The Role Of A Decision Support System In Enhancing The Management Of Sexual Violence Cases In Higher Education Using The Saw Method Through An Android-Based Application

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Abstract

The rising prevalence of sexual violence in higher education institutions demands urgent attention, highlighting the need for an efficient and responsive reporting system. Android-based applications for reporting sexual violence play a vital role in addressing this issue. This research proposes an application designed to provide ease of access and usability, enabling victims or witnesses to promptly submit reports supported by video, audio, and real-time GPS data. Such empirical evidence increases the likelihood of successful follow-up actions and strengthens legal claims against perpetrators. Timely responses are especially critical for the Sexual Violence Prevention and Handling Task Force (PPKS) to mobilize campus security teams effectively and reduce long-term trauma experienced by victims. An integral component of the application is a Decision Support System (DSS) that utilizes the Simple Additive Weighting (SAW) method to assess the severity of reported cases—categorized into mild, moderate, or severe. This system facilitates faster and more accurate decision-making during the investigation and handling phases. Functional and case testing resulted in 100% success, aligning perfectly with manual calculations and real-world scenarios. The urgency of this research lies in the pressing need for a reporting system that is not only reactive but also proactive in preventing sexual violence. The application demonstrates strong potential to support systemic reform in campus reporting mechanisms, enhance victim trust in reporting processes, and shift the paradigm from reactive intervention to preventive action. Ultimately, this research contributes to building a safer, more responsive, and survivor-centered campus environment.

Keywords : *Decision support systems (DSS), Reporting, Sexual Violence, Simple Additive Weighting (SAW).*

1. INTRODUCTION

Between 2006 and 2023, Indonesia witnessed a concerning increase in incidents of sexual violence. This phenomenon encompasses various forms of abuse, including verbal humiliation, insults, harassment, and physical assaults, often rooted in power disparities or issues related to sexual orientation. These actions inflict psychological and physical trauma, compromise reproductive health, and hinder educational attainment. According to data from Simfoni PPA up to 2022, a total of 3,131 cases of violence against women were reported, affecting 3,228 individuals. Of these, 16.7% (542 victims) involved sexual violence. In addition, there were 4,148 reported cases of violence against minors, impacting 4,526 victims, with 53.8% (2,436 victims) involving sexual assault [1]. Sexual violence is not confined to public spaces; it can occur within academic institutions. The National Commission on Violence Against Women, recorded 67 cases of sexual violence in educational environments between 2015 and 2021 [2].

In response, the Indonesian government has introduced a range of legal measures aimed at mitigating sexual violence. These include Presidential Regulation No. 65 of 2020 concerning the

Ministry of Women's Empowerment and Child Protection, specifically Articles 3(d) and 3(e) of KemenPPPA, as well as Law No. 12 of 2022 on the criminal acts of sexual violence [3]. Furthermore, the issuance of Permendikbudristek No. 30 of 2021 [4] specifically addresses the prevention and management of sexual violence in higher education settings, encouraging active participation from both academic communities and the general public in reporting such incidents.

One institutional approach to demonstrate commitment in addressing this issue is the establishment of the Task Force for the Prevention and Handling of Sexual Violence (PPKS). This initiative has been widely adopted by universities across Indonesia to respond more effectively to cases occurring on campus. However, real-world incidents require timely and structured case handling, supported by institutional regulations tailored to address immoral and sexually violent behavior.

Despite these efforts, sexual violence remains a persistent issue in academic settings. Survivors often face psychological barriers such as shame, fear, and uncertainty regarding how to report incidents. Many students remain silent until they graduate due to a lack of knowledge about reporting mechanisms or insufficient evidence to support their claims. Thus, it becomes imperative for higher education institutions to provide a secure, trustworthy, and accessible platform for victims to report such cases. Through the integration of safety features and comprehensive awareness programs, it is hoped that survivors will feel empowered to seek justice and support.

To address this, previous studies have explored Android-based applications equipped with emergency features to facilitate sexual violence reporting. For example, research conducted in [5] and [6], as well as [7] and [8], focused on school-based violence reporting using the Rapid Application Development (RAD) approach and location-based services. Similarly, other studies have targeted the broader public, including commuters and event attendees, developing applications that report incidents directly to local security personnel or nearby police authorities [9], [10], [11], [12].

Victims of sexual harassment typically expect confidentiality and prompt responses when submitting reports. One potential solution is the development of a GPS-based emergency reporting system integrated into an Android application. This system allows users to instantly contact PPKS officers by transmitting their real-time location, along with optional video and voice messages. Such features can significantly enhance the ability to track and verify cases, especially given the importance of concrete evidence in legal proceedings. Additionally, to further strengthen the reporting and follow-up process, the implementation of a decision support system (DSS) is proposed. This system can assist PPKS task forces in classifying the severity level of sexual violence cases, enabling them to determine appropriate responses and actions efficiently.

