

# Monitoring Single Site Verification (SSV) System and Optimization BTS Network based on Android

Abdul Syukur, Siti Rahmadhani Sabri and Yudhi Arta

*Department of Informatics Engineering, Universitas Islam Riau, Pekanbaru, Indonesia*

**Keywords:** PT. GCI Indonesia, BTS, Maintenance, Android.

**Abstract:** Information technology is characterized by the birth of a computer and its rapid development. It started with the creation of the first generation computers to the fifth generation computers today. PT. GCI Indonesia is a company engaged in telecommunications. This company provides professional consulting and technical services to work on wireless networks, transmission networks, data communication, and several other services. Of course, going to BTS requires a variety of preparations, starting from the BTS data, the types of maintenance performed, the development of maintenance, the costs needed and so forth. For now, PT. GCI Indonesia itself still uses preparation and reporting by recording on sheets of paper which will later be reported. So from that, the purpose of this research is to produce a monitoring system with Android and able to archive a lot of data into the database as the report that will be used for the report.

## 1 INTRODUCTION

PT. GCI Indonesia is a company engaged in telecommunications. This company provides professional consulting and technical services to work on wireless networks, transmission networks, data communication, and several other services. PT. GCI Indonesia sends professional technicians to check, repair or renew the system at the Base Transceiver Station (BTS). Of course, going to BTS requires a variety of preparations, starting from the BTS data, the types of maintenance carried out, the development of maintenance, the costs needed and so on.

To overcome this, currently PT. GCI Indonesia is still preparing and reporting on performance in BTS by recording on sheets of paper to be reported to relevant parties. This method is fairly ineffective, considering the time, effort and efficiency of reporting by technical and the receipt of reports by related parties. To improve performance, monitoring should be done more quickly and effectively. In this study, the author tries to find a solution to these problems.

## 2 LITERATURE REVIEW

According to Nabil Bawafie in the e-ISSN journal: 2338-5197 discusses the Design of SMS-Based Internet Bandwidth Monitoring System. In this study,

an automated system was developed that can provide information to engineers when there is trouble on a network. A server is a computer system that provides certain types of services in a computer network. Servers are supported by scalable processors and large RAM, also equipped with special operating systems, which are referred to as network operating systems or network operating systems. The server also runs administrative software that controls access to the network and the resources contained in it, such as files or printers, and provides access to network member workstations (Bawafie and Muslihudin, 2013).

According to Nelly Indriani Widiastuti conducted research on monitoring System Study of UNIKOM's Informatics Engineering Accreditation Document. The system developed monitors activities according to planning, identifies problems that arise so that they can be addressed immediately, evaluates work patterns and management used, knows the bond between activities and objectives and adjusts activities to changing environments. This system was developed based on the web as a user interface (Widiastuti and Susanto, 2014).

According to Asti Herliana in the journal ISSN: 2355-6579 researched Information Systems Monitoring of Software Development in the Development Phase of Web Development. This system was developed to help the projects carried out by Devel-

opment completed on time. In essence, this system monitors the execution of the software and the time tested according to the agreement (Herliana and Rasyid, 2016).

### 3 RESEARCH METHODOLOGY

#### 3.1 Data Collection Technique

The research methodology is the stages that are passed by the researcher to obtain a clear picture of the research so the preparation of the research methodology is as follows (Sulihati, 2016; Jumri, 2013; Risnandar et al., 2015):

1. Data Collecting is data collected, namely symptom data, disease data, case data, the data is obtained by conducting a search or research
2. Literature Studies conducted by collecting and studying all kinds of information relating to the monitoring system and everything related to the programming model
3. System Design that is at this stage carried out software system design that will be made based on the results of existing literature studies. This software design includes data structure design, information flow design, interface design, algorithm design and programming
4. System Implementation, namely the system implementation phase is carried out in stages with reference to literature studies and system design that has been made
5. Testing and Evaluation At this stage a program trial is carried out to look for possible problems, evaluate the course of the program, and make improvements if there are shortcomings
6. Preparation of Research Reports is carried out at the final stage as documentation. This documentation is made to explain the application to make it easier for others who want to develop the application further

