Brilliance
Research of Artificial Intelligence

E-ISSN : 2807-9035
Volume 4, **Number** 2, November 2024
https://doi.org/10.47709/brilliance.v4i2.4207

Implementation Of Weighted Aggregated Sum Product Assessment (Waspas) Method In Determining English Language Learning Levels At Vanka Speaking Course Sumbawa

Virna Febri Andini[1], M. Julkarnain[2*] Yuliadi[3]
[1,2] Informatika, Sumbawa University of Technology, Sumbawa, Indonesia
[1]virnafa@gmil.com, [2*]m.julkarnain@uts.ac.id, [3]yulaidi@uts.ac.id

open access

***Corresponding Author**

Article History:
Submitted: 01-07-2024
Accepted: 30-10-2024
Published: 29-11-2024

Keywords:
Decision support system; WASPAS Method; RAD Method; PHP; Laravel.

ABSTRACT

English is an international language that plays a crucial role in global communication. English is very influential in aspects of life, ranging from the work sector to the education sector. Vanka Speaking Course Sumbawa is one of the course institutions in Sumbawa Regency that accepts participants from various levels, namely elementary to junior high school, with multiple levels and six levels of learning. Currently, Vanka Speaking Course Sumbawa has seven tutors with 142 students divided into 13 regular classes (117 people) and 12 private classes (25 people). In a language course like this, determining the student's learning level is a critical initial stage. This allows teachers to design learning programs with suitable modules and materials to meet the needs of each student. The course party still needs help determining the initial stage and learning level that suits the student's abilities. This study aims to apply the Weighted Aggregated Sum Product Assessment (WASPAS) Method in determining the level of English learning by selecting alternatives based on specific criteria. The development method designs the system using Rapid Application Development (RAD), PHP programming language, Laravel framework, MySQL database, and Unified Modeling Language (UML). After being built and tested using black box testing, this application can be run properly and help Vanka Speaking Course Sumbawa make decisions related to determining the level of English learning. The results of this study can improve the accuracy of assessment in determining the level of English learning in students and ultimately further improve the quality of learning at the Vanka Speaking Course.

INTRODUCTION

English is an international language that plays a key role in global communication (Digitalfatih, 2020) (BBPMP Jatim, 2020). English has a significant impact on various aspects of life, from the work sector to the education sector. In the work sector, having a good command of English is essential for communicating with companies that have global relations. Therefore, prospective employees are required to attach English proficiency certificates such as the Test of English as a Foreign Language (TOEFL) and the International English Language Testing System (IELTS). In the education sector, English is given special attention, as evidenced by the release of the Merdeka Curriculum by the Indonesian Ministry of Education and Culture in February 2022, which encourages teaching English from elementary school onwards. Teaching English from an early age is considered to be in line with the government's commitment to developing the Pancasila Student Profile, which includes global diversity (NuansaNTB, 2020) (Gunawan, 2023) (Sitinjak, Maman, & Suwita, 2020).

Sumbawa is a district that implements the Merdeka Curriculum, where one of the results can be seen in the inclusion of English lessons for elementary school (SD) students in Sumbawa. English lessons are an elective subject for students, conducted for about 70 minutes or once a week. Due to the emphasis on students meeting English language learning competencies at school, English proficiency has become a priority and is given special attention by students. To achieve a more adequate level of proficiency, many students join English courses (Lestari, 2020) (Fitria, 2020).

Vanka Speaking Course Sumbawa is one of the English language course institutions located in Sumbawa Regency and is committed to improving the English language skills of its participants. The institution accepts course participants from elementary school (SD) to junior high school (SMP), with class levels ranging from beginner to advanced. Currently, Vanka Speaking Course Sumbawa has 7 tutors with a total of 142 students divided into 13 regular classes (117 students) and 12 private classes (25 students). In the context of language courses like this, determining the students' learning level is a crucial initial step. This allows teachers to design learning programs that are tailored to the specific needs of each student, using appropriate modules and materials.

The method currently used to determine learning levels at the Vanka Speaking Course is not optimal, as the

Brilliance
Research of Artificial Intelligence

E-ISSN : 2807-9035
Volume 4, **Number** 2, November 2024
https://doi.org/10.47709/brilliance.v4i2.4207

admin only groups names randomly. As a result, many tutors have to restructure classes that are already in progress or suddenly change the modules and teaching materials used because they are not suitable for the student's abilities. This is due to the fact that many students enroll from different levels, making it difficult for the admin and tutors to determine fixed classes based on the student's abilities.