Despite the formation of Task Forces for Prevention and Handling of Sexual Violence (PPKS) at universities, survivors continue to confront stigma, fear of reprisal, procedural uncertainty, and lack of evidentiary support. To address these challenges, secure and intelligent reporting mechanisms are urgently needed. Existing solutions include Android-based emergency applications equipped with panic buttons, GPS-triggered alerts, and location-based reporting aimed at broader communities, school environments, and public transport systems. However, there remains a critical gap: none of these platforms incorporate a Decision Support System (DSS) to ass-ess and prioritize cases based on severity, particularly within the context of higher education [13], [14], [15], [16], [17].

The selection of SAW is grounded in its computational simplicity, efficiency, and seamless compatibility with mobile platforms [18]. Furthermore, SAW delivers consistent, transparent, and interpretable outcomes, which are imperative in sensitive, multi-criteria decision-making contexts such as sexual violence case management [19] - [22]. Empirical applications of SAW in a variety of domains—including scholarship allocation [23], social aid distribution, educational planning [24], health diagnostics, and procurement decision-making [25]—underscore its robustness and adaptability.

Consequently, SAW is preferred over more complex MADM techniques like AHP or TOPSIS, which may be unsuitable for resource-constrained mobile environments [26] – [29] .

Ultimately, this study presents a novel, integrated solution to campus sexual violence by combining real-time reporting with intelligent case evaluation within a single Android application— enabling proactive, evidence-based, and survivor-centered decision-making.

2.   METHOD

Given this context, the objective of this study is to conduct a series of research phases aimed at providing assistance to victims of sexual violence and PPKS officers. The aim is to maximize the effectiveness of a decision support application for reporting incidents of sexual assault. The research stages were conducted through four distinct methods, as illustrated in Figure 1.
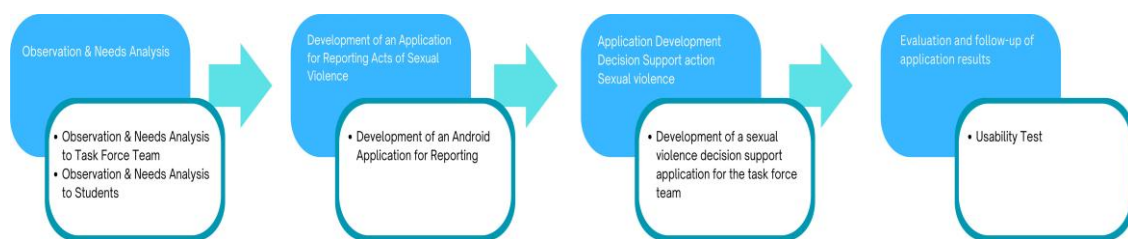

Figure 1. Research Stages

2.1.   Observation and Data Analysis

The observation and data analysis stages were conducted using two methods for data collection. Firstly, a literature review was conducted to augment the number of scholarly sources gathered from journals, literature, books, and the internet that are relevant to this research. The second step involves conducting consultation interviews with subject matter experts, specifically with Dr. Yaltafit Abror Jeem, M.Sc., who is the leader of the UII task force, as well as with various students. These interviews aim to explore and understand the specific demands of the users.

The literature review examined multiple studies on the use of sexual violence, employing different methods. Some studies specifically addressed reporting of sexual violence against women, children, and prisoners [30] - [32]. Additionally, there were studies that focused on cases of sexual harassment in schools, conducted by [33]. Additional studies explore the use of various methodologies, such as waterfall, prototype, and SAW, to develop information systems for reporting incidents of sexual violence. These studies include the works of [34]-[38]. Sudjud and Akbar (2022) specifically developed an Android-based application using the prototype method.

2.2.   Aplication Android

The creation of an Android application follows the prototype technique, which involves doing iterations during the system testing phase and reviewing user feedback until the program is considered satisfactory. Application development employing the prototype technique entails iterative testing and incorporating user feedback to customize the application to their requirements [39] a prototype is a method employed in software development to assist in the creation and refinement of the required software. The mockup design of the application will be assessed, and the evaluation findings will serve as a foundation for software development. The prototype phases are executed in accordance with the sequence depicted in figure 2.
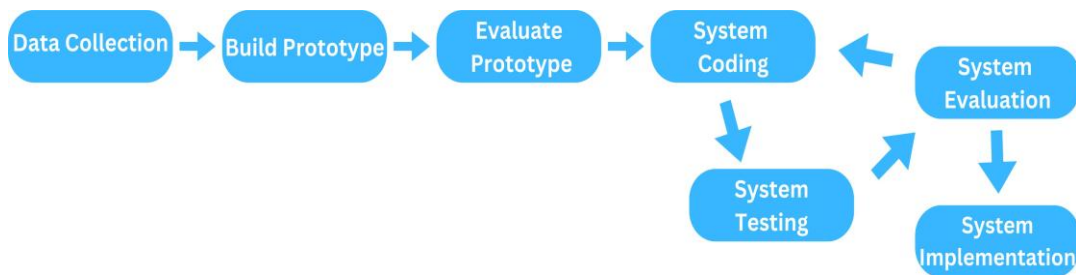
Figure 2. Prototype Stages

2.3. Development of a decision support system for reporting acts of sexual violence

The purpose of the Decision Support System (DSS) is to aid PPKS task force users in managing data and reporting models. It aims to transform this information into actionable insights to assist in decision making for semi-structured problems, specifically in determining the severity of acts of sexual violence. This system possesses data analysis and decision modeling skills that are specifically designed for future planning and can be utilized for an unspecified duration of time [40].

