



promotions/positions, they still have not provided information clearly and quickly (Ardhianto, 2015). This results in delays in the promotion process for staff and lecturers. Likewise for student services, especially in the scholarship application process, many students are not aware of any information related to existing scholarships. And also in terms of providing information related to promotions/positions, they still have not provided information clearly and quickly. This results in delays in the promotion process for staff and lecturers. Likewise for student services, especially in the scholarship application process, many students are not aware of any information related to existing scholarships. And also in terms of providing information related to promotions/positions, they still have not provided information clearly and quickly. This results in delays in the promotion process for staff and lecturers. Likewise for student services (Ardita, 2015; Mulyono, 2017). Therefore we need a device that can assist the administrative service process so that it can run effectively and efficiently, and can accommodate the services that have been described previously. The device to be used is an information system that will help serve all service needs.

An information system is a system within an organization that meets the needs of transaction management, operational functions are developed because they have benefits for system components within an organization's management. Information systems have an important role in an organization including to support operational activities, support management decision making, support strategic competitive advantages. The benefits of information systems include increasing speed in carrying out activities, saving costs, reducing errors or problems that occur and improving management planning and control (Muttaqin & Prihandoko, 2018).

There are several types of information systems including, First, functional information systems which include (accounting information system, financial information system, manufacturing information system, marketing information system, personnel information system). Second, information system based on available support which includes (transaction processing system, management information system, office automation system, decision support system, management information system, group support system and intelligent support system) (Haryanto et al., 2015). Third, classification by management activities including (knowledge management system, operational information system, management information system, strategic information system). Fourth, classification according to system architecture. Fifth, geographic information systems. Sixth, ERP (Enterprise Resource Planning) system.

Administration is the process of planning, organizing (organizing), operating and controlling a job to achieve predetermined goals. Administration is also a work process between two or more people to achieve predetermined goals. The function of the administration is to carry out a number of activities to run smoothly and avoid problems. Office administration is a series of planning, operating, controlling and supervising activities carried out by a group of people in a form of cooperation to achieve certain goals (Nasution & Malikah, 2020). In addition, as information that includes all activities from manufacturing, processing, structuring to storage of all information used by the organization, it is necessary as an activity to determine everything that occurs in the organization used by leadership.

E-Office is a service where data and information are created through telecommunications media with the Paperless concept in order to minimize the use of paper in office administration. The concept of e-Office is done to change the manual process of office administration activities into electronic. With this E-Office, all administrative systems

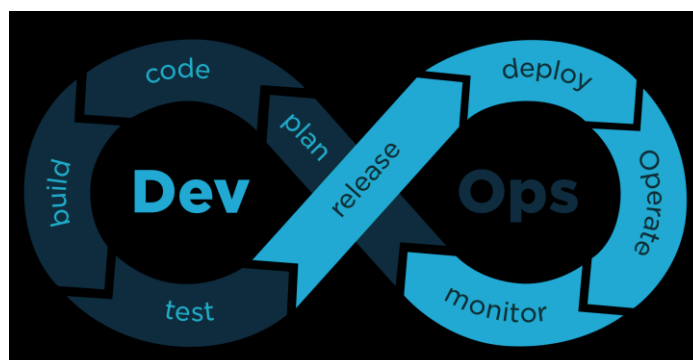


in the form of filing, documentation and correspondence can be done easily and quickly (Agnitia LEstari et al., 2021). Office work that has been accomplished manually for many years has become digital and a few have even carried out digital places of work. Electronic offices use communication technology to provide office administration services electronically to anyone, anywhere, and at any time. The benefits of this system can keep time, attempt and cost (Azis & Dirgahayu, 2015).

The benefits of e-Office include providing accurate, real-time information, online business processes that make decisions quickly and accurately, productivity gains because work is not limited to space and time, and easier and faster services. This includes improving the satisfaction of stakeholders. Increase the competitiveness of development institutions (D. Prasti, D. Darmawati, M.I. Rusdi, 2021).

