

## Development of an Android-Based “LaporKPS” Application to Support the Service Center for Reports of Sexual Violence and Harassment Cases

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**Abstract.** Cases of sexual violence and harassment have recently occurred among the public. Many print and non-print media report on issues of sexual violence and harassment. The PPP case is an abuse of the relationship between women and men which harms one of the parties because they are harassed or degraded in dignity, either verbally or non-verbally. Semarang was the highest rank in cases of sexual violence in Central Java in 2018. The PPP case reporting mechanism requires victims to go to a service center. Many risks make victims reluctant to report the incident that occurred because they are embarrassed in society and afraid that perpetrators will intimidate them. This paper aims to develop an android-based application to summarize the reporting mechanism by reporting PPP incidents experienced by victims using gadgets. Several menus provided include reporting menu, counseling menu, article menu, and Robo menu to identify categories of forms of harassment based on user input. The application is developed by using a customized waterfall method. Several testing has been developed to evaluate the application, such as Blackbox testing (achieves 100%), usability testing (achieves 79%), and media content testing (achieves 85.45%).

**Keyword:** Service Center, Sexual Violence and Harassment, Android Application, Application Development, Report, Android Development

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### 1 Introduction

Cases of sexual violence and harassment have recently experienced much spotlight among the public. Both online and print media report on sexual violence and harassment issues. Sexual violence and harassment are two violation forms of moral norms, which are not only a matter of national law but also included in the laws of all countries in the world and have become a global problem. Sexual violence and harassment (KPS) is an abuse of the relationship between women and men that harms one of the parties because they are harassed or degraded in dignity, either physically or verbally [1]. It could be claimed that incidences of sexual violence and harassment do affect either women or men being victims of such acts (PPP). Women are commonly victims

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of sexual abuse and harassment because society's value perceives them as defenseless beings who should be dominated by men and positions them in servitude and marginalization [1]. This is in line with the report on the Quantitative Study of the Gender Equality Barometer conducted by the International NGO Forum on Indonesian Development, which states that 62.8% of the total respondents agree that sexual violence and harassment are more natural for women than for men [2]. National Commissions on Violence against Women received 4.500 complaints, which doubled in 2020. The violence against women and harassment cases happen in cities where the culture and awareness of legal knowledge of its people are relatively advanced compared to other small cities. Based on data from the Legal Resource Center for Gender Justice and Human Rights (LRC-KJHAM) in Semarang City, from 2016-2019, there were 1,145 cases recorded [3].

Website [jatengtoday.com](http://jatengtoday.com) showed that Semarang was the highest number of cases (360 cases) of sexual violence against children in Central Java in 2018 [4] [5]. In accordance with the data report released by the Office of Women's Empowerment, Child Protection, Population Control, and Family Planning of Central Java province. On the other side, the non-reporting of victims of PPP cases is also based on Indonesian law, which currently does not favor victims. Based on the point of view Director of LBH APIK (Indonesian Women's Association for Justice), Siti Mazuma said that KPS victims are burdened with evidence and witnesses, where the PPP case occurs in a privacy area, so not many witnesses or evidence are collected [6]. The state is responsible for protecting its citizens from Sexual Violence and Harassment and for preventing them before cases occur. Semarang has an Integrated Service Center that handles victims of sexual violence and harassment cases, namely PPT Seruni Semarang, Central Java. PPT Seruni has a system and mechanism for enforcing its integrated services. Victims (clients) could report to the PPT directly or through related agencies such as NGOs and police. Then, PPT Seruni analyze the case of victims to obtain protection from a sense of security, they will stay in a safe house [7].

Some victims are reluctant to report their cases to the PPT Seruni office or another institution because they should come directly. Therefore, it is important to develop a system or application as media between victims and services to report and monitor cases. Android-Based "LaporKPS" Application as a Supporter of the Sexual Violence and Harassment Case Report Service Center aims to summarize the current reporting mechanism to support the Sexual Violence and Harassment Case Report Service Center. This application is designed to make it easier for victims to report PPP incidents via gadgets so that victims no longer need to come to the Service Center office. This application ensures the confidentiality of victims' identities and victims' courage to report their cases.

## **2 Literature Review**

### **2.1 Related Research**

Vivian and Arsawati [8] examined the factors of sexual violence and the role of integrated service institutions in providing legal protection to victims. The study results were obtained, namely that internal and external factors caused sexual violence against children. In addition, results were gathered about the role of the integrated service unit in receiving victim reports when victims or their families presented complaints about their cases to the service unit. This shows that there is no online reporting system. Hence, victims/families want to come to the service unit first and complete all procedures and registrations to be assisted. The study also suggested that the service unit provide proactive measures to socialize essential elements of child protection regarding sexual violence.

