Design of Human Resource Information System as Human Resource Management Learning Innovation

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Abstract:

This study aims to determine the urgency of the human resource information system (HRIS) practicum and to design HRIS as an innovation in human resource management learning. The research was conducted in Yogyakarta Province. This research is development research(Research and Development) with the ADDIE models (Analyze, Design, Develop, Implementation and Evaluation). The subjects of this research are lecturers with HR management expertise, lecturers who have taught HR management courses, and students whohad taken HR management courses. Data collection techniques used are interviews and focus group discussions. The development procedure used is analyze and design. Based on the analysis stage, it is known that HRIS is necessary and important to be a practicum content in HR management courses. The design or design of the required HRIS includes an employee database, employee attendance, payroll, and performance appraisal.

Keywords: Information system, human resource, management, ADDIE, office automation.

Introduction

The application of technology needs to be done to create more meaningful and practical learning. The biggest challenge for educational institutions today is finding ways for students to have opportunities to succeed in work and life through problem- solving skills. Daryanes et al. (2023) argue that problem-solving skills are skills that the current generation must master. As the nation's successors, students must be able to explore problems, process problems, process data into information, and find appropriate solutions. The Ministry of Education and Culture-Research and Technology revealed that the formation and improvement of problem-solving skills need to be done continuously because, with these skills, individuals can face problems, make decisions, and evaluate their actions. In line with the opinion of Daryanes et al., Meißner (2017) also revealed that problem- solving skills are an indicator of academic achievement.

The phenomena that occur in Indonesia show the low ability of Indonesian students to solve problems. The Organization for Economic Cooperation and Development (OECD) survey results in the science category showed that Indonesia was ranked 62nd out of 70 countries participating in the PISA (Program for International Students Assessment) competition. Not only that, Fitria et al. (2018), Suryani et al. (2020), and Elvianasti et al. (2022) revealed that the low ability of Indonesian students to understand and study problems resulted in needing to get the right solution to the low problem-solving ability of Indonesian students is also shown from the results of the Final Examination, where on analytical questions, as many as 55% of students get low scores (Daryanes et al., 2023). Factors causing low student scores on analyst questions, according to Daryanes et al. (2023), are caused by the habit of providing learning material using text, where students read and memorize material more often than using interactive learning media by providing cases to practice skills.

Technology in education supports improving the learning process (Rohmah et al., 2021). The use of exciting and interactive learning media endorses the quality of learning. This statement is to Nurrita's idea (2018) that learning media plays a role in improving students' critical thinking skills and analysis so that learning material is easy to understand. Nookhong and

Wannapiroon (2015) argue that using appropriate learning media can develop students' learning and thinking skills.

Based on the results of documentation and interviews at several vocational schools and universities in Yogyakarta, learning about human resource management (HRM) or staffing has not used information systems as teaching media. Meanwhile, learning is designed with practical content in human resource management courses or subjects that should be used to learn skills in using HRIS. HRIS skills are essential to understanding, considering that HR management practices in many organizations or companies already use HRIS. Nagendra & Deshpande (2014) stated that most medium and large-scale organizations spend a lot of money investing in HR software. Thus, skills in using personnel information systems are essential so that the competence of vocational and university students is under the needs of the world of work.

This research contributes to developing instructional media that can be used for vocational and undergraduate student learning. Learning media is designed in the form of a website-based information system. In addition to supporting the improvement of the quality of education, the development of this media aims to support the concept of office automation, especially in HR management. This learning media is also expected to be used in the learning process to train students' analytical skills to solve HR management problems.