### Research Method

The research method used in this system is a software development method with a DevOps (Development and Operations) development model. This development model emphasizes more on communication, collaboration and integration between the developers and IT professionals. The goal of DevOps is to shorten the system development cycle and provide features, fixes and updates that are in line with the objectives to be achieved (Oktaviana & Yuliani, 2022). This model consists of several stages, which can be seen in Figure 1.



**Figure 1. DevOps Development Model Flow**

Data used in the form of qualitative data and quantitative data to determine the quality of the e-Office Administration System. Quantitative data from this media was in the form of giving a score of 4 (strongly agree), 3 (agree), 2 (disagree), 1 (Disagree). While the qualitative data of learning media were SS (strongly agree), S (agree), KS (disagree), TS (disagree) (Tuzzahra & Rahmah, 2020). To determine the criteria for system quality, it was done by calculating the total score obtained from each respondent who had filled out the questionnaire and were then calculated by the formula :

$$K = FN \times I \times R$$

Description :

K: Percentage of eligibility

F : Total number of respondents' answers

N: Highest Score in the questionnaire

I : Number of questions in the questionnaire

R: Number of respondents



After knowing the percentage of eligibility, the interpretation was carried out according to the table below.

**Table 1. Feasibility Presentation**

Percentage	Criteria
0% K 20%	Very Inappropriate
20% K 40%	Less Worthy
40% K 60%	Enough
60% K 80%	Worthy
80% K 100%	Very Worthy

E-Office Administration System is said to be feasible to use if the percentage of the system's feasibility is more than 60% with proper criteria. The reliability of the system validation sheet is determined based on the percentage of agreement approval by ensuring that the verifier is consistently validated against the validation sheet. Surveys are used to determine user responses to the use of the developed system. The results of the questionnaire were evaluated quantitatively and qualitatively.

### **Running System Analysis**

Based on the results of experience in observing the administrative service process at the Administration of the Faculty of Engineering, State University of Padang, there are several services that are still carried out in an ineffective process such as academic services, staff and lecturer services, and student services especially in the scholarship registration process (Muniroh et al., 2020). This analysis is included in the flow of the DevOps model, namely the plan, which includes aspects related to business processes, document analysis and business rules. The business processes that occur in the field include one of the identification of goals and requirements in developing this system.

### **System Analysis Proposed**

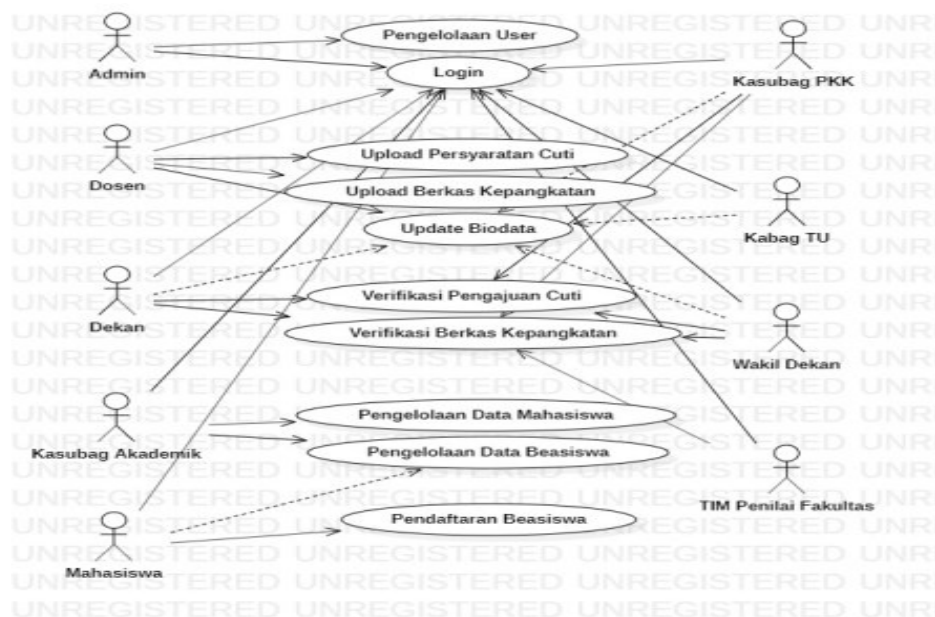
Based on the analysis of the problem received, for this reason, an e-office administration service system is proposed to facilitate existing services at the Administration of the Faculty of Engineering, Padang State University. In this system the process flow which is usually done manually and requires a relatively long time can be done quickly and effectively. This analysis is also included in the flow section of the DevOps development model, namely the plan (Farell et al., 2018).