#### 3.2 System Planning

The description of the ssv monitoring and optimization system process that is currently running at PT. GCI Indonesia is as follows (Hutasoit and Mubarakah, ; Auliq and Prasojo, 2018; Cahyadi et al., 2016):

Figure 1 the manual process that occurs at this time starts from the management of project data by

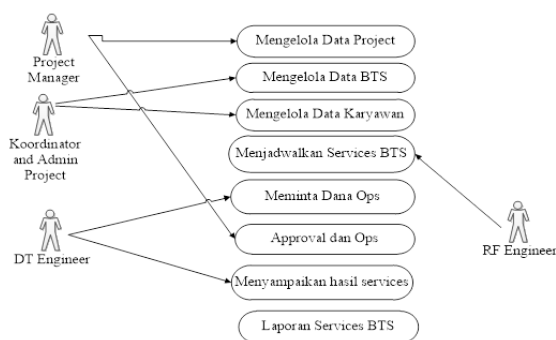


Figure 1: The Process System Manual

the Project manager, after that the BTS data according to the agreed project will be managed by the project coordinator and admin. The RF engineer will schedule BTS that has been managed by the Project Coordinator and admin. Before leaving the field, DT Engineer will request operational funds to the admin with permission from the project manager. DT Engineer will input data services and Project Manager can see the report on the system that is running.

#### 3.3 Flowchart of Program

The program logic flow is illustrated through the following flowchart:

Figure 2 from the program flowchart it can be seen that there is a login form display, then the user can enter the username and password. There are 4 users on this system, namely, Project Manager, Admin and Project Coordinator, Drive Test Engineer and Radio Frequency Engineer.

The program logic project manager flow is illustrated through the following flowchart:

Figure 3 is the access menu used by the project manager. The menu provided for access has been adjusted to the conditions in the field and the rules that apply at PT. GCI Indonesia

The program logic coordinator admin project flow is illustrated through the following flowchart:

Figure 4 is the access menu used by the Project Coordinator and Admin. The menu provided for access has been adjusted to the conditions in the field and the rules that apply at PT. GCI Indonesia

The program logic RF engineer flow is illustrated through the following flowchart:

Figure 5 is the access menu used by RF Engineer. The menu provided for access has been adjusted to the conditions in the field and the rules that apply at PT. GCI Indonesia

The program logic DT engineer flow is illustrated through the following flowchart:

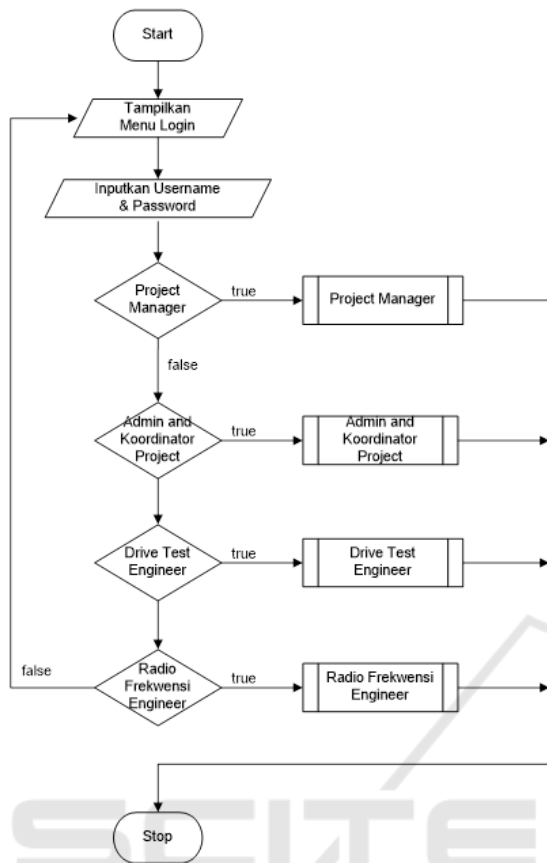


Figure 2: Flowchart of Program

Figure 6 is the access menu used by DT Engineer. The menu provided for access has been adjusted to the conditions in the field and the rules that apply at PT. GCI Indonesia