1. Multi Attribute Decision Making (MADM)

   Shalehah (2022) defines Multi Attribute Decision Making (MADM) as a decision-making framework that evaluates several choices based on specific features and criteria to identify the optimal choice. MADM is comprised of multiple components, specifically:

   a. Alternatives: A collection of distinct objects that possess an equivalent probability of being chosen by a decision maker.

   b. Decision criteria: Factors should be taken into account when making a decision.

   c. Attributes are categorized into two distinct groups:

      i. The benefit attribute is a criterion that indicates that the higher the value, the more anticipated the outcome.

      ii. The cost attribute is a criterion that decreases in value as the expectation increases.

   d. Decision weight: The numerical representation of the significance of each criterion in impacting a decision, denoted as W = (w1, w2, ..., wn).

   e. A decision matrix is a matrix of dimensions m x n, where each member xij represents the assessment or rating of each choice Ai (i=1,2,...,m) against each criterion Cj (j=1,2,...,n).

2. Simple Additive Weighting (SAW)

   Simple Additive Weighting (SAW) is a decision- making method that employs the sum of values that have been weighted according to a variety of criteria. The value of each alternative must be normalized in this method to ensure that it can be compared equitably on the same scale.

   The following formula is used to perform this normalization.

$$r_{ij} = \begin{cases} \dfrac{x_{ij}}{Max_i \; x_{ij}} & \rightarrow \; if \; J \; Benefit \\[2em] \dfrac{Min_i \; x_{ij}}{x_{ij}} & \rightarrow \quad if \; J \; Cost \end{cases} \qquad (1)$$

Information:

r_{ij} : Normalized performance rating value

x_{ij} : The attribute value of each criterion

Max x_{ij} : The largest value for each criterion i

Min x_{ij} : The smallest value of each criterion i

Benefit   : The greatest value is the best

Cost   : The smallest value is the best

The subsequent phase involves determining the preference value for each alternative by employing the subsequent formula.

$$V_i = \sum_{j=1}^{n} w_j r_{ij}$$
(2)

Information:

V_i : Ranking for each alternative.

W_j : Weight value for each criterion

r_ij : Normalized performance rating value

3.   Use Case Diagram

Use Case Diagrams are utilized to elucidate the functionality and usage of a system. This figure illustrates the interface between the system and the user, as well as the user's perception of the system's usability. Figure 3 displays the Use Case Diagram.

According to the use case diagram in Figure 3, there are three actors with distinct roles. The first actor is the PPKS leader and system admin, responsible for managing the decision support system, user accounts, and handling reported results from the reporter. The second actor is a PPKS member, who can also manage data related to reported cases of sexual violence. The last actor is the reporter, who provides data on the outcomes of the experienced violence.
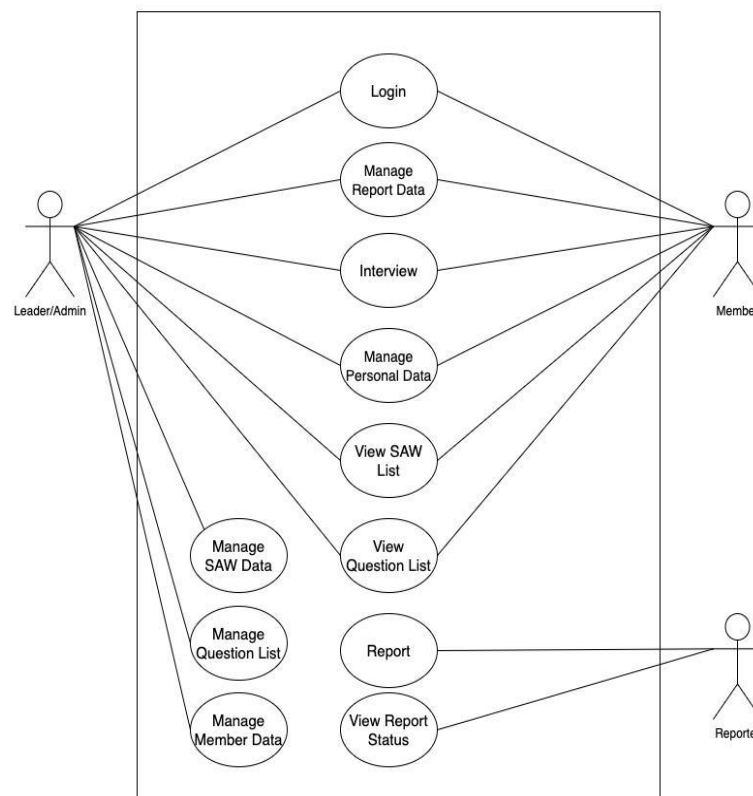