### **System planning**

System design is a set of activities that explain in detail how a system runs. The system design is the result of a modification changes from the analysis that will be applied later (Saggaf et al., 2014).

#### **1) Use Case Diagrams**

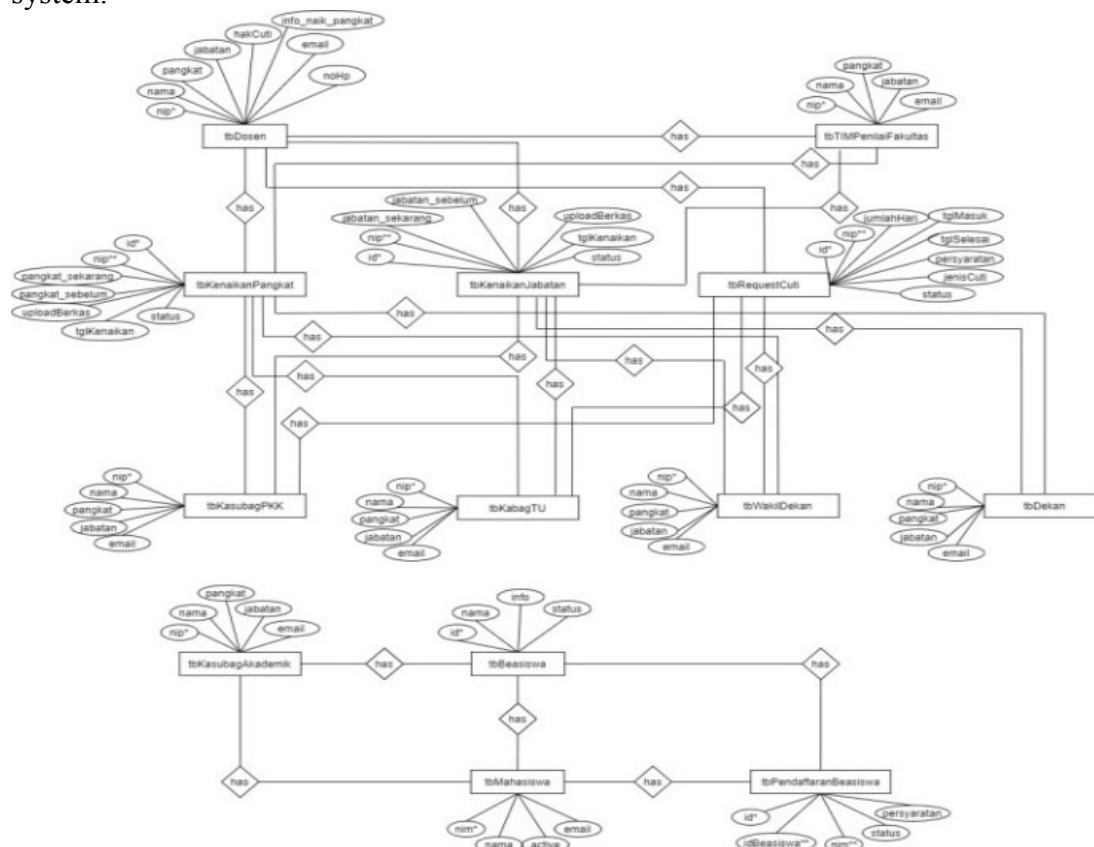
Use case diagrams explain how users interact with the system (Nurkholis et al., 2022). Actors of this system consist of admin, students, lecturers, head of administration, head of academic sub-section, head of PKK sub-section, head of state-owned sub-division, faculty assessment team, deputy dean and dean. The following image shows a use case diagram.