## 4 RESULT

### 4.1 Testing Login Access Rights Admin, Radio Frekuensi Engineer, Drive Test Engineer, Project Manager

The testing login admin access rights, radio frequency engineer, drive test engineer, and project manager following:

Figure 7 To be able to process data on the system, Admin PT.GCI Indonesia must log into the system. Admin must enter the username and password that has been registered to the system. The following is the picture of the PT.GCI Indonesia Admin committee’s login page in figure 6. The following is the display of PT. GCI Indonesia Admin login form

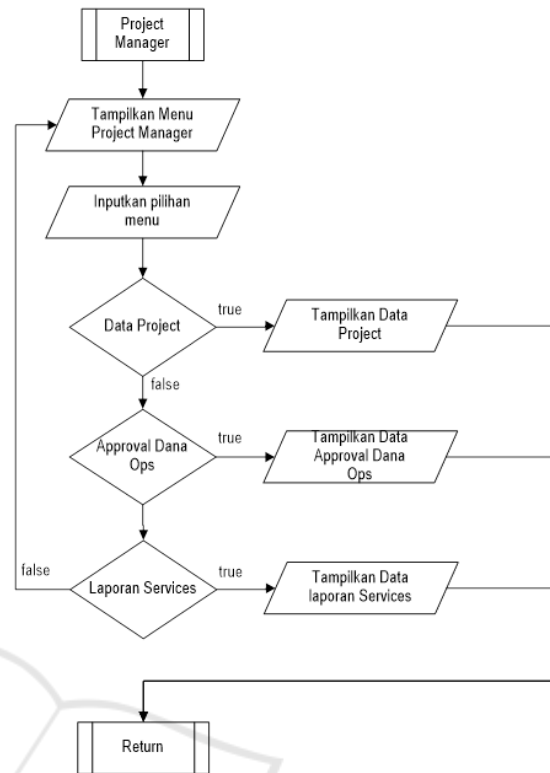


Figure 3: Flowchart of Project Manager

### 4.2 Testing Form Login Radio Frekuensi Engineer (RF)

The testing form login radio frekuensi engineer following:

Figure 8 when going to do data processing on the system, the Radio Frequency Engineer (RF) first login to enter the system by entering a username and password that has been registered in the system database. The following is a test image of the login form of Radio Frequency Engineer (RF) PT. GCI Indonesia

### 4.3 Testing Form Login Drive Test Engineer (DT)

The testing form login drive test engineer following:

Figure 9 when going to do data processing on the system, the Test Drive Engineer (DT) first login to enter the system by entering the username and password that has been registered in the system database. The following is a picture of testing the login form of Drive Test Engineer (DT) PT. GCI Indonesia