Based on the problems at the Vanka Speaking Course, the author intends to develop a decision support system that can be used to determine English language learning levels at the Vanka Speaking Course Sumbawa. The approach used is the Weighted Aggregated Sum Product Assessment (WASPAS) method. This method is a derivative of the Multi-Criteria Decision Making (MCDM) method, which selects alternatives based on certain criteria (Dr. Dedek Indra et al, 2023). In this case, the WASPAS method is very suitable for the problems at Vanka Speaking Course Sumbawa, as this method has adequate accuracy in determining English language learning levels.

Therefore, the author intends to provide a solution by applying the Weighted Aggregated Sum Product Assessment (WASPAS) method to determine English language learning levels at the Vanka Speaking Course Sumbawa. It is hoped that the results of this research can help improve the accuracy of assessment in determining English language learning levels for students and ultimately enhance the quality of learning at the Vanka Speaking Course.

LITERATURE REVIEW

A literature review was conducted to review or examine the results of previous research papers that are relevant and in line with the theme/object of the research study. The results of previous research are used as a reference to determine the direction of the research. The research is as follows:

1. Decision Support System for Determining English Instructors Using the Simple Additive Weighting (SAW) Method. This study used the SAW method for data calculation and built an application to determine English instructors (Sunandar & Rajagukguk, 2019).
2. Application of the WASPAS method in determining the selection of majors in the Informatics Engineering Study Program. This study developed a decision support system to help students choose a major based on their abilities. The criteria used were informatics logic, statistics and probability, and multimedia (Syaipuddin & Himawan, 2020).
3. Decision Support System for Determining English Language Course Institutions with the Weighted Product Method. This study developed a decision support system that ranks English language course institutions in Pekanbaru based on preference values, allowing users to choose the best alternative according to their needs (Sukamto, 2021).
4. Application of the WASPAS Method in Choosing Universities for School Students. This study applied the WASPAS method to help students choose universities that match their criteria (Lubis & Gusmaliza, 2022).
5. Application of the WASPAS Method in Determining Major Interests in New Student Admissions. This study developed a decision support system for new students to choose their majors (Alfarisi & Syafii, 2023).

After analyzing the five studies above, the author found several differences between previous research and the research to be conducted. The differences include the alternatives and criteria used, as well as the menus and features that will be displayed. In this study, a decision support system will be built using the WASPAS method, which has 6 alternative levels (beginner, level 1, level 2, level 3, level 4, and level 5) and criteria such as speaking, reading, listening, writing, and vocabulary. These alternatives and criteria will be input into the system. The goal of applying the WASPAS method is to help Vanka Speaking Course Sumbawa improve in the future.

METHOD

To provide a clear and structured path, this research follows several steps that flow logically and systematically, applying the weighted aggregated sum product assessment (WASPAS) method and utilizing the Rapid Application Development (RAD) method (Ramadhan & Nufriana, 2019). This research is conducted through several stages. The following is a flowchart of the research method in applying the Weighted aggregated sum product assessment Method in determining the level of English language learning at the Vanka Speaking Course Sumbawa.

Brilliance
Research of Artificial Intelligence

E-ISSN : 2807-9035
Volume 4, **Number** 2, November 2024
https://doi.org/10.47709/brilliance.v4i2.4207