**Figure 2. Use Case Diagram**

2) ERD (Entity Relationship Diagram)

ERD design can help create a database in this system and to explain the relationship between data in a database (Al' Padil, 2016). ERD is divided into three components, entities, attributes and relationships. The following image shows the ERD used in this system.

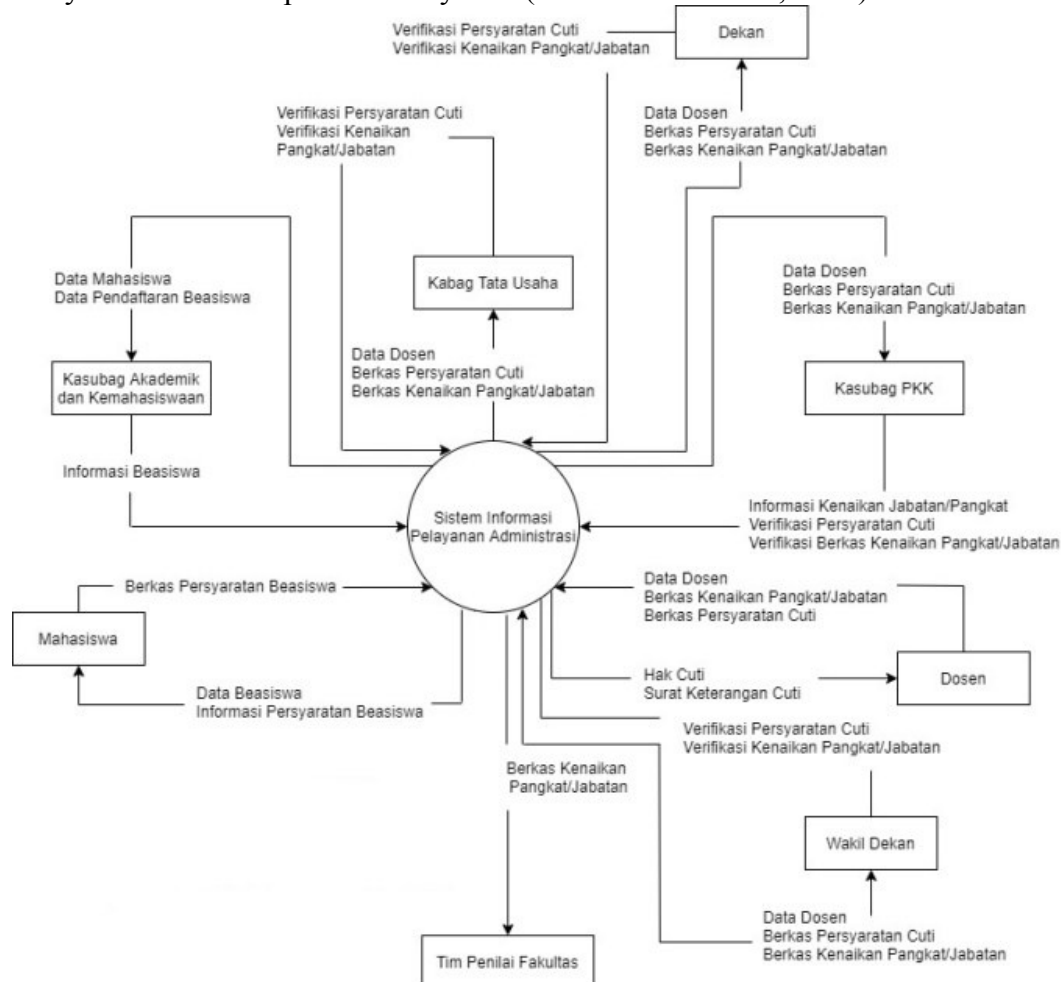


**Figure 3. Entity Relationship Diagram (ERD)**



### 3) Context Diagram

A context diagram is a diagram that illustrates the relationship between all inputs to the system and all outputs of the system (Maulana & Priatna, 2021).