Research Methodology

This research is a Research and Development type. Researchers use the ADDIE model as a method because the ADDIE development model is effective, dynamic, and supports the performance of the program itself (Wijayanto & Santoso, 2010). The ADDIE model consists of 5 interrelated and systematically structured components, which means that from the first stage to the fifth stage, the application must be systematic and cannot be ordered randomly. These five stages or steps are elementary when compared to other design models. In this year's research, the stages that will be carried out are the Analyze and Design stages. The ADDIE development research steps (Analyze, Design, Develop, Implementation, Evaluation) in this research, if presented in chart form, are as follows:
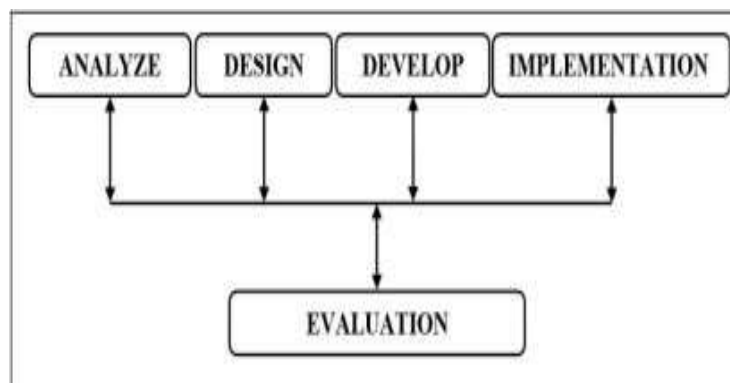

Figure 1: Model ADDIE (Wijayanto, 2010)

This research was conducted in Yogyakarta Province and involved lecturers of human resource management courses and students who had taken HR management courses. The sampling technique used is the saturated sampling technique, whereall lecturers or instructors who have taught HR management courses will become research respondents, while the sampling technique for students uses purposive random sampling. The selected students are considered active by the lecturer while attending HR management lectures. Collecting data in this study used documentation, interviews, and focus group discussion methods. Documentation is used to obtain HR management learning planning data and information in the syllabus/RPS. Interviews were used to obtain data from students' perceptions of HRIS and the need for data and information about the design and content of the required HRIS learning media. Focus Group Discussion is intended to review and provide confirmation on the data and report found. The Focus Group Discussion invites academics and practitioners in HR management.

The data collected in this study consisted of qualitative and quantitative data. Quantitative data in the form of needs analysis were analyzed using descriptive analysis. Qualitative data obtained from documentation, interviews, and FGDs will be analyzed using content analysis techniques introduced by Lodico, Spaulding, & Voegtle (Lodico et al., 2013). Based on the data analysis model, the stages of qualitative data analysis are: 1) organizing the data and conducting careful data examination, 2) re-examining the data, and 3) conducting further data processing. The researcher describes, summarizes, andorganizes the coding, which contains more specific and differentiated categories; 4) conducts the final analysis and makes interpretations and conclusions.

The learning media development model in this study uses the ADDIE development model. The development procedure in this research is as follows:

Analyze

Activities carried out at the analysis stage are analyzing the needs needed in research by collecting data for developing learning media. The data collection is related to student practicum learning in the laboratory or class, teaching materials used during learning, the number of students who already have Android-based smartphone facilities, problems encountered in correspondence learning, and student's needs for learning media. The analysis activities carried out are asfollows:

Needs Analysis - Analyzing needs to be done as a reference in product development and knowing the needs of students and lecturersto support the learning of HR management courses.

Material Content Analysis - The material's content is analyzed to determine the depth of the material and learning components contained in thelesson plan or syllabus. The content of the material to be developed in the media must be under the learning objectives.

Resource Analysis - Resource analysis was carried out to identify the available resources at the research location, which includes the availability of the facilities owned and the analysis of human resources, namely lecturers and students.

Design

The design stage is the process that precedes system development. At this stage, it is carried out by determining the method or strategy used later and then the model that will be applied to the application. So, the result of this design stageis a design that can answer the problems from the previous analysis process. Flowcharts and DFD are needed to design this HRIS information system to analyze user needs and PDM to develop the system.

Formulate Flowcharts

Formulating a flowchart aims to make the system more precise and describe the system's flow as a whole.

Programming language - Researchers use PHP and Javascript as the backend (Server Side) – frontend (Client Side) programming languageand SQL as the programming language in charge of handling the database section and use XAMPP for web server applications.