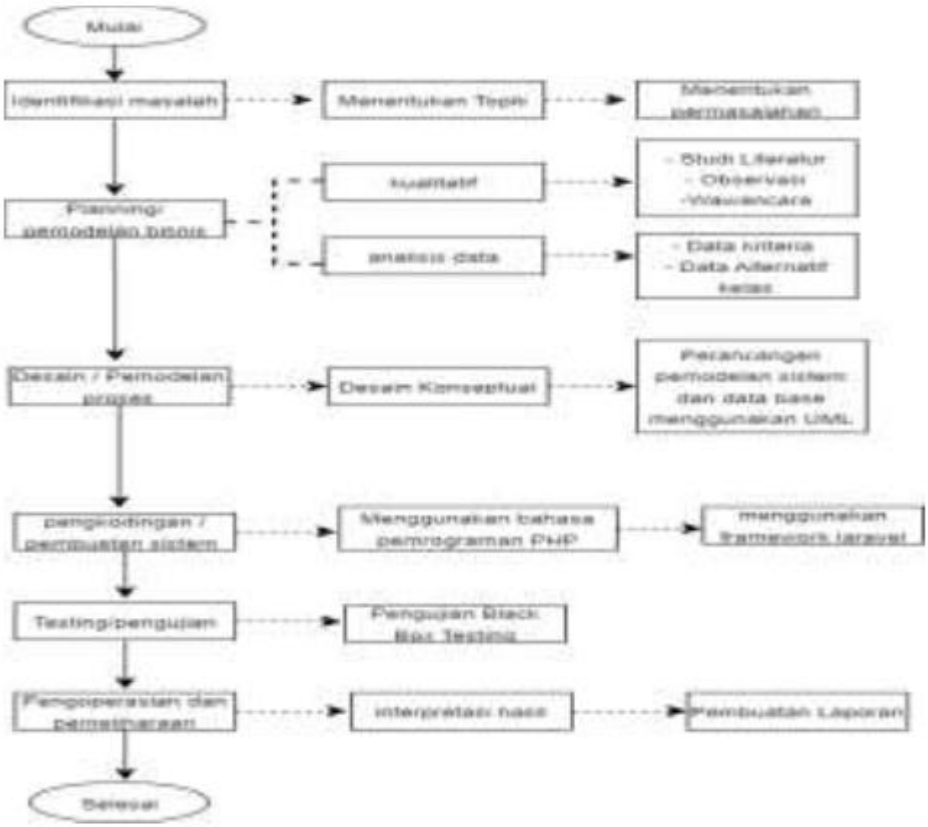

Figure 1. Research method

1. Data Collection Method

This research uses qualitative methods for data collection and processing techniques. The primary data in this study were obtained through two methods, namely observation and interviews. The observation carried out in this study was observing and recording several things related to the learning module and several levels of learning in the Vanka Speaking Course Sumbawa. The interview conducted by the author in this study was interviewing the admin and owner of the Vanka Speaking Course Sumbawa regarding the course and the flow of learning in the course. Secondary data is data collected from data sources or research that has been done before. In this study, the researcher collected data obtained from references of research that had been done. The data is as a literature study from the researcher. Software Development Method The software development system used is the Rapid Application Development (RAD) model (Susilawati , 2020).

The Rapid Application Development method has several stages, which are as follows: Planning/business modeling At this stage, it is done by understanding and modeling the business concept of the application or system, including what information should be created. Design (data modeling and process modeling) This stage is the design stage based on the agreed business context. Here the author uses the UML Diagram in designing it. Coding or system creation This stage is implementing the modeling of the data process into a program. In this case, the author uses the PHP programming language and the Laravel framework in building a decision support system. Testing / Testing At this stage, testing is carried out on the components that have been created. In this study, the author uses Black Box Testing (Triana, Yusman, & Hermanto, 2020).

2. Software Development Methods

The software development system used is the Rapid Application Model Development (RAD). Rapid Application Method Development has several stages in sequence as follows (Youtama, 2020):

a. Business planning/modeling
   At this stage, it is done by: Understand and model the business concept of The application or system including any information that must be made.
b. Design (data modeling and process modeling)
   This stage is the design stage based on the agreed business context. Here, the author uses UML diagrams to design it.

Brilliance
Research of Artificial Intelligence

E-ISSN : 2807-9035
Volume 4, **Number** 2, November 2024
https://doi.org/10.47709/brilliance.v4i2.4207

c. Coding or system creation
At this stage, implementation is carried out by modeling data processes into a program. In this case, the author uses the language PHP programming and the deep Laravel framework to build a decision support system.

d. Testing/testing
At this stage, what is done is Testing of existing components made. In this research, the author used Black Box Testing.

RESULT

In this section of the results and discussion, the results of the analysis are obtained based on data collection and analysis of the Rapid Application Development (RAD) software development method, and the use of the Unified Modeling Language (UML), which implements four types of diagrams from UML, namely Use case diagram, activity diagram, sequence diagram, and class diagram. The following is the design of the support system to be built: Use Case Design.