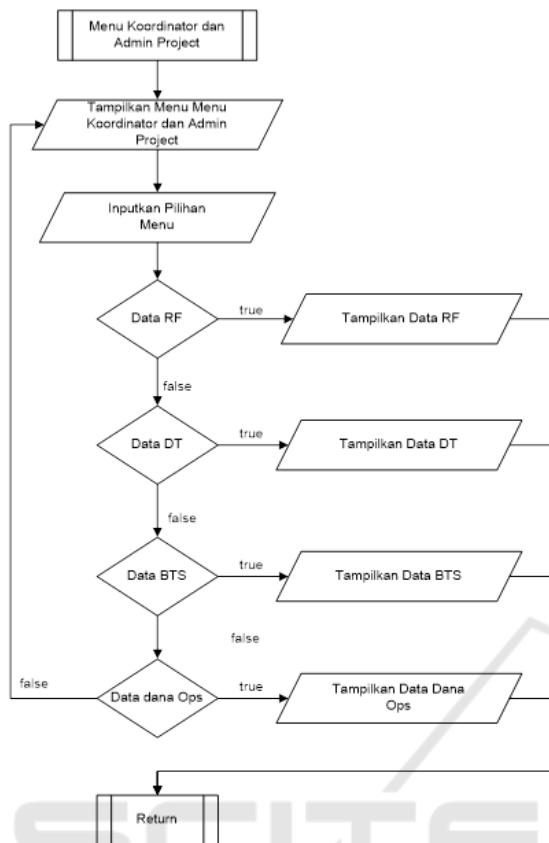


Figure 4: Flowchart of Koordinator Admin Project

#### 4.4 Testing Form Login Project Manager

The testing form login project manager following:

Figure 10 when going to do data processing on the system, the Project Manager first login to enter the system by entering a username and password that has been registered in the system database. The following is a test picture of the Project Manager (DT) PT. GCI Indonesia login form

#### 4.5 Form Data Service

The form data service following:

In Figure 11 above explains that the data service that has been inputted by the Drive Test Engineer (DT) will be displayed in the table above where the data is stored in the database and can use ascending or descending shorting according to column selection

#### 4.6 Form Graph Project per Week

The form graph project following:

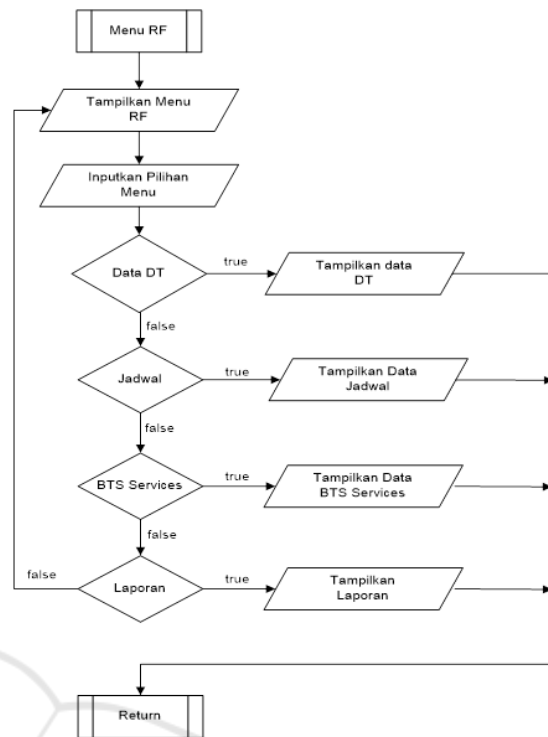


Figure 5: Flowchart of RF Engineer

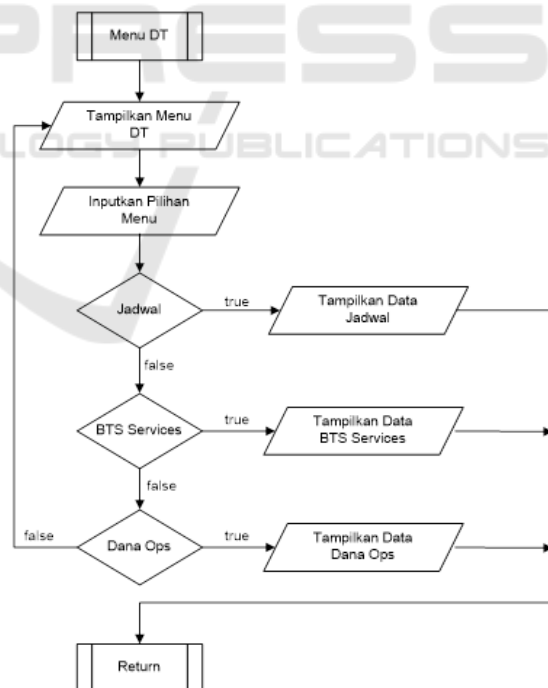


Figure 6: Flowchart of DT Engineer

#### 4.7 Form Graph Project per Month

The form graph project per month following:

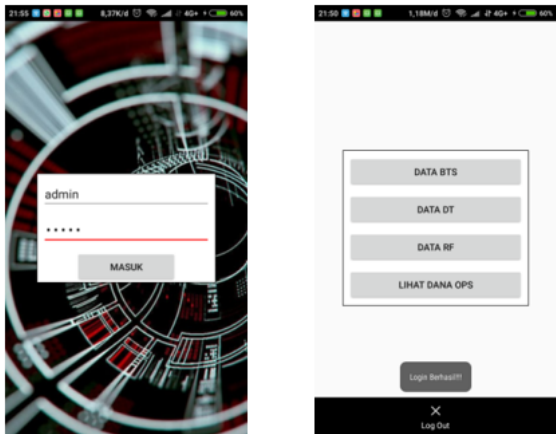


Figure 7: Testing Form Login Admin and Main Menu Admin

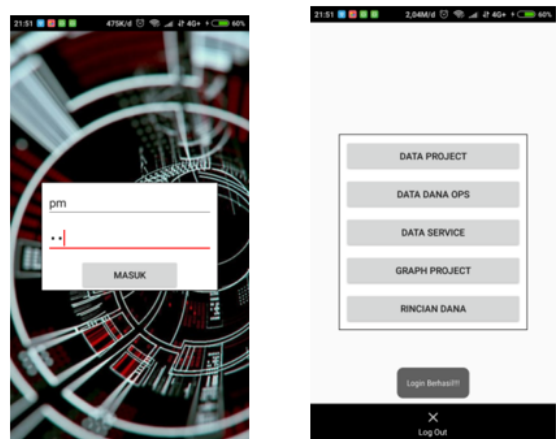


Figure 10: Testing Form Login and Main Menu Project Manager

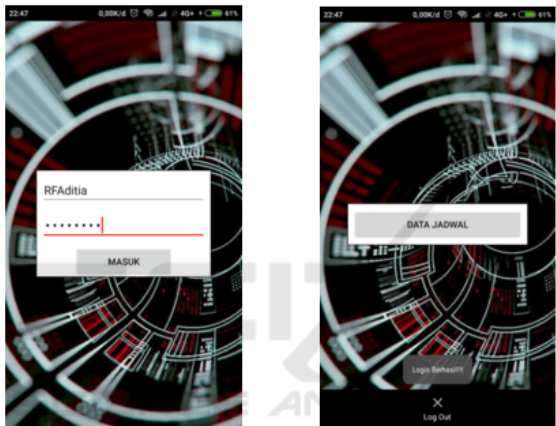


Figure 8: Testing Form Login Radio Frekuensi Engineer (RF) and Main Menu RF

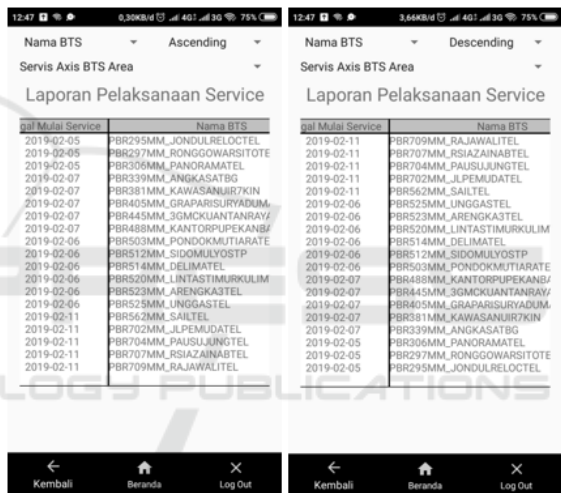


Figure 11: Form Data Service

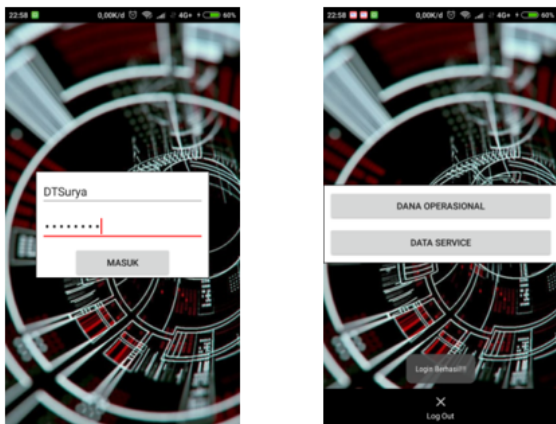