Oktafiani and Yunita [9] built a web-based PPP case complaint information system. From this research, it was found that the use of an online system in complaints of sexual violence cases can help the public in complaints without having to come to the service head office. The application in this research still has to be accessed using a PC and cannot be accessed via mobile. Then in Purnia, Silvi [10] built a mobile-based application to create a domestic violence complaint system. In this application, there is only one menu, namely complaints, which are the main points of the application. In the application, the victim can explain in detail the chronology of the events he experienced and obtain the results that the application is easy to understand and can be applied to the community.

### **2.2 Sexual Violence and Harassment**

Sexual violence is sexual violence experienced by the victim. In contrast, sexual harassment is the abuse of the relationship between women and men that harms one of the parties because they are harassed through sexual activities or degraded in their dignity [1]. It can be said that sexual violence and harassment are abuses of the relationship between women and men that harm one of the parties because sexual violence and harassment can degrade a person's dignity.

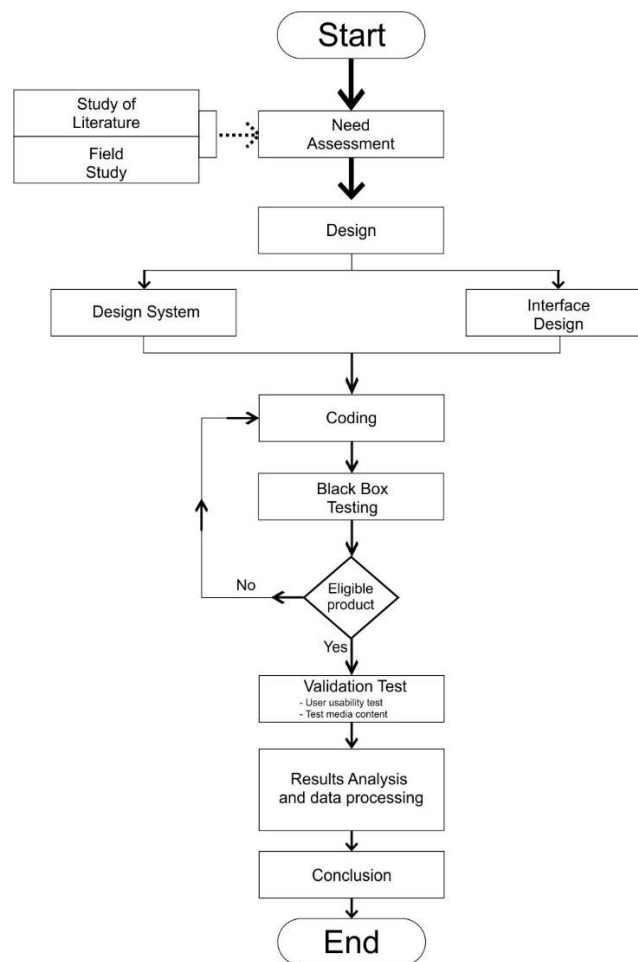
### **2.3 Android**

Android is a set of software used to develop mobile applications consisting of Linux-kernel-based operating systems, middleware, and applications. The components underlying the creation of the operating system are written using the C/C++ programming language, while android applications for users are created using the Java programming language [11]. The use of the Android system can make it easier for developers because many developers already use it. One of the reasons for the rapid development of Android is that this system has good development tools as well as high market support and support from the community through Open Source media so that Android today can continue to develop rapidly, both in terms of technology in the world and technology used in various devices in the world [12]. In addition to convenience from the developer side, the

Android operating system is widely used by users in Indonesia so that it can provide easier access to wider applications for users. According to the global stats counter, Indonesian Android OS users reached 90.84% of the total market.

### 3 Research Methodology

The application design method used in this study refers to the Waterfall Method. The Waterfall method is a software development approach with a systematic approach that starts with the analysis of user needs and software testing [13]. The advantage of using this method is the development process, which is carried out in each phase to minimize possible errors. However, in this study, several adjustments were made that were related to the research (Figure 1).