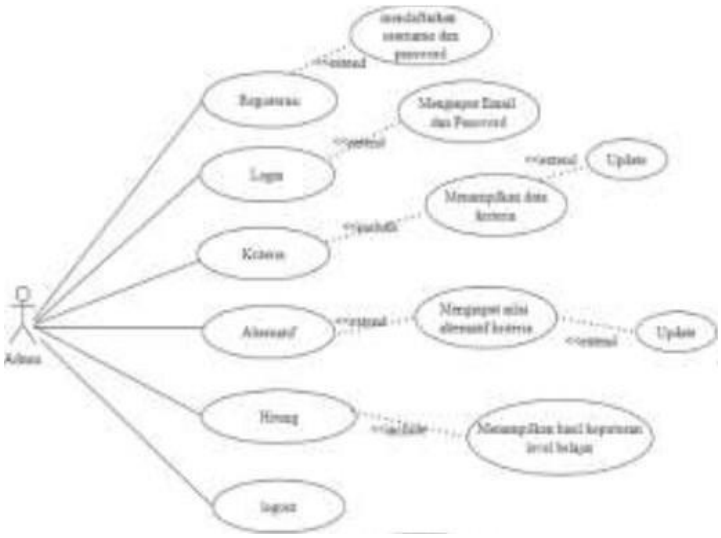

Figure 2. Usecase Diagram

Figure 2 shows the use case diagram of an English learning level decision support system consisting of one actor namely admin. Admin actor can access the login menu, student alternative, criteria, WASPAS calculation process, and logout menu. User Interface Design To show the appearance of the page that will be displayed on the user's screen, the User Interface (UI) design is used. In this study, there are several User Interface designs, namely the registration page, login page, dashboard page, criteria page, criteria update page, alternative page, alternative add page, alternative update page, count page, and logout page. Here is the user interface design:

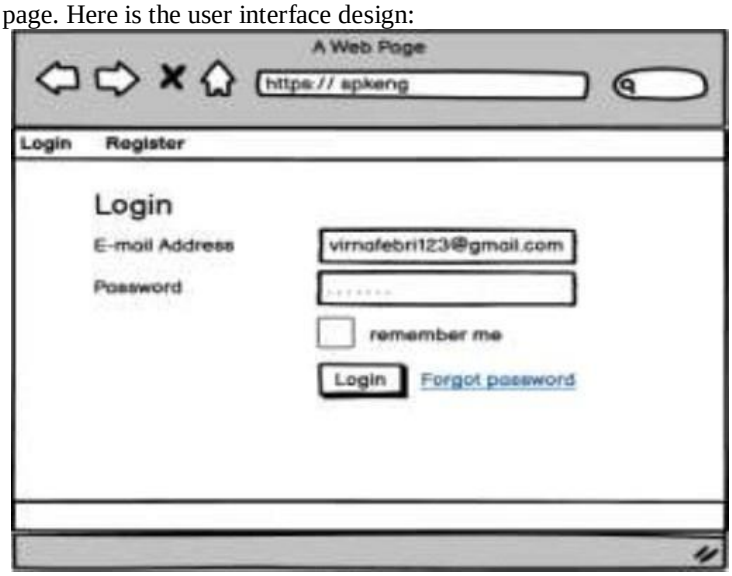

Figure 3. Login Fage Design

Brilliance
Research of Artificial Intelligence

E-ISSN : 2807-9035
Volume 4, **Number** 2, November 2024
https://doi.org/10.47709/brilliance.v4i2.4207

The third image is a login interface design for the admin page. On the login page, there are email and password input boxes. The admin can fill in the boxes with the email and password that have been registered on the registration page. After that, don't forget to check the captcha, then click the login button. If the login is successful, the admin will enter the dashboard menu. However, if the login fails, the admin can re-enter the correct information or click forgot password.

Figure 4. Criteria Fage Design

Figure 4 is the design of the data page interface criteria, where on this page there are data criteria used in determining decisions, namely the criteria code, criteria name, the weight of each criterion, type of criteria, and action menu for doing an update.

Figure 5. Alternative Fage Design

In figure 5 there is an interface design of an alternative data page, where on this page we can see the filled-in alternative data, then there is a button in the upper right corner to add data

Brilliance
Research of Artificial Intelligence

E-ISSN : 2807-9035
Volume 4, **Number** 2, November 2024
https://doi.org/10.47709/brilliance.v4i2.4207

Figure 6. Count Fage Design

Figure 6 is the design of the calculation page interface. On this page, the name of SINTEKSI II (National Seminar on Information and Communication Technology) 2023 ICT and Science for Smart Indonesia Towards National Energy Independence for Student Welfare and the obtained score will be displayed, after that it will also be displayed at what level the student is. Program Representation Based on the design that has been designed, this stage is the stage of coding the design. The result of the program implementation is the login menu, dashboard menu, criteria menu, update criteria menu, alternative menu, add alternative page, alternative data update page, calculation menu, and logout page. This decision support system is built with the PHP programming language, the Laravel framework, and the MySQL database. This is the picture used in the program representation