Designing media display design - After knowing the design of the program flow in the form of a flowchart from the HRIS design as a learning innovation for the Human Resource Management course, the next step is to design the program design in the form ofinput, output, and interface designs. This design uses the Pencil application tools as the design, while the explanation of the design is as follows:

      i.   Input Design
     ii.   Output Design
    iii.   Interface Design

Results and Discussion

Analysis Stage

Based on the results of the documentation, it is illustrated that there are differences in the composition of credits for MSDM courses in the Administration, Management, and Accounting Education Departments. The MSDM course inthe Accounting Education Department is not a compulsory subject but an elective course. Besides that, the credits only consist of theory credits. The Administration and Management Education Department's credits are divided into theoretical and practical content. However, the time allocation for practicum and theory in each department differs. For the Administration Education Department, MSDM course credits are two, with details of one credit of theory and one creditof practice. Whereas in the Management Department, the total number of credits is three, with details of two credits of theory and one practice.

From the results of the interviews, it is known that there are differences in the implementation of the practical content of the MSDM course. Practical implementation is divided into completing case studies and conducting research on HRM. However, some students stated that they had never practiced while attending MSDM courses. They only get material in theory. Students also noted that the lectures used the group presentation method, in which each group was asked to study material and present it in front of the class.

Interviews conducted with students also showed that practicum needed to be carried out. Students revealed that practicums could help them understand the material in MSDM courses. The theory lecturers and classmates convey in group

presentations needs to be revised to provide student understanding. It is because, with the practicum, it is easier forstudents to imagine its implementation in the world of work, such as managing human resources in companies.

The concept of office automation is widely applied in the world of work. One example is an information system commonly used in many sectors. However, the results of interviews with students show that students' knowledge of HR information systems, better known as HRIS, still needs to be improved. It can be seen from their various answers. Some students answered that they knew HRIS, and some responded that they did not understand and had never even heard of the term HRIS. Therefore, it is necessary to increase student knowledge about HRIS.

In the interview session, students were shown an example of HRIS from Mekari Talenta. Mekari Talenta is a provider of HR software to assist companies in managing employee data. The talent application has various HR management features, such as an employee database, time management (attendance), payroll, and company. After beingshown the application, students agree that in the MSDM course, there is an application such as talent used to assist in implementing practical content. This application makes it easier for students to understand HR management practices incompanies today.

The design of the HR management application is carried out to facilitate practical content in the MSDM course. By applying the talents shown in interviews, students can learn more about managing company employee data. Therefore, menus are needed in the application that can accommodate the topics in the MSDM course. The menus students expect in the HRIS application include employee databases, attendance systems, payroll systems, and performance appraisals.

As for the form of the application, students choose the application to be made into the website version to make it easier to learn. Based on the results of other FGDs conducted with lecturers supporting the MSDM course, it is known that practical implementation has been carried out using different methods. In the Management Department, practice is carried out by providing case studies from foreign textbooks. There is also practice by giving assignments to students to conduct research related to HRM. Whereas in the Administrative Education Department, practice is carried out only by giving assignmentsto students to make group presentations in rotation every week. Because credits for MSDM courses at the Accounting Education Department are different, students get more theory and practice only at the end of learning, especially on HR information systems material.

To facilitate the implementation of practicum content, the results of the FGD stated that the lecturers agreed that students could use HRIS to carry out practicums. Not all topics or material can be done with practicum. There need to beadjustments to the learning needs or achievements of students in each department. In general, topics that can be includedin the HRIS application and used for student practicums are employee needs analysis, payroll system, and performance appraisal. These three topics can be implemented into HRIS menus, including employee database, employee attendance, payroll, and performance appraisal.