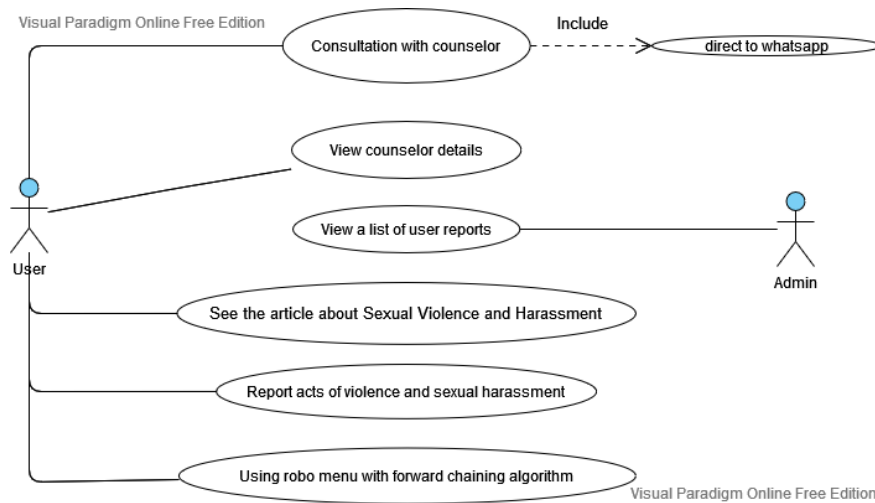
**Figure 1** Application Design Methods

### 3.1 Needs Assessment

The application development life cycle begins with communicating with stakeholders. Needs assessment determines the function and purpose of making the application. This process will produce user requirements that are subject to consideration for features in the application. Needs assessment is performed in two ways: literature studies and field studies. At this stage, two requirements were obtained: (1) functional requirements -including the menu provided and (2) non-functional requirements-including technical needs for making applications.

### 3.2 Design

The design in it is divided into two phases, namely system design, and interface design. The system design uses UML (Unified Model Language), which consists of use case diagrams, activity diagrams, sequence diagrams, and class diagrams. First, the use case diagram of the application has shown in Figure 2.



**Figure 2** Use case Diagram

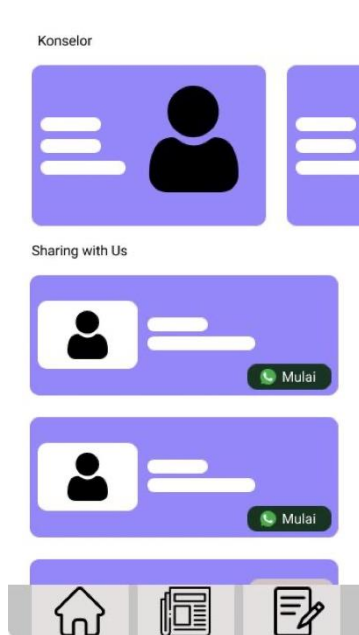
Figure 2 shows the role between a user and an admin. Each of these roles is described in Table 1.

**Table 1** Use Case Diagram Description

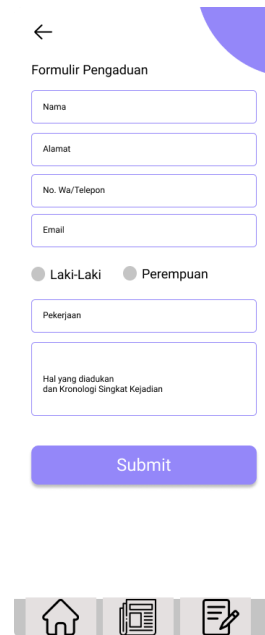
No.	Actor	Task
1	Actor: User Use Case: Consult a Counselor	Users can consult with the counselor and directly go to the Whatsapp application where there is a counselor number.
2	Actor: User Use Case: View counselor details	Users can see details about the list of counselors in the app, such as the counselor's name, address, where the agency came from, information about the counselor, and the hours the counselor works.
3	Actor: Admin Use Case: View a List of user reports	Admins can see a list of users' reports for follow-up. The admin application is different from the application used by the user.
4	Actor: User Use Case: View articles on Sexual Violence and Harassment	Users can view articles on violence and harassment on the Android application.

5	Actor: User Use Case: Report Sexual Violence and Harassment	Users can report sexual violence and harassment with the form provided in the Android Application.
6	Actor: User Use Case: Using a Robo menu with a forward chaining algorithm	The user will be asked several questions, which will be looked at by an expert system using the Forward Chaining algorithm. Based on the answers the user gives, conclusions will be drawn.

This is an initial overview of the application of one of the pages built with the wireframe model, which can be seen in Figure 3 and Figure 4.