DISCUSSION

Based on the design that has been designed, the stage This is the stage of coding that design. The results of program implementation are the login menu, dashboard menu, menu criteria, criteria update menu, alternative menu, alternative add page, data update page alternative, calculate the menu and log page. System This decision support is built with language PHP programming, Laravel framework, and database MySQL. This is the image used in program representation:

Figure 7. Login Page

Figure 7 is the representation of a program, which is the login feature on the website. The admin should visit the login page. The admin must have an E-mail and password first in order to access the website even deeper .

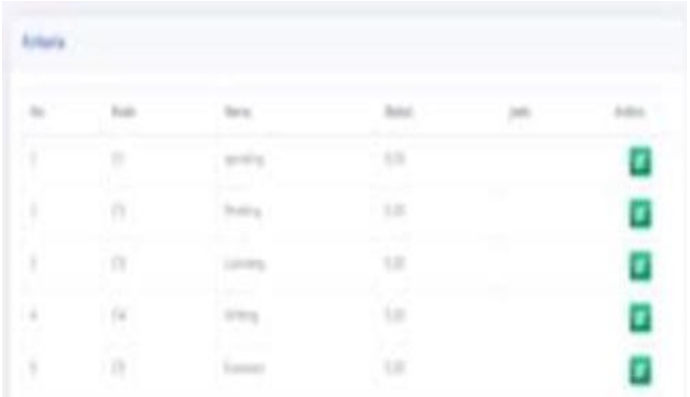

Figure 8. Criteria Page

Brilliance
Research of Artificial Intelligence

E-ISSN : 2807-9035
Volume 4, **Number** 2, November 2024
https://doi.org/10.47709/brilliance.v4i2.4207

Criteria Image 8 is the implementation of the criteria page, where the admin can see the criteria data, namely the criteria code, criteria name, criteria weight, and criteria type and there is an action menu that functions to update the criteria

Figure 9. Alternative Page

Figure 9 is the implementation of the alternative page, where the admin can view alternative data that has been added to every criterion.

Figure. 10. Count Page

Figure 10 is the implementation of the page of calculation, where the admin can see the result of the calculation, then the admin can see the result of the decision at what level the student will be placed based on the value

CONCLUSION

The implementation of the Weighted Aggregated Sum Product Assessment Method in determining the level of learning English at Vanka Speaking Course Sumbawa has been completed using the PHP programming language with the Laravel Framework and the MySQL database, this research was conducted to help Vanka Speaking Course Sumbawa in determining and dividing the learning levels of course participants based on their abilities, so that effective learning can take place. The learning levels consist of 6 levels, namely Beginner level, level 1, level 2, level 3, level 4, and level 5, which are determined based on several criteria: speaking, reading, listening, writing, and vocabulary. System modeling uses Unified Modeling Language (UML) and is tested using the BlackBox Testing method

Based on the conclusions described above, the suggestions for further development in the implementation of the Weighted aggregated sum product assessment method (WASPAS) in determining the level of learning English at Vanka Speaking Course Sumbawa are as follows: Adding delete and edit features to the criteria menu and Adding edit and delete features to the alternative menu. This application is only created and accessible by the course admin, it is expected that in the future there will be users (participants) who can access the web and can see directly in which class they are placed.

REFERENCES

Alfarisi M. I. & Safii M. (2023). Penerapan Metode WASPAS Dalam Menentukan Peminatan Jurusan Pada Penerimaan Mahasiswa Baru. J-SISKO TECH (Jurnal Teknol. Sist. Inf. dan Sist. Komput. TGD), vol. 6, no. 1, p. 274. doi: 10.53513/jsk.v6i1.7390.