Design Stage

In designing the HRIS application system, flowcharts describe the flow of a program for each process, and UML (Unified Modeling Language) is modeling that uses the concept of object orientation, the use case diagrams, and class diagrams. Design and build web-based HRIS applications as learning innovations in MSDM courses using three user roles: employee, admin (HRD), and super admin (manager). The following is the design of the HRIS application:
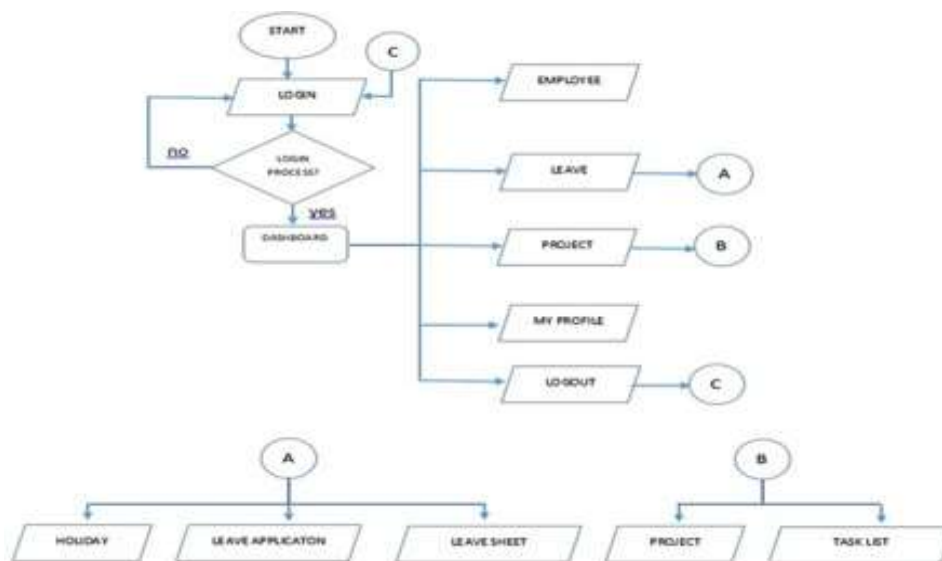
i.   Employee Flowchart

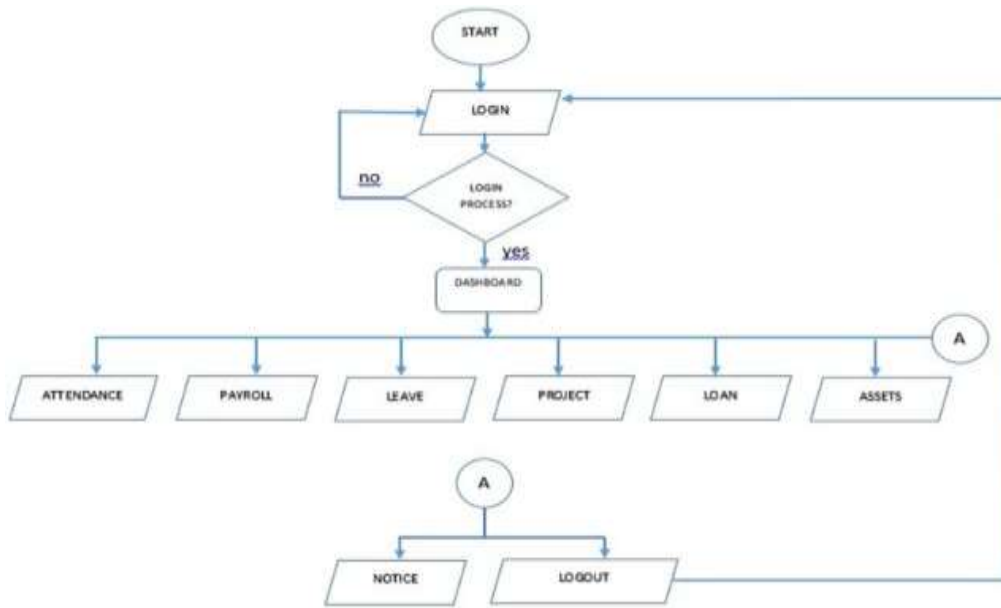Figure 2: Flowchart Karyawan

ii.   Admin Flowchart (HRD Manager)