Figure 9: Form Login Drive Test Engineer (DT) and Menu DT

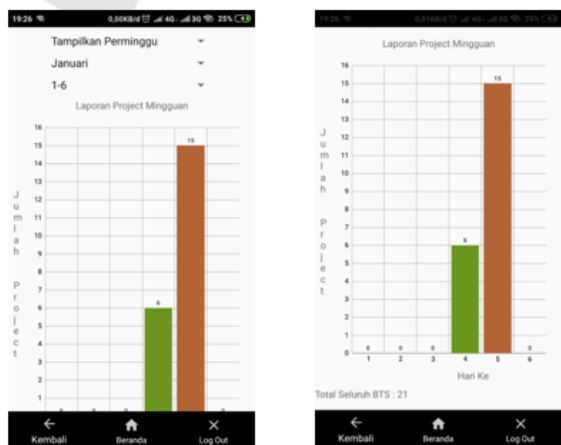


Figure 12: Form Graph Project

#### 4.8 Form Graph Project per Year

The form graph project per year following:

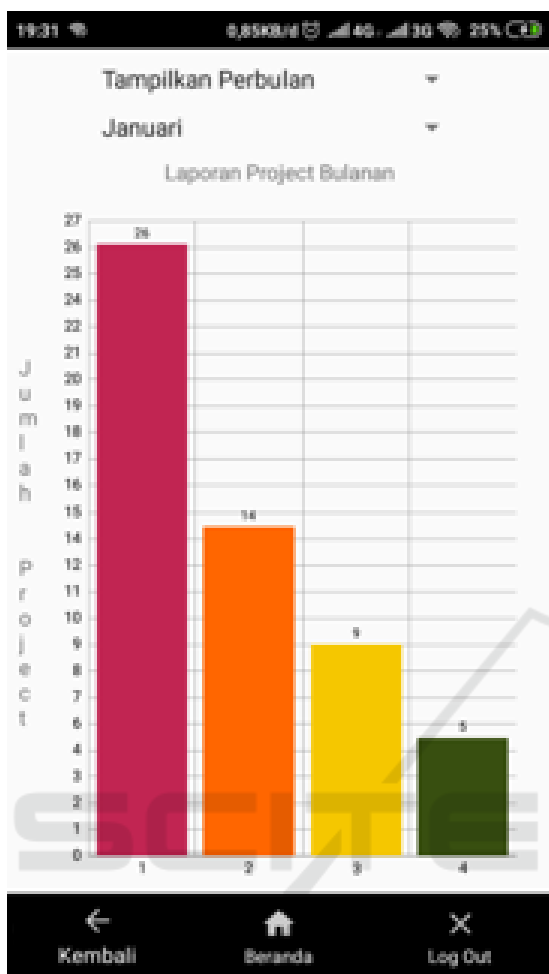


Figure 13: Form Graph Project Per Month

In pictures 12, 13, and 14 display graph reports weekly, monthly and annually that can be seen by the project manager.