Figure 3. Use Case Diagram

4. Criteria and groups of sexual violence acts

There are 25 interview questions for each criterion, which are specifically targeted at the victim/reporter. The victim or reporter will be asked each question to determine the nature of the sexual violence they encountered. The interview questions pertain to Permendikbudristek Number 30 of 2021[4], which are categorized into physical, non-physical, verbal, and digital criteria. Below is a compilation of interview questions that align with the criteria groups and their respective weights as displayed in the table1.

Table 1. Criteria Groups and Questions

Criteria	No	Questions	Weights
Physical	1.	Did the offender grope, rub, or touch you?	6
	2.	Did the offender give you a hug, kiss, or hold?	7
	3.	Did the offender take the victim's clothes off?	15
	4.	Did the offender rub his privates?	20
	5.	Did the offender commit rape?	30
	6.	During the rape, did the offender penetrate?	30
	7.	What was the means of penetration?	25
	8.	Was the offender ejaculating?	17
	9.	The ejaculate fluid is released where?	15
	10.	When the harassment started, was the victim in any violent situations?	20
Non-Physical	11.	Does the offender administer penalties or sanctions with a suggestion of sexual subtext?	3
	12.	Did the offender intentionally expose his genitalia?	25
	13.	Did the offender disseminate any sexually suggestive material about the victim's appearance, personality, or both?	10
	14.	Did the offender purposefully observe the victim engaging in activities in private or in a private area, or did they just peek?	15
	15.	Did the offender give the victim a sexually suggestive or uneasy look?	5
Verbal	16.	Did the offender coerce, threaten, offer anything, or make a promise to get the victim to engage in sexual activity or transactions?	20
	17.	Did the offender make inappropriate or sexually provocative remarks about the victim's appearance?	15
	18.	Did the offender make jokes, sexually suggestive comments, or whistles at the victim?	7
	19.	Does the offender request someone to engage in sexual activity or pose intimate questions?	10
	20.	Does the offender use foul or violent words with a suggestion of sexuality?	7
Digital	21.	Did the offender talk to the victim about sexual things, send messages, or make audio or video calls?	15
	22.	Did the offender give the victim any explicit jokes, pictures, audio, or videos?	6
	23.	Did the offender record or take sexually suggestive pictures, audio, or video recordings of the victim?	30
	24.	Did the offender have a sexual undertone when discussing, uploading, or disseminating the victim's personal information online?	30
	25.	Did the offender use digital media to propagate rumors or false information about the victim that had a sexual theme?	7

Every question has a weight dependent on the severity level, as shown in Table 1. Each question's weight will be divided into three categories based on the severity of sexual assault: mild, moderate, and severe. Table 2 shows how the question weights are grouped.

Table 2. Sexual Violence Severity Index

Category	Index
Light	$0 > \text{Index} \leq 7$
Medium	$7 > \text{Index} \leq 19$
heavy	$\text{Index} > 19$

The question's response will then be divided into multiple answers, each of which will have a weight. Table 3 displays the questions answered and their corresponding weights.

Table 3. Alternatif Answered and Index

Answered	Index
Yes	1
No/Don't Know	0
Maybe/Attempt/Almost	0,5
Digital	0,75
Direct	0,5
Genitals	0,75
Object	0,5
Both of them	1
Outside Sex	0,75
In Sex	1

2.4. Usability Testing

Usability testing is a technique that evaluates the ease of use of an interface design by a representative group of people. The essential components of usability testing include learnability, efficiency, memorability, mistakes, and satisfaction [41]. Usability measurements are conducted through Blackbox testing to verify that all system designs adhere to their intended functions, including error messages. Additionally, usability testing involves manual assessment of decision support outcomes against actual values.

The usability testing process was conducted in two stages. First, the functional reliability of the application was assessed using Blackbox testing. This method ensured that all features—such as report submission, media attachment, GPS location tagging, and DSS-triggered case evaluation—operated according to the defined requirements. Second, the system's decision support output was validated through a comparative analysis between the application's recommendation scores and the assessments made by actual decision-makers, in this case, PPKS officers. This validation aimed to determine whether the SAW-based decision values generated by the system aligned with human judgment in prioritizing sexual violence cases based on their severity. A high degree of correspondence between the system output and expert decisions would indicate that the application can effectively support and replicate real-world decision-making processes in sensitive and critical contexts.