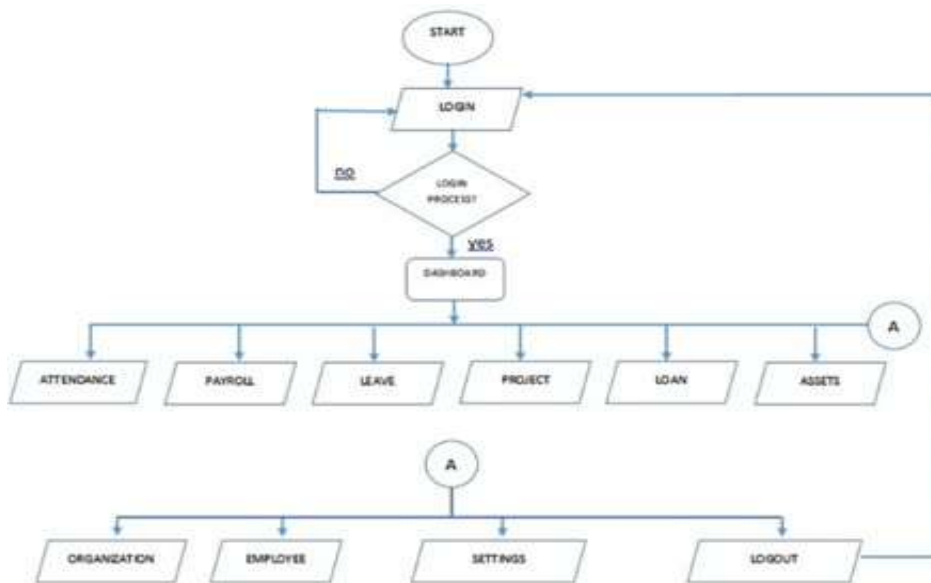Figure 3: Flowchart Admin (Manajer HRD)