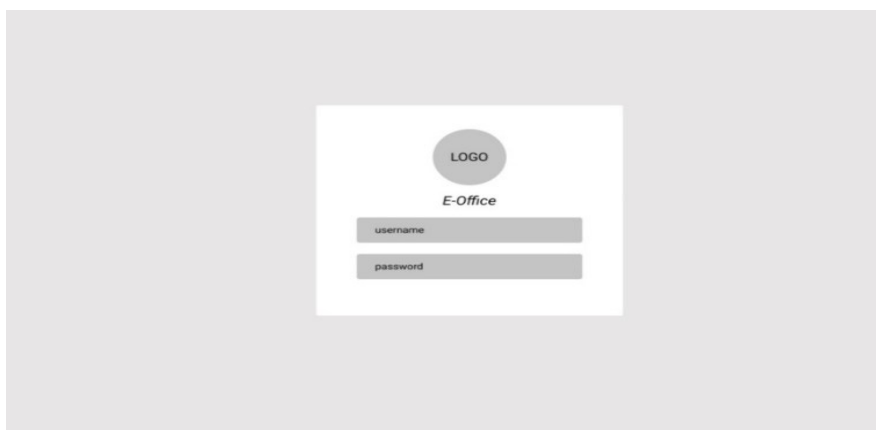
**Figure 4. Context Diagram**

## Results and Discussion

Starting from the user interface design, then apply the design in a program code so that it displays a layout. Display layout will facilitate interaction with the system interface as a whole. The following is the result of the display design on the Administrative Service Administration Information System, Faculty of Engineering, UNP (Ary, 2019).

### 1) Login Page

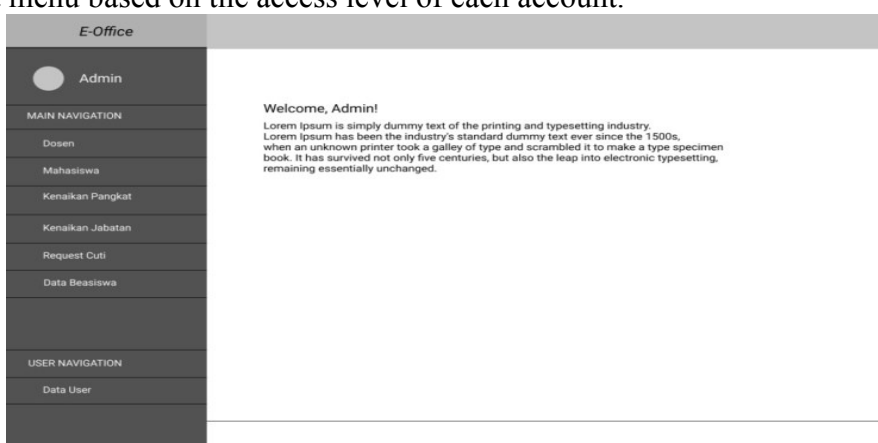
The login page is the main page for accessing this system. This page prompts the user for a username and password. If the username and password are correct, the user will be redirected to the main page.



**Figure 5. Login Page**

2) Admin Main Page

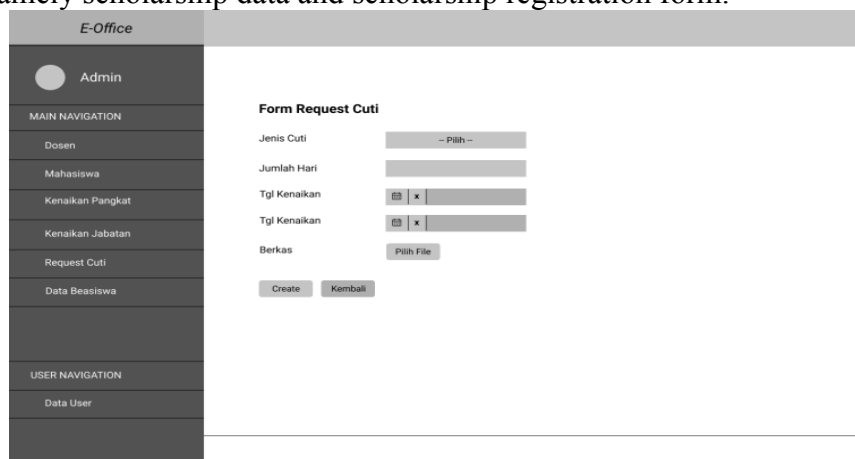
After registration is complete, each user will be taken to the main page. The main page is the page that will be accessed by the user when successfully logged in. User activity will vary according to the access rights of each user, so that each user gets a different menu based on the access level of each account.