3. RESULT

One can gain insight into the business processes required for a decision support system for reporting acts of sexual violence by conducting an interview process with one of the heads of PPKS at one of the universities, as well as the investigation team for reporting acts of sexual violence. This system will involve three actors: the PPKS chair/admin, PPKS members, and the reporter/victim. Figure 4 illustrates the business process for reporting acts of Sexual Violence.
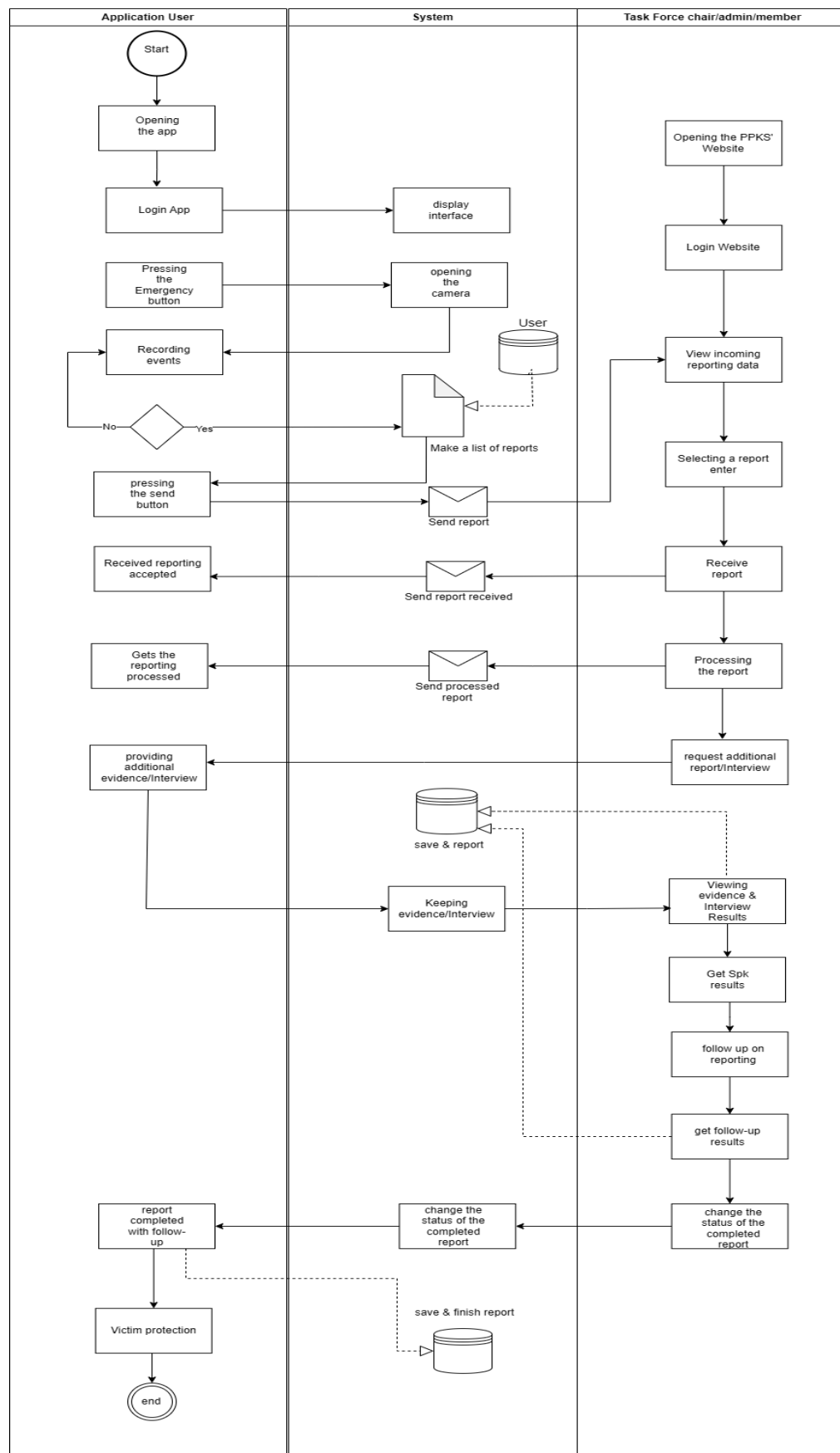
Figure 4. Busines Proses for reporting acts of Sexual Violence

3.1.   Functionality Testing Results

Black box testing encompasses multiple stages, including the formulation of test plans, creation of test cases, and the comparison of expected outcomes with actual test results. Based on the outcomes of blackbox testing, which involved testing various application features, it can be inferred that the application is functioning effectively and all features are performing their intended functions.