iii. Flowchart Super Admin

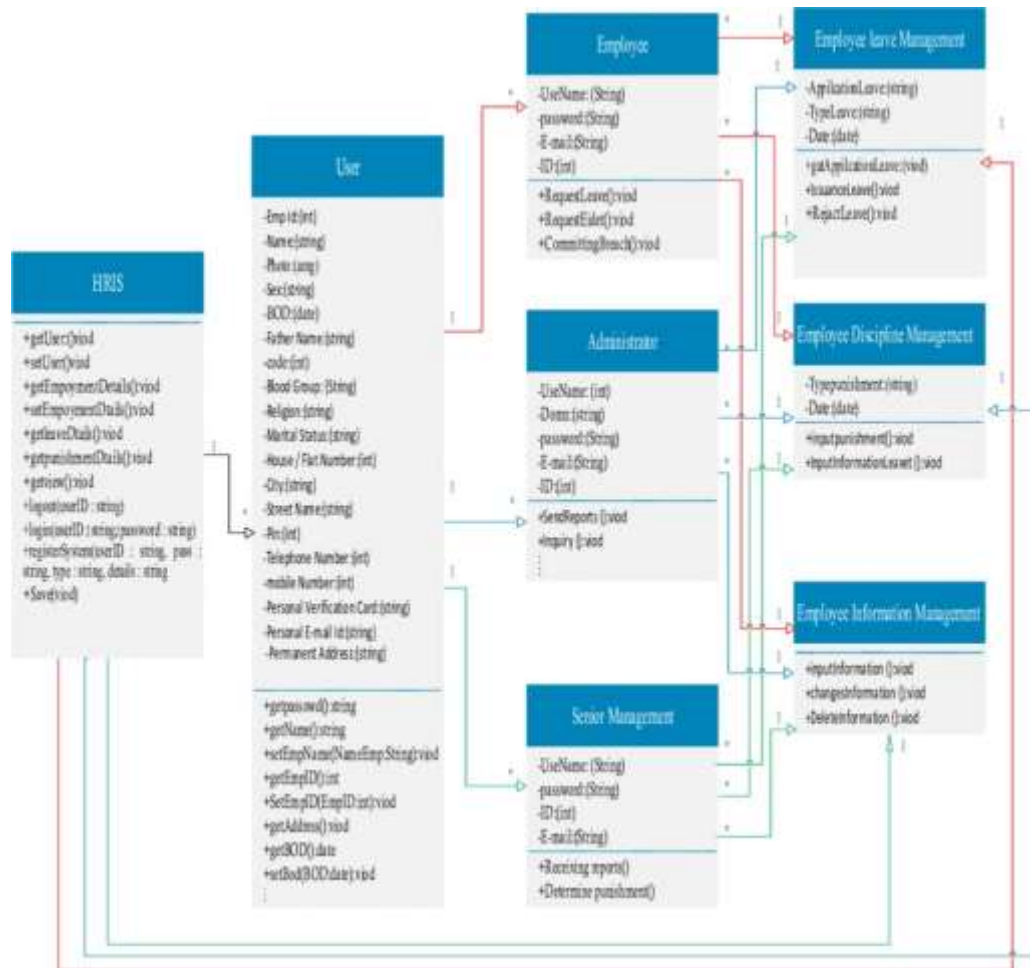Figure 4: Flowchart Admin (Manajer HRD

iv. Class Diagram

Figure 5: Class Diagram

Class diagrams are used to clearly understand web-based HRIS design systems as learning media in human resource management courses for future development. After making the class diagram, programmers are expected to have a clear path to building HRIS applications related to data requirements, programming languages, frameworks, and the database system used. The primary purpose of creating a web-based HRIS application is as a medium for student practice in HR courses that is more flexible, has a high impact, and can be developed and can be appropriately implemented when later working in companies.

Conclusion and Suggestions

Learning human resource management courses at the Faculty of Economics and Business, Yogyakarta State University, has practical content. During this time, the practicum carried out varies depending on the lecturer who teaches. Based on the research results, students and lecturers agreed that the HRIS practicum was deemed necessary and essential to complement human resource management learning. In today's technological era, HRIS has been widely used in companies and government organizations. The HRIS practicum provides an accurate picture of HR management with the help of information technology. This practicum is expected to provide students with knowledge and skills. Not all HR management functions can be facilitated in HRIS. HRIS, used in learning HR management, has menus or employee database features, employee attendance, payroll, and performance appraisal.

References

Ambo, S. N., & Ghufron, M. (2015). Rancang Bangun Aplikasi Human Resource Information System (HRIS) Menggunakan Metode Model View Controller (MVC). *Prosciding of Seminar Nasional Sains Dan Teknologi Fakultas Teknik Universitas Muhammadiyah Jakarta*, 2.

Anza, F., Sensuse, & R. (2017). Developing E-Goverment Maturity Framework Based on COBIT 5 and Implemetating in CityLevel: Case Study Depok City and South Tangerang City. *EECSI*.

Baskerville, R. L., & M. (2002). Information System as a Reference Discipline. *MIS Quarterly*, 21(1), 114.Becta. (2005). School Management Information Systems and Value for Money.

Daryanes, F., Darmadi, D., Fikri, K., Sayuti, I., Rusandi, A. M., Situmorang, D. D. B. (2023). "The development of articulate storyline interactive learning media based on case methods to train student's problem-solving ability", *Heliyon*, Vol 9 (4), https://doi.org/10.1016/j.heliyon.2023.e15082.

Davis, G. (2013). Kerangka Dasar Sistem Informasi Manajemen. Maxikom.

Elvianasti, M., Kharisma, N. A. N., Irdalisa, Yarza, H. N. (2022). Analisis kemampuan pemecahan masalah sains peserta didik pada materi perubahan lingkungan, *J. Penelit. Pembelajaran Fis*, *8*, 1–9, https://doi.org/10.30983/lattice.v2i1.5542.

Eriana, E. S. (2021). Sistem Informasi Manajemen. Unpam Press.

Fahmi, M. H., & Sar, N. P. (2018). Pengembangan Human Resource Information System (HRIS) untuk Optimalisasi Manajemen Sumber Daya Manusia di Perguruan Tinggi. *JUPITER (Jurnal Pendidikan Teknik Elektro)*, 03(02), 1–12. http://e-journal.unipma.ac.id/index.php/JUPITER/article/viewFile/3329/1846

Fitria, N. F. N., Hidayani, N., Hendrian, H., Amelia, R. (2018). Analisis kemampuan pemecahan masalah matematik siswa SMP dengan materi segitiga dan segiempat, *Edumatica*, *8*, 49–57.

Jonni, M., & Husain, S. M. (2016). Perancangan Aplikasi Human Resource Information System (HRIS) Berbasis Website PadaPT. Super Tata Raya Steel. *Jurnal Teknik*, 5(2), 104–105.