**Figure 6. Admin Main Page**

3) Student Page

This page is the main user page with Student level. On this page there are two main menus, namely scholarship data and scholarship registration form.



**Figure 7. Student Page**



4) Lecturer Page

This page is the main user page with Lecturer level. On this page there are three main menus, namely promotion, promotion and request for leave.

The screenshot shows the 'E-Office' interface for a Lecturer. The sidebar menu on the left includes a user profile section with a circular icon and the name 'Dosen', followed by a 'MAIN NAVIGATION' section with links for 'Dosen', 'Kenaikan Pangkat', 'Kenaikan Jabatan', and 'Request Cuti'. The main content area on the right displays a welcome message: 'Welcome, Dosen!' followed by a paragraph of Lorem Ipsum text.

**Figure 8. Lecturer Page**

5) Promotion Form and Position

This page is the page used to carry out the promotion process and position. This page can be accessed by Lecturers if a notification has been sent by the Head of the PKK Sub-section to immediately upload the file for promotion and position. Meanwhile, users with the level of Head of Administration, Deputy Deans and Deans can only view data on lecturers who upload files and provide verification related to promotions and positions. The following is a display of the promotion form.

The screenshot shows the 'E-Office' interface for an Admin user. The sidebar menu on the left includes a user profile section with a circular icon and the name 'Admin', followed by a 'MAIN NAVIGATION' section with links for 'Dosen', 'Mahasiswa', 'Kenaikan Pangkat', 'Kenaikan Jabatan', 'Request Cuti', and 'Data Beasiswa'. Below this is a 'USER NAVIGATION' section with a link for 'Data User'. The main content area on the right displays a form titled 'Form Kenaikan Pangkat'. The form includes input fields for 'Pangkat Sekarang' and 'Pangkat Sebelumnya', a 'Berkas' field with a 'Pilih File' button, and a 'Tgl Kenaikan' field with a calendar icon and a close button. At the bottom of the form are 'Create' and 'Kembali' buttons.

**Figure 9. Promotion Form**





**Figure 10. Promotion Form**

6) Leave Request Form

This page is the page used for the leave application process. Users with Lecturer level can access this page if leave rights have not been fulfilled, if leave rights have been fulfilled Lecturers cannot access this page.

**Figure 11. Leave Request Form**

Based on the results of system validation by both validators. It can be seen that the results of the assessment by the validator with an average percentage of both values of 84.47% are categorized as "very valid" based on the media validation category table.