Table 4. The Results of Blackbox testing

No	Feature	Test Plan	Test Case	Expected results	Test Result
1	Complaint Form	Report Submission	The reporter's information, incident details and proof of the incident are complete and valid	Report sent successfully	Succeed
			The reporter's information is incomplete and invalid	Failed to go to the next reporting step	Succeed
			Filling in the incident detail column is invalid	Failed to go to the next reporting step	Succeed
			Evidence of the incident was not uploaded	Report sent successfully	Succeed
2	Login member PPKS	Admin Login	Email and Password are valid	Login Successful	Succeed
			Invalid email and invalid password	Login Failed	Succeed
			Valid email and invalid password	Login Failed	Succeed
			Invalid email and invalid password	Login Failed	Succeed
4	Question List Page (leader role only)	Create Questions and Weights	Added questions and question weights	Questions and weights added successfully	Succeed
		Change Questions and Weighting	Change questions and question weights	Questions and weights changed successfully	Succeed
		Delete Question	Delete questions and question weights	Questions and weights deleted successfully	Succeed
5	Question Details Page (leader role only)	Create Answers and Weights	Add answers and answer weights	Answers and weights added successfully	Succeed
		Change Answers and Weights	Change answers and answer weights	Answers and weights changed successfully	Succeed
		Delete Answer	Delete answers and answer weights	Answers and weights deleted successfully	Succeed
6	Admin List Page (leader role only)	Create a Member Account	Add members	Account added successfully	Succeed
		Changing Member roles	Changing Member roles	Member role has been successfully changed	Succeed

		Delete Member Account	Delete Member Account	Account successfully deleted	Succeed
7	*Logout*	Exit Account	Click the profile button on the navbar, then click the logout menu	Return to Login Page	Succeed

3.2.   Usability Testing Results

Secondary data was utilized to examine reported instances of sexual violence. Several data samples were selected based on data on reporting sexual violence in higher education that had occurred to evaluate the accuracy of the data model by comparing it with real cases. This analysis yielded results, which are presented in tables 5 and 6. The SAW method is utilized for conducting case testing, following formulas (1) and (2) as outlined in table 2 for Group Criteria and questions, and table 3 for alternative answers and corresponding indexes specific to the case example.

Following the process of categorizing the outcomes of the questions that align with the responses to the case in table 5, a matrix model is created to represent the connection between the criteria and different levels of sexual assault. This matrix reflects the importance of each criterion, as indicated in table 6.

Table 5. Case Example Levels Sexual Violence (Model Output Vs Real Aplication) I

No	Answered	Physical											Non Physical				Verbal					Digital					Calculation		Result
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Model output	Real Aplication	
1	Yes									v						v		v						v			0,75	0,75	Light
	No/Don't Know																												
	Maybe/Attempt/Almost	v	v	v	v	v	v	v	v		v	v	v	v	V		v		v	v	v	v	v		v	v			
	Digital																												
	Direct																												
2	Yes	v					v	v	v	v		v			v	v		v	v	v		v		v			0,925	0,925	Medium
	No/Don't Know																												
	Maybe/Attempt/Almost			v	v	v					v		v	v			v				v		v		v	v			
	Digital																												
	Direct		v																										
3	Yes						v			v	v		v			v	v	v	v	v	v	v				v	0,865	0,865	Heavy
	No/Don't Know	v					v		v																				
	Maybe/Attempt/Almost			v	v	v				v			v		v	v								v	v	v			
	Digital																												
	Direct																												

The outcomes of the computations for each alternative approach to addressing sexual assault, specifically high, medium, and low levels, are displayed in table 6. It can be inferred that the alternative with the highest value is the most favorable choice to be recommended for decision-making.

Based on the suggestion results, it may be inferred that the decision level aligns with the top ranked value. Table 6 confirms that the output model calculations align with the valid conclusions drawn from the real application. This provides practical value for decision-makers in prioritizing cases that demand immediate intervention.

Table 6. Case Example Levels Sexual Violence (Model Output Vs Real Aplication) II

No	Alternatif	Criteria				Calculation		Result
		C1 (W=0,5)	C2 (W=0,25)	C3 (W=0,10)	C4 (W=0,15)	Model output	Real Aplication	
1	Light	6	5	0	0	**0,75**	**0,75**	
	Medium	0	0	10	15	0,25	0,25	Light
	Heavy	0	0	0	0	0	0	
2	Light	9	5	7	0	0,249	0,249	
	Medium	47	10	25	15	**0,925**	**0,925**	Medium
	Heavy	45	0	0	30	0,629	0,629	
3	Light	13	5	7	6	0,303	0,303	
	Medium	0	25	0	0	0,25	0,25	Heavy
	Heavy	39,5	10	25	15	**0,865**	**0,865**	

Summarizing the outcomes of the case tests by juxtaposing the output model results with those of the actual application, it can be inferred that all results achieve a precision rate of 100%. This indicates that all test based on data on reporting sexual violence in higher education outcomes are entirely accurate, as per the data presented in table 7.

