



## SINERGI: Human Resource Management Learning Innovation Using Website-Based Instructional Media

Fajar Wahyu Nugroho<sup>1\*</sup>, Rr. Chusnu Syarifa Diah Kusuma<sup>2</sup>, Wahyu Rusdiyanto<sup>3</sup>

<sup>1, 2, 3</sup>Department of Business and Finance, Universitas Negeri Yogyakarta, Indonesia

### Abstract.

**Purpose:** This research aims to determine the urgency of Human Resource Information System (HRIS) practicum and to develop the HRIS application as a human resource management learning innovation within the Vocational Faculty, Yogyakarta State University.

**Methods:** This research is a Research and Development study designed to be a multi-year study using the ADDIE model approach. The ADDIE model is an abbreviation for the five stages of the development process, namely Analysis, Design, Develop, Implement and Evaluate. In the previous year, the researchers had completed the design of an HRIS to be used as a learning media. Design and construction focus on needs analysis and system design formulation (Analysis and Design). In the second year of the study, researchers begin to develop designs into product prototypes and trials (Development and Implementation). In the third year, the researchers focus on evaluation. Evaluation needs to be carried out to improve the system by processing data obtained from previous phases that have been carried out. So, this research uses the Research and Development method with ADDIE model over a multi-year basis.

**Result:** The result of the study is the development and implementation of web-based HRIS for learning practices in human resource management courses for students.

**Novelty:** The novelty of this research is to develop HRIS as an interesting and interactive learning media for all students to learn human resource management as a preparation for work later. The target output of this research is articles published in reputable international journals or proceedings as well as IPR for the HRIS products being developed.

**Keywords:** Information system, Human resource management, Human resource information system, Office automation, Instructional media

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### INTRODUCTION

Information systems are increasingly being implemented across all sectors today. They facilitate the management of data into meaningful information, serving as a foundation for problem solving and decision making. Within the organization, the implementation of information systems will help the implementation of management functions so that work becomes more effective and efficient [1]. Traditionally, data and information were stored in hard-copy files, requiring a relatively long time to process. However, with the adoption of information system, these will be converted into data in the form of soft files. This transformation certainly has had a positive impact on the speed of data processing. No exception in the field of human resource management (HR), information systems in this field are starting to be widely used to help manage HR [2]. In this context such systems are referred to as the *Human Resource Information System* (HRIS).

The digitalization era presents new opportunities for educators to develop more interesting and interactive learning media. The use such media is believed to support the quality of learning. In addition, the development of learning media must align with the learning objectives being implemented. In the context of human resource management (HRM), for example, the existence of HRIS allows educators to utilize the integration of technology and information systems in the implementation of human resource management [3]. Learning becomes more engaging when it goes beyond concepts and theories, particularly by integrating technology and information systems in HRM, such as online recruitment and selection trends, introduction of computerized features for recruiting employee candidates, use of information systems for

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\*Corresponding author.

Email addresses: [fajarwahyunugroho@uny.ac.id](mailto:fajarwahyunugroho@uny.ac.id) (Nugroho)\*, [chusnu@uny.ac.id](mailto:chusnu@uny.ac.id) (Kusuma), [wahyu\\_rusdiyanto@uny.ac.id](mailto:wahyu_rusdiyanto@uny.ac.id) (Rusdiyanto)

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employee databases, and others [2]. Based on the results of previous studies, there are recommendations to provide website-based HRM learning media in the form of HRIS. This recommendation came from lecturers teaching HRM courses and requests from students.

HRIS skills are essential as many organizations and companies have already adopted HRIS in their HR management practices. Providing knowledge and skills in using HRIS is expected to be a superior value for students as prospective graduates. Through this research scheme, researchers will develop web-based HRIS learning media for HR courses. In addition to supporting the improvement of learning quality, the development of this HRIS media will support the concept of office automation, one of which is employee data and information management.

As a vocational education program, the Office Administration study program must align its curriculum with workplace skill requirements. Learning components such as materials and media should be adjusted to work needs. Until now, the office administration study program only has one learning media with a web-based information system model for archiving, namely E-RISE [4]. However, in the components of accreditation assessment and main performance indicators of Higher Education, each study program is required to create various kinds of innovations. Therefore, the development of HRIS learning media is necessary to expand the number of innovative works [5].

Advancements in technology within Accounting Information Systems (AIS) not only positively impact operational efficiency but also enhance decision-making quality and ensure consistency in the application of financial accounting theory [6]. Human resource management is a crucial system that must be implemented consistently within a supportive design [7]. The latest technology enables managers in measuring employee performance capabilities, optimizing recruitment processes, and tailoring development strategies based on specific performance needs [8]. The need for the role of professional human resource management, supported by an information system [9]. Therefore, a seamless integration of information systems, technology, and human resource capabilities is essential to produce professionals in the field of administration, making them applicable in the future workforce.

### **Human resource management**

Human resource management is a system designed to shape employee attitudes, behaviors and performance to maximize their contributions to achieve company goals [10]. According to Armstrong [11] in human resource management is a comprehensive and coherent approach to human resource development. Human resource management practices are directed to maximize their influence on company performance. Additionally, human resource management is something related to the utilization of humans in doing a job to achieve maximum and efficient levels in realizing the goals to be achieved in a company [12].