**Figure 3** Home Activity



**Figure 4** Report Page

### 3.3 Coding

The next step is coding; a working model is carried out to build an Android-based software application at this stage. The coding stage of the application uses Android Studio as an IDE (Integrated Development Environment), the official IDE from Google. The programming languages used are Kotlin and Java.

### 3.4 Validation Test

The application developed should go through the validation test, which includes Blackbox testing, usability testing, and media content testing.

#### A. Blackbox Testing

The testing stage uses Blackbox testing, which involves the successful application to run. According to Cholifah et al. [15], the black box test aims to find out the application's functions,

whether they have run according to the previously set functions, and evaluate the suitability of the application to the needs of the user. Data collection using test cases was then assessed using the Guttman Scale. According to Darwin et al. [16], The Guttman scale is a scale measured based on the ratio of dichotomies (two alternatives). This study used two choices, namely, success and failure. Then both are given a value where success is worth one and failed answer choices are worth 0. Then it is calculated using the following formula:

$$\text{worthiness percentage (\%)} = \frac{\text{Score Obtained}}{\text{Maximum Score}} \times 100\% \quad (1)$$

After the percentage of results is obtained, it is converted into the appropriate statement as in Table 2 below.

**Table 2** Conversion of App Eligibility Percentage

No.	Percentage	Interpretation
1	100% - 80%	Very Worthy
2	80% - 61%	Proper
3	60% - 41%	Decent Enough
4	40% - 21%	Not Worth It
5	20% - 0%	Very Unworthy

### B. Usability Testing

The usability testing uses the USE Questionnaire introduced by Arnold Lund in [17], which contains 30 questions to assess each aspect: usefulness, ease of use, ease of learning, and satisfaction (satisfaction). The use of the USE Questionnaire can subjectively measure the product to be measured, so it can be a strong reason to measure the usability of Android applications. The test results were then assessed using the Likert scale, which contained five values. Table 3 shows points from the Likert Scale.

**Table 3** Likert Scale

No.	Variable	Value
1	Strongly Agree (SS)	5
2	Agree (S)	4
3	Neutral (N)	3
4	Disagree (TS)	2
5	Strongly Disagree	1

The calculation of the Likert Scale is measured using the following formula:

$$\text{Satisfaction Percentage(\%)} = \frac{\text{Score Obtained}}{\text{Maximum Score}} \times 100\%. \quad (2)$$

The results of the calculation are then grouped based on the value of the percentage in Table 4 to get an interpretation of the score obtained.

**Table 4** Percentage score The Result of the Likert Scale calculation

No.	Percentage	Interpretation
1	100% - 80%	Very Satisfied
2	80% - 61%	Satisfied
3	60% - 41%	Less Satisfied
4	40% - 21%	Not Satisfied
5	< 21%	Very Dissatisfied

Usability testing in this research has four aspects used, as shown in Table 5.

**Table 5** Usability Testing Instrument

No.	Aspect	Interpretation	Number of Questions
1	Usefulness	Help users to be more effective and productive	2
		Helping users to achieve their will and save time and meet user needs	3
		The application is to the expectations of the user and is helpful for the user	2
		Make it easier for users to achieve the goal of reporting cases of Sexual Violence and Harassment	1
2	Ease of Use	The app is easy to use and user-friendly	5
		Application Requires few steps to achieve user goals	1
		The application can run smoothly, and few errors	4
3	Ease of Learning	Users like the app	1
		Users can quickly remember how to use the app	2
		Users can quickly learn about the app	1
4	Satisfaction	Users can quickly and skillfully use the app	1
		Users are Satisfied and happy to use the App	2
		Users feel the need for this app	1
		The app runs to its full potential and is awesome	3
		Users feel they can make recommendations to others	1

### C. Media Content Testing

The content validation test is carried out by a material expert, who is a person who knows the field of sexual violence and harassment. Experts are asked for their opinions to identify problems and analyze whether the content in the application is suitable for display to users. Content Test calculations have similarities to usability tests. The conversion results can be seen in Table 3. The media content examination study grid is shown in Table 6.