Table 7. Recapitulation of Calculation Result (model Output VS Real Aplication)

Testing Case number	Model Output		Real Aplication		Accuracy
	Level	**Score SAW**	**level**	**Score SAW**	
1	Light	0,75	Light	0,75	100%
2	Heavy	0,75	Heavy	0,75	100%
3	Heavy	0,83	Heavy	0,83	100%
4	Medium	0,85	Medium	0,85	100%
5	Light	0,639	Light	0,639	100%
6	Medium	0,925	Medium	0,925	100%
7	Light	0,615	Light	0,615	100%
8	Heavy	0,865	Heavy	0,865	100%
9	Medium	0,6	Medium	0,6	100%
10	Heavy	0,885	Heavy	0,885	100%

After comparing manual and actual calculations using 10 data instances, it was found that the accuracy rate is 100%. This is evident from the test findings presented in table 7, specifically when employing the SAW method. A visual representation of the model's output alongside real calculation results is provided in Figure 5. The comparison illustrates a consistent alignment between the computed outcomes generated by the decision support system and the actual manual calculations. This consistency confirms the system's reliability and accuracy in implementing the selected decision-making method, thereby reinforcing the validity of the proposed computational approach.
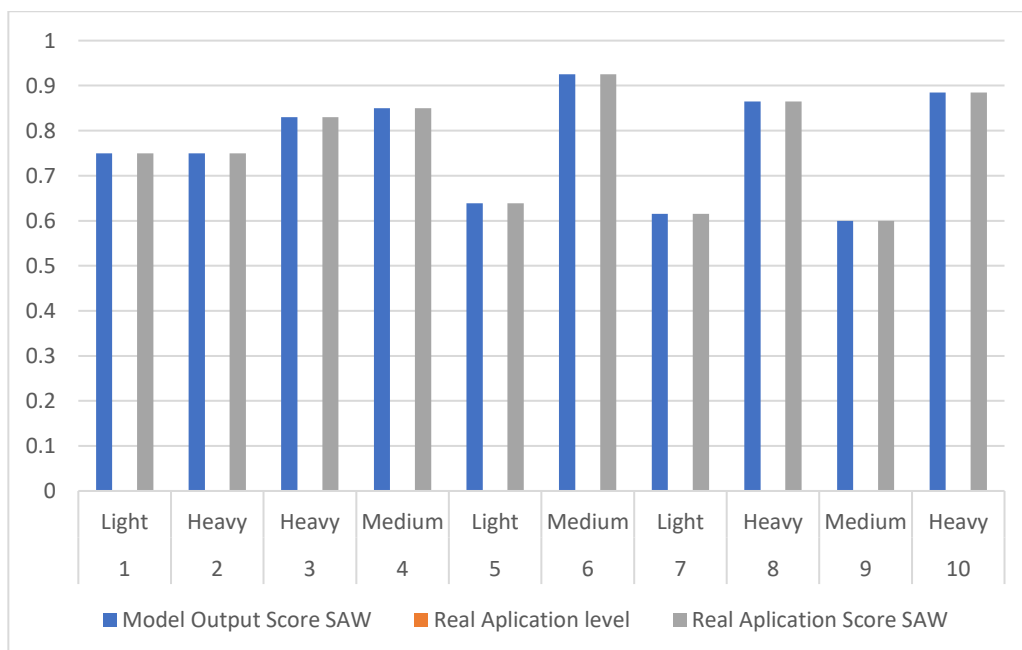

Figure 5. Comparison result graph of Output model and Real Application

Figure 6 illustrates the outcomes of the reporting application. where the reporter can view the status of the reporting, including whether it has been processed, received, or concluded, as well as the results of the reporting. This information can assist the reporter in monitoring the reporting process and conducting real-time follow-up.
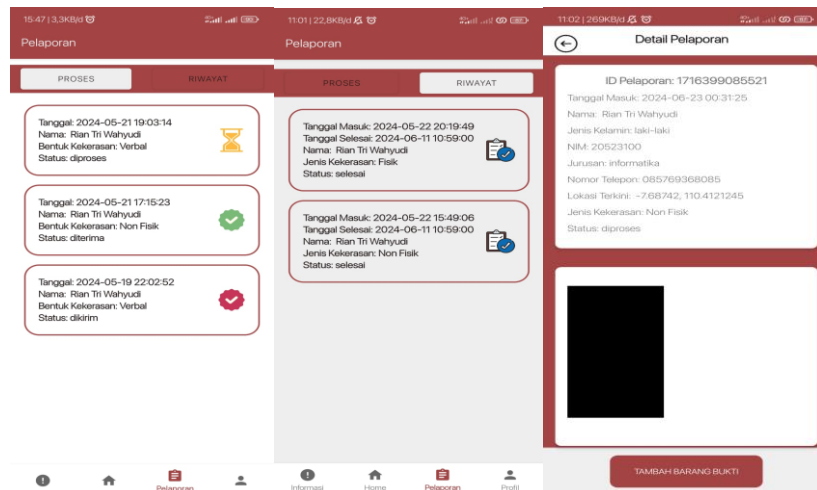

Figure 6. Application reporting acts of Sexual Violence

Figure 7 displays a concrete illustration of the outcomes generated by the decision support system for reporting instances of sexual violence. The PPKS utilizes the outcomes of this process to promptly offer a resolution to the reporter for further action on the report.