## 5 CONCLUSIONS

After conducting research, designing and testing the SSV Monitoring System and BTS network Optimization using the Android case study of PT. GCI Indonesia, conclusions can be taken as follows:

Has successfully made the SSV Monitoring System and BTS network Optimization using the Android case study of PT. GCI Indonesia, and based on the results of testing that has been done using Black box, SSV Monitoring System and BTS network Optimization using the Android case study of PT. GCI Indonesia has achieved efficiency as a monitoring system, and the last based on the results of testing that

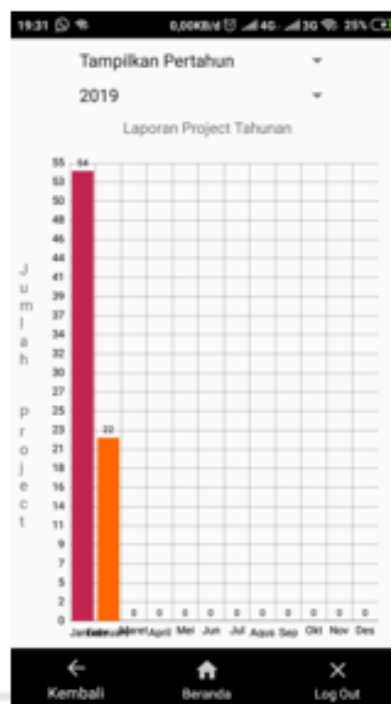


Figure 14: Form Graph Project Per Year

has been done using the White box, SSV Monitoring System and BTS network Optimization using the Android case study of PT. GCI Indonesia facilitates the data storage process in accordance with field conditions.

## REFERENCES

- Auliq, M. A. and Prasojo, K. S. (2018). Perancangan sistem monitoring power bts (base transceiver station) menggunakan sms gateway berbasis mikrokontroler atmega 8535. *PROSIDING SENSEI 2017*, 1(1).
- Bawafie, N. and Muslihudin, M. (2013). Perancangan sistem monitoring bandwidth internet berbasis sms. *Jurnal Sarjana Teknik Informatika*, 1(1):241–247.
- Cahyadi, D., Agus, F., and Iman, M. (2016). Studi pemanfaatan network monitoring system pada intra/inter-net pemerintah provinsi kalimantan timur sebagai bahan rekomendasi untuk memaksimalkan utilisasi jaringan intra/inter-net. *Informatika Mulawarman: Jurnal Ilmiah Ilmu Komputer*, 5(2):38–49.
- Herliana, A. and Rasyid, P. M. (2016). Sistem informasi monitoring pengembangan software pada tahap development berbasis web. *Jurnal Informatika*, 3(1).
- Hutasoit, E. F. and Mubarakah, N. Analisis unjuk kerja jaringan pada sistem cdma (studi kasus telkom flexi medan). *Singuda ENSIKOM*, 7(1):23–29.
- Jumri, J. P. (2013). Perancangan sistem monitoring konsultasi bimbingan akademik mahasiswa dengan noti-

- fikasi realtime berbasis sms gateway. *Jurnal Sistem dan Teknologi Informasi (JustIN)*, 1(1):21–25.
- Putro, M. R. D., Susanto, T., and Sutomo, E. (2014). Rancang bangun sistem informasi monitoring antrian pada koperasi setia bhakti wanita berbasis web. *Jurnal JSIKA*, 3(1):204–211.
- Risnandar, E. et al. (2015). *Pembuatan Aplikasi Sistem Informasi Monitoring Kegiatan Mahasiswa Berbasis Web dan Android Client*. PhD thesis, UNIVERSITAS NEGERI SEMARANG.
- Sulihati, A. (2016). Aplikasi akademik online berbasis mobile android pada universitas tama jagakarsa, volume xi, nomor 1, hal 18-19. *Universitas Tama. Jagakarsa*.
- Widiastuti, N. I. and Susanto, R. (2014). Kajian sistem monitoring dokumen akreditasi teknik informatika unikom. *majalah ilmiah UNIKOM*, 12(2).