**Table 6** Media Content Aspect Testing Grid

No.	Aspects	Indicators	Sub Indicators	No Grain	
1	Norm	Purpose	Messaging	1	
			Limitations of time and space	2	
			User Accuracy	3	
		Characteristic	The message conveyed	4	
			Material Emphasis	5	
			Interaction of counselors and users	6	
			Ease of use	7	
			Function	Pull	8
				Interactive	9
		Quality		10	
		Benefit	Usage time	11	
			Increased user role	12	
			Clarifying the material	13	
			Equalizing perceptions	14	
			Attract the attention of <i>users</i>	15	
2	Governance	Goal			
		Goal Formulation		16	
		Material		17	
3	Relevance of the material to cases of Sexual Violence and Harassment	Contents of the Material	Definition of Sexual Violence and Harassment	18	
			Complaints report	19	
			Articles on the topic of Sexual Violence and Harassment	20	
			Ease of counselling	21	
			Suitability of the material on the Robo menu	22	

## 4 Result and Discussion

### 4.1 Blackbox Testing

In Blackbox testing, two experts who work as professional software engineers are given a test case and match the output results resulting from trying the application. Then the value is measured using the Guttman Scale. From the measurements, the results are obtained as stated in Table 7.

**Table 7** Blackbox Testing Result

No.	Validators	Average score (%)	Interpretation
1	Expert 1	100	Very Worthy
2	Expert 2	100	Very Worthy

From the expert's assessment, the results showed that the application was running well. No error occurs during the expert is trying out those apps. The assessment results are then categorized according to Table 2, and a proper interpretation is obtained. Based on the tests given, the expert also argues that the application is worth using and gaining an appreciation for the UI appearance.

## 4.2 Usability Testing

The usability testing method uses the PPP Report Application to determine customer satisfaction. The application will be installed directly on an Android Smartphone and share a research questionnaire in the form of a questionnaire using the Likert Scale measuring tool. Testing on usability was conducted on community groups consisting of activists, students, and service units with 20 respondents. The purpose of holding the assessment above is to measure user satisfaction in using the LaporKPS! Application.

**Table 8** Usability Test Result by Users

No.	Aspect	Average score (%)	Interpretation
1	Usefulness	79,75%	Satisfied
2	Ease of use	78,30%	Satisfied
3	Ease of Learning	84,50%	Very Satisfied
4	Satisfaction	76,10%	Satisfied
	Overall Average	79%	Satisfied

The usability assessment results were then categorized according to Table 4, and the interpretation was satisfied.

## 4.3 Media Content Testing

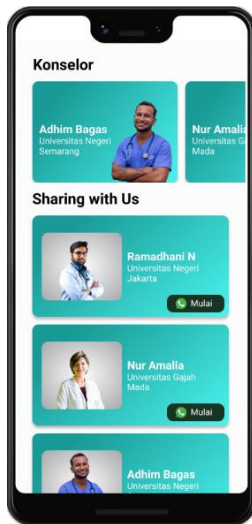
Then, in testing media content, this assessment aims to measure the feasibility of the content on the LaporKPS! Application. The measurement was carried out using the Likert Scale, and questionnaires were distributed to experts with 22 questions. From the measurements taken, the content available on the application is categorized as feasible to be used as an application supporting the reporting of sexual violence and harassment cases. The test results can be shown in Table 9.

**Table 9** Media Content Test Result

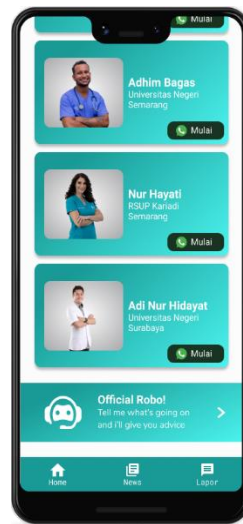
No.	Validators	Average score (%)	Interpretation
1	Expert 1	91,81%	Very Worthy
2	Expert 2	79%	Very Worthy
	Overall Average	85,45%	Very Worthy

## 4.4 Application User Interface

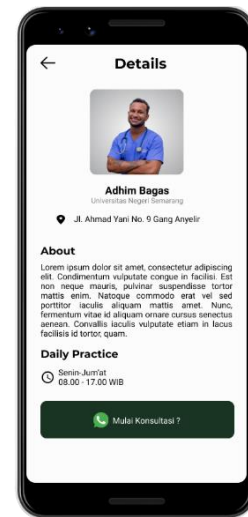
In the application, we can see the user interface of the application. Figure 5 & 6 is the application's start page, with several menus. The first is the list of counselors, which presents a list of counselors users can use to do counseling with the counselor. There is also a menu for the Robo feature and bottom navigation at the bottom. Figure 7 shows the counselor's details, including the name, origin of the institution, address, about, and operating hours of the counselor. Users can also do counseling through the Whatsapp button on the counselor detail page.