Jabatan Responden	Email Responden	Praktikalitas				Total (x1)	Tampilan							Total (x2)	Kemudahan			Total (x3)	Keuntungan				Total (x4)
		x1.1	x1.2	x1.3	x1.4		x2.1	x2.2	x2.3	x2.4	x2.5	x2.6	x2.7		x3.1	x3.2	x3.3		x4.1	x4.2	x4.3	x4.4	
Mahasiswa	rafikahapsari90@gmail.com	5	4	4	4	17	4	5	5	5	4	4	27	5	4	5	14	5	3	4	5	17	
Mahasiswa	windaww2103@gmail.com	5	5	5	5	20	4	4	5	4	5	5	27	4	5	4	13	4	4	5	4	17	
Mahasiswa	fiyanzul99@gmail.com	5	4	5	4	18	5	4	5	5	5	5	29	5	5	5	15	5	5	5	5	20	
Mahasiswa	ridhordidwan@gmail.com	5	3	5	5	18	5	5	4	5	4	5	28	4	5	4	13	4	4	5	5	18	
Mahasiswa	harianda0203@gmail.com	4	5	5	4	18	4	5	4	4	5	4	26	4	5	4	13	4	4	4	5	17	
Mahasiswa	rosmn9800@gmail.com	5	5	5	5	20	5	5	5	5	5	5	30	5	5	5	15	5	4	4	5	18	
Mahasiswa	sy.nafisah@gmail.com	4	5	4	4	17	4	5	4	4	5	4	26	5	5	4	14	5	5	5	4	19	
Mahasiswa	dandimira77@gmail.com	5	4	4	5	18	5	5	5	5	4	5	29	5	5	5	15	5	5	4	4	18	
Mahasiswa	kyranty_zuhroh@gmail.com	5	5	5	5	20	4	5	5	4	4	5	27	4	5	5	14	5	5	4	4	18	
Dosen	verairma@ft.unp.ac.id	3	4	5	5	17	4	5	5	5	4	4	27	5	4	5	14	4	5	5	5	19	
Dosen	hadilhs@ft.unp.ac.id	4	5	4	5	18	3	4	5	5	5	5	27	4	4	3	11	4	4	5	5	18	
Dosen	geovannefarell@ft.unp.ac.id	3	5	5	5	18	5	5	4	4	4	5	27	5	4	5	14	4	5	3	4	16	
Dosen	elfitarsif@ft.unp.ac.id	3	4	5	5	17	5	4	5	4	5	4	27	5	4	5	14	5	5	4	5	19	
Dosen	thamrin_elka@ft.unp.ac.id	5	5	4	5	19	4	5	5	5	4	4	27	4	4	3	11	5	5	5	4	19	
Dosen	delsina_faiza@ft.unp.ac.id	4	4	4	4	16	3	4	5	5	5	5	27	5	5	4	14	5	4	5	5	19	
Dosen	indah_kammar@yahoo.co.uk	4	4	5	5	18	4	4	4	5	5	5	27	4	3	3	10	4	5	5	5	19	
Dosen	resmidarni@ft.unp.ac.id	5	5	5	4	19	4	5	4	4	5	5	27	5	3	4	12	5	5	4	4	18	
Kepala Bagian TU	indralena@gmail.com	5	4	5	5	19	5	5	5	5	4	4	28	5	4	5	14	4	4	5	5	18	
Kepala Sub Bagian TU	mimidrosnelly@gmail.com	4	4	4	4	16	5	5	4	5	5	5	29	4	5	5	14	4	4	4	5	17	
Wakil Dekan	muh_anwar@ft.unp.ac.id	5	5	4	5	19	5	5	5	4	4	5	28	5	4	5	14	4	5	4	4	17	
						362								550				268					361
						400								600				300					400
						90.5								91.6667				89.3333					90.25

**Figure 12. Research Data Result Table**



Based on the table above, the results of services in the e-Office Administration System by the two validators are known to get a value with an average percentage of 90.5% with the "very valid" category to be used services in the system based on the media validation category table. Display and ease of service access indicators of the applications made show a number of 91.6%, with the "very valid" category for the software indicator it shows 89.33% in the "very valid" category and shows 90.25% in the "very valid" for the benefit indicators. So from the results of user responses it can be seen that users are interested in using e-Office Administration System.

### Conclusion

The conclusions obtained from the results of the Electronic Office (E-Office) system design at the Administration of the Faculty of Engineering are as follows: Based on the analysis that has been explained, the services contained in this system such as staffing and student services have been running according to what has been designed and can be used directly by the academic community of the Faculty of Engineering, Padang State University. This Electronic Office (E-Office) system has not been integrated with other administrative systems in the Administration of the Faculty of Engineering, State University of Padang. It is hoped that further development can be integrated with the existing Administration System so that it becomes a significant form of the Administration Service Information System.

### Recommendation

Further research can be carried out by researchers and office staff to test the practicality and effectiveness of the system to improve services. Innovations made using Information Systems are expected to be able to be a solution in solving problems in service in every administrative office, especially at the Administration of the Faculty of Engineering, Padang State University.

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