Lee, A. S. (2021). Management Information System (MIS). *MIS Quarterly*, 25(1), 3–8.

Lodico, M., Spaulding, D. Voegtle, T. Van. (2013). *Review Essay - CJAR. The Canadian Journal of Action Research*, 14(3), 78–79. http://journals.nipissingu.ca/index.php/cjar/article/view/103/65

Meißner, A., Greiff, S., Frischkorn, G. T., Steinmayr, R. (2017). Predicting Complex Problem Solving and school grades with working memory and ability self-concept, *Learn. Indiv Differ,* 49, 323–331, https://doi.org/10.1016/j.lindif.2016.04.006.

Mohapatra, S. (2009). Framework for HRIS Implementation in Non-IT Sector. Bhubaneswar.

Mondy, R., & Martochhio, J. J. (2016). Human Resourch Management. Pearson Education.

Nagendra, A., & Deshpande, M. (2014). Human Resource Information Systems (HRIS) in HR Planning and Development in Mid to Large Sized Organizations. *Procedia - Social and Behavioral Sciences*, *133*, 61–67. https://doi.org/10.1016/j.sbspro.2014.04.169

Nookhong, J., Wannapiroon, P. (2015). Development of collaborative learning using case- based learning via cloud technologyand social media for enhancing problem-solving skills and ICT literacy within undergraduate students, *Proc. Soc. Behav. Sci*, *174*, 2096– 2101, https://doi.org/10.1016/j.sbspro.2015.02.007

Novitasari, F. (2016). Implementasi Resources Information System Dalam Aktivitas Sumber Daya Manusia (Studi Kasus PadaPT. PG. Krebet Baru, Malang. *Jurnal Ilmiah Mahasiswa FEB*, 7(1), 5–6.

Nurrita, Teni. (2018). "Pengembangan Media Pembelajaran untuk Meningkatkan Hasil Belajar Siswa", *Misykat,* Vol 3 (1), pp 171-187.

Permana, M. (2017). Manajemen Sumber Daya Manusia Perusahaan. Ghalia Indonesia.

Permata, R. E., & N. (2019). Human Resource Information System (HRIS) Di PT. Sarmiento Parakantja Timber Berbasis Web. *Jurnal Penelitian Dosen Fikom (UNDA)*, 10(1).

Priyono. (2010). Manajemen Sumber Daya Manusia. Zifatama Publisher.

Rohmah L, Irma Russanti dan, Kesejahteraan Keluarga P, Teknik F, Negeri Surabaya Jl Ketintang U, Gayungan K, et al. Studi Literature: Efektivitas Penggunaan Virtual Reality Pada Mahasiswa Fashion Design.

Rusdiana. (2014). Sistem Informasi Manajemen. Pustaka Setia. J Online Tata Busana 2021; 10:168–75. https://doi.org/10.26740/JOTB.V10N02.P168-175.

S., K. A., Tjandra, S., & Tambunan, S. T. B. (2019). Perancangan Website Human Resource Administration. *Journal of Information System,Graphics, Hospitality and Technology*, 1(01), 9–14. https://doi.org/10.37823/insight.v1i01.8

Sopiah & Sangadji. (2018). Manajemen Sumber Daya Manusia Strategik. Andi.Supriyadi. (2015). Manajemen Sumber Daya Manusia. Andi.

Suryani, M., Jufri, L. H., Putri, T. A. (2020). Analisis kemampuan pemecahan masalah siswa berdasarkan kemampuan, *Awal. Musharafa: J. Pendidik. Mat*, *9*, 119–130.

Susan, E. (2019). Manajemen Sumber Daya Manusia. Jurnal Manajemen Pendidikan Islam, 9(2), 956–957.Susanto, A. (2004). Sistem Infromasi Manajemen Konsep dan Pengembangannya. Lingga Jaya.

Sutarbi, T. (2016). Sistem Informasi Manajemen (Edisi Revisi). Andi

Wijayanto, R., & Santoso, R. H. (2010). Pengembangan Bahan Ajar Matematika Dengan Pendekatan Problem Solving Berorientasi Pada Kemampuan Pemecahan Masalah. *Journal of Education*, 1(1), 4.