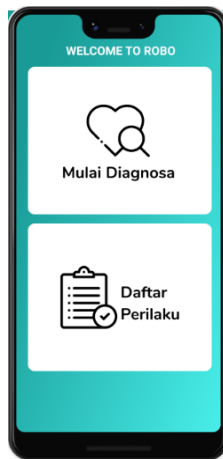
**Figure 5**  
Home Activity



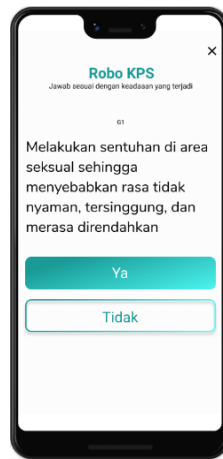
**Figure 6** Home Menu



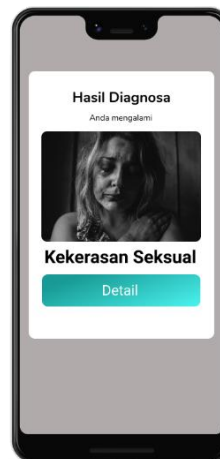
**Figure 7**  
Counselor Details



**Figure 8**  
Robo Page



**Figure 9**  
Diagnostic  
Menu

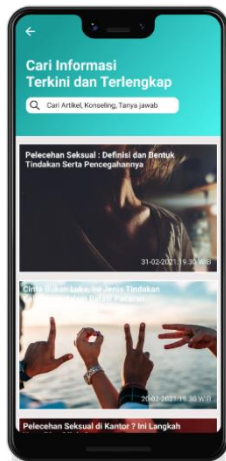


**Figure 10**  
Diagnostic  
Results

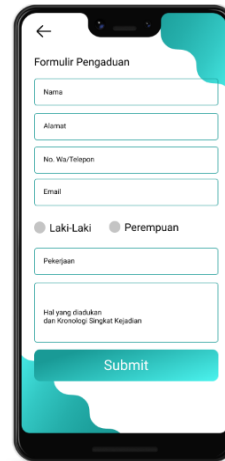


**Figure 11**  
Diagnosis Details

In Figures 8 and 9, there is a Robo feature where users will be presented with several questions to be analyzed using the Expert System using the Forward Chaining Algorithm. The Forward Chaining algorithm is a method of finding or drawing conclusions based on existing data or facts and leads to conclusions. The search starts from the existing facts and then moves through the premises to the conclusion via bottom-up reasoning. Then Figures 10 & 11 display the Expert System results, which are used as an educational tool for users about the events they experience.

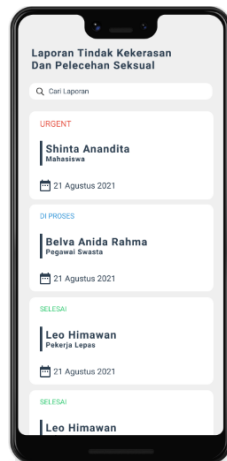


**Figure 12** Article Page

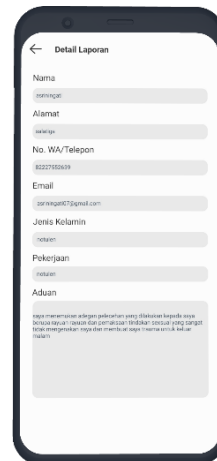


**Figure 13** Report Page

Figure 12 is an article page that presents various sexual violence and harassment articles that can provide users with knowledge about the topic. Figure 13 is a report page used to report incidents of sexual violence and harassment that occur online and in real-time, which will then be followed up by the task force concerned. Figure 14 & 15 is an admin page that can only be accessed by admins and has their application. This page contains the List of Reports and Detailed Reports the user has submitted.



**Figure 14** Report List



**Figure 15** Report Details

## 5 Conclusions

The Laporkps android application can help the service unit report sexual violence and harassment cases. The app is also categorized as being usable for the general public. This is based on the research of the system testing (BlackBox), media content test, and usability testing, which received scores of 100%, 85.45%, and 79%, respectively. By using Blackbox testing, the application can get a 100%, which means that the system success in running. Meanwhile, in terms

of media content, the LaporkPS android application is categorized as very feasible, measured through a linker scale conversion table from the results of the Content Test research.

Regarding user satisfaction, the LaporkPS application is categorized as feasible to be applied to the community. In this study, the android application only focuses on the user's use of the Reports of cases of sexual violence and harassment application. In the future, the system will be developed by using the intelligent system, for example, providing a Robo menu. A Robo menu is used to check whether a user has been harassed or not.

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