Figure 7. DSS for sexual violence action level

4. DISCUSSIONS

The development of decision support systems for reporting acts of sexual violence is crucial in addressing underreporting and enhancing survivor support. Recent research highlights various

technological and communicative approaches that can improve reporting mechanisms and survivor experiences.

4.1. Local Support Services

The presence of local support services positively influences the likelihood of reporting sexual violence. Evidence suggests that accessible support can empower victims to report incidents, especially following awareness campaigns [42]. Additionally, location-based applications can provide real-time reporting options, enhancing the safety and confidence of victims in reporting incidents [43], [44].

4.2. Communication and support systems

Effective communication strategies are essential for improving disclosure encounters. Research indicates that survivors often face negative experiences during reporting, which can deter them from seeking help [45]. Implementing trauma-informed responses from support providers can significantly enhance the reporting experience, making it more supportive and less intimidating.

4.3. Natural Language Processing (NLP) Systems

NLP-based systems can automate the reporting process, improving accuracy and efficiency. For instance, a study demonstrated a system achieving 91% accuracy in identifying and handling reports of sexual violence on campus [46]. Techniques like sentiment analysis and entity recognition facilitate anonymous reporting, which is vital for encouraging survivors to come forward.

4.4. Risks and Challenges in Real-world Implementation

Despite the benefits, implementing digital reporting applications in real-world contexts presents multiple risks. Chief among them are data privacy and security concerns. Sensitive personal information—such as victim identity, incident details, and geolocation data—must be protected against breaches, which could retraumatize survivors or expose them to further harm .

Furthermore, disparities in digital literacy and access remain significant, particularly among marginalized and rural populations who may lack the resources or skills needed to use these tools effectively. Misuse of reporting platforms, including malicious or false reports, may also undermine the credibility of the system and divert critical resources. Therefore, robust verification mechanisms are essential while maintaining a user-friendly and survivor-sensitive interface.

Legal recognition and admissibility of digital reports vary across jurisdictions, posing additional challenges to institutionalizing such tools within existing legal frameworks. This necessitates coordinated efforts between software developers, legal entities, and campus-based task forces to standardize and validate digital reporting mechanisms.

Several studies aim to facilitate the process of reporting acts of sexual violence digitally so that follow-up reporting can be carried out immediately [47]. The purpose of this research is to improve the decision support system for reporting sexual violence by increasing education about sexual violence, providing training on reporting procedures, and encouraging an educational climate that supports victims to immediately report incidents. [48] In addition, the reporting system also aims to assist crime analysts and investigators in connecting serious sexual offenses. [49]

This decision support system, which was built as a forum for reporting acts of sexual violence, can make it easier for victims of sexual violence and the investigation team, so that the reporting process can be completed quickly and in accordance with the stages of the process in government regulations. While these advancements show promise, challenges remain, such as the stigma surrounding reporting and the emotional toll of engaging with the criminal justice system, which can deter survivors from coming forward [50].

5.   CONCLUSION

After conducting tests on many data samples and performing black box testing to verify that all system flows and functions are operating as intended, it may be concluded that the system is working successfully and without any issues. In addition, to ensure the accuracy of the system's outcomes, the results are also evaluated by comparing them with the SPK test results to determine the extent of sexual violence experienced by the reporter. This evaluation aims to verify that the system's output aligns with reality, resulting in a 100% accurate outcome. Consequently, it can be inferred that the SPK application effectively supports the process. Timely reporting of incidents of sexual violence in accordance with the appropriate reporting category level.

This study contributes to the field of human-centered computing and the broader domain of computer science by showcasing the integration of lightweight DSS models into mobile platforms. The application of the Simple Additive Weighting (SAW) method in assessing case severity exemplifies the viability of multi-criteria decision-making (MCDM) in constrained environments while maintaining computational efficiency and interpretability.

Moreover, this work emphasizes the ethical dimensions of computing in socially sensitive contexts. By aligning technological innovation with societal needs, particularly in addressing stigmatized issues like sexual violence, the study reinforces the importance of responsible AI development. The proposed methodological framework—combining DSS logic, secure data handling, and usability-focused validation—may serve as a blueprint for future applications in e-governance, public health informatics, and crisis response systems.

Furthermore, this research opens avenues for future work in several directions. First, the system can be extended with machine learning algorithms to enhance case prioritization based on dynamic contextual data and survivor feedback. Second, further cross-platform integration—such as interoperability with institutional legal systems or mental health support services—can significantly increase its real-world applicability. Third, longitudinal studies involving real users in diverse socio-cultural settings are necessary to evaluate long-term usability, trust, and impact. These enhancements would not only improve system performance but also contribute to the growing body of ethical, user-centered technologies aimed at addressing complex social problems.

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