BBPMP Jatim. (2020). Kehadiran Kurikulum Merdeka Dukung Optimalisasi Pelajaran Bahasa Inggris di SD," BBPMP Jatim. [Online]. Available: https://bbpmpjatim.kemdikbud.go.id/site/detailpost/kehadiran-kurikulum-merdeka-dukung-optimalisasi-pelajaran-bahasa-inggris-di-sd

Brilliance
Research of Artificial Intelligence

E-ISSN : 2807-9035
Volume 4, **Number** 2, November 2024
https://doi.org/10.47709/brilliance.v4i2.4207

Digitalfatih (2020). Mengapa bahasa inggris menjadi bahasainternasional,"*national english centre*. [Online]. Available: https://nationalenglishcentre.com/mengapa-bahasa-inggris-menjadi-bahasa-internasional

Fitria M.T. (2020). Penerapan Metode Scrum Pada E-Learning Stmik Cikarang Menggunakan Php Dan Mysql. Infotek : Jurnal Informatika Dan Teknologi, 3(1), 79–83. https://doi.org/10.29408/jit.v3i1.1793.

Gunawan D.I., et. al. (2023). Metode Sistem Pendukung Keputusan : Teori dan Studi Kasus. Indramyu, jawa Barat: CV. Adanu Abimata. [Online]. Available: https://www.google.co.id/books/edition/METODE_sistem_pendukung_keputusan_Teori/6njWEAAAQBAJ?hl=id&gbpv=1&dq=METODE+WASPAS&pg=PA178&printsec=frontcover

Lestari Y. D. & Perdana A. (2020). Pemilihan Peminatan Pada Program Studi Teknik Informatika. J. Ilmu Komput. dan Sist. Komput. Terap., vol. 01, no. 02, pp. 1–8.

Lubis J. H., Gusmaliza D., & Mesran. (2022). Penerapan Metode WASPAS Dalam Pemilihan Perguruan Tinggi Bagi Siswa Sekolah," J. Inf. Syst. Res., vol. 4, no. 1, pp. 177–183. doi: 10.47065/josh.v4i1.2358.

NuansaNTB. (2020). Kurikulum Merdeka Pembelajaran yang berpusat pada anak. Sumbawa Besar. [Online].Available: https://www.nuansantb.id/2022/03/kurikulum-merdeka-pembelajaran-yang-berpusat-pada-anak/

Voutama, A. (2020). Sistem Antrian Cucian Mobil Berbasis Website Menggunakan Konsep CRM dan Penerapan UML. Komputika : Jurnal Sistem Komputer, 11(1), 102–111. https://doi.org/10.34010/komputika.v11i1.4677

Ramdhan N.A. & Nufriana D.A. (2019). Rancang Bangun Dan Implementasi Sistem Informasi Skripsi Oline Berbasis WEB. Jurnal Ilmiah Intech: Information Technology Journal of UMUS, 1(02), 1–12. https://doi.org/10.46772/intech.v1i02.75

Sitinjak J.T.J, Maman D. D., & Suwita, J. (2020). Analisa Dan Perancangan Sistem Informasi Administrasi Kursus Bahasa Inggris Pada Intensive English Course Di Ciledug Tangerang. Insan Pembangunan Sistem Informasi Dan Komputer (IPSIKOM), 8(1). https://doi.org/10.58217/ipsikom.v8i1.164.

Sunandar H. & Rajagukguk D.M. (2019). Sistem Pendukung Keputusan Penentuan Instruktur Bahasa Inggris Dengan Metode Simple Additive Weighting (SAW). JUKI J. Komput. dan Inform., vol. 1, no. 2, pp. 59–65, 2019, doi: 10.53842/juki.v1i2.18.

Sukamto S. et al. (2021). Sistem Pendukung Keputusan Penentuan Lembaga Kursus Bahasa Inggris dengan Metode Weighting Product," Inform. Mulawarman J. Ilm. Ilmu Komput., vol. 16, no. 2, p. 103. doi: 10.30872/jim.v16i2.5936.

Susilawati T., et.al. (2020). Membangun Website Toko Online Pempek Nthree Menggunakan Php Dan Mysql. Jurnal Teknik Informatika Mahakarya (JTIM), 3(1), 35–44.

Syaifuddin S. & Himawan M.R.(2020). Sistem Pendukung Keputusan Pemilihan Pejabat Struktural Perguruan Tinggi Dengan Metode Simple Multi Attribute Rating Technique (SMART) Di Universitas Muhammadiyah Gorontalo.Jurnal Informatika Upgris, 6(1), 66–71. https://doi.org/10.26877/jiu.v6i1.6056.

Triana T., Yusman M., & Hermanto. (2020). Sistem Informasi Manajemen Data Klien Pada PT. Hulu Balang Mandiri Menggunakan Framework Laravel. Jurnal Pepadun, 2(1), 40–48. https://doi.org/10.23960/pepadun.v2i1.33