The focus of this human resource management policies can be seen as a strategic approach in guiding workers to direct them towards organizational goals. As a part of this process, organizations manage human resources in a systemic mechanism including human resources flow starting from human resource planning, recruitment, selection, job analysis formulation, and more. Rewards systems, for instance, may include remuneration package consisting of salaries, bonuses and incentives and various other forms of compensation [13].

The purpose of human resource management varies across companies. The human resource management system can be a source of company capabilities that allow the company to continue to learn to demonstrate new opportunities. According to Cushway, the primary goal of human resource management is to provide management considerations in making human resource policies to ensure that the company has employees or staff who have high performance, are always ready to overcome change, and fulfill their obligations as workers legally.

Cushway states that the purpose of human resource management is to provide strategic management considerations in making human resource policies to ensure that the company has high-performing employees who are adaptable to change and comply with legal obligations. Additionally, another key objective is to implement and maintain HR policies and procedures that support the company in achieving its goals. In general, the role of HR is to achieve the company's goals, which involve the human workforce in it, who are not only capable, skilled, but must also have the will and sincerity to work effectively and efficiently [14].

### **Learning media**

Learning media plays a crucial role in improving the learning process and learning outcomes. This argument is reinforced by the assumption that the use of media aims to attract students to be more active, effective, and interactive. Kustandi and Bambang in [15] state that learning media serves a tool that support the teaching and learning process and functions to clarify the meaning of the message conveyed so that it can achieve better and more perfect learning goals.

According to Azhar Arsyad in [15] one of the key functions of learning media is to act as a teaching aid that also influences the climate, conditions, and learning environment arranged and created by the teacher. This highlights the importance of learning media as essential tools in the educational process. The use of learning media as an intermediary for delivering information makes the media must be more varied, easy to understand, and interactive. The development of web-based learning media by utilizing web-based media promises independence of time and place to facilitate the learning process. In building a learning media, the pedagogical aspect is very vital. This requires an appropriate strategy [16], and becomes a benchmark for the development of learning media. However, teachers often face challenges in integrating learning strategies into the various available learning media.

The use of learning media is very much needed in learning activities. Learning media encompass all tools and materials used to achieve educational goals. In modern education, internet-based media such as portals, forums, blogs, websites, and other e-learning platforms provide innovative solutions for educational development [17]. The development of science and technology has also transformed learning materials. According to Dick & Carey [17], there are two types of learning materials, namely written (written) teaching materials and teaching materials provided (mediated) or called printed materials (non-printed materials).

### **Website based learning**

According to Hidayat, R. in [18], a website is a of interconnected pages that display text, images, animations, sounds, videos, and other information, both static and dynamic, each of which is connected to a network of various pages. The connection between one webpage and another is called a hyperlink, while the text used as a link is referred to as hypertext.

According to Rusman and Deni Kurniawan in [17], website-based learning is defined as a form of education that can be accessed via the internet or a web-based network (Web-Based Training, WBT), which is a type of e-learning. Web-based learning in an institution is often integrated with conventional face-to-face teaching. This is usually done via an intranet, which is usually password protected and can only be accessed by registered users. Thus, it is possible to protect the intellectual property of online materials and to support the confidentiality of communication exchanges between learners. Web-based learning can complement traditional learning programs by providing additional learning materials and enabling self-assessment. It is also particularly beneficial for supporting clinical teaching when learners are geographically dispersed.

Web-based learning is fundamentally a learning approach that is carried out based on student participation in communicating with various aspects of learning, especially utilizing media and materials. In addition, teachers must also be proficient in utilizing information and communication technology media and to maximize the potential of internet-based learning. The main principles in web-based learning according to Munir in [19] are: (1) interaction (communication) between participants and instructors; (2) use to create a consistent and simple learning environment, and (3) relevance of accurate information to improve student understanding, in addition, it also requires cooperation from many people in reflecting possible design scenarios. One widely used web-based learning is the blended learning method (hybrid). Consequently, students' achievement can improve. Furthermore, as web-based learning emphasizes written communication, it helps students develop clearer and more structured ways to express their ideas and opinions [4].

### **Human resource information system**

The Human Resource Information System (HRIS) is an integrated information system that handles problems related to human resource management in an organization (company). To handle various problems effectively, an integrated system is needed, so it is necessary to create an HRIS application that can help performance become more efficient and effective. HRIS serves as a comprehensive system for collecting, storing, and analyzing HR-related data, utilizing databases, application software, and hardware

to facilitate HR functions [20]. Human Resources Information System (HRIS) is to input HR-related data and generate valuable outputs that support decision-making processes [21]. It provides timely and relevant information in the process of making decisions related to human resources [22].

Human Resource Information System (HRIS) is a science or a way to manage the relationship and role of resources (workforce) owned by individuals efficiently and effectively and can be used optimally so that the goals (goals) of the company, employees and the community are achieved optimally using software [23]. As software with an integrated database, HRIS enables organizations to input, store, and manipulate HR data systematically. It provides a global view of HR-related information, allowing for better decision-making and improved access to essential workforce data [24].

The Human Resources Information System (HRIS) is an automated, computerized system that integrates various HR functions, including payroll process and recruitment management where all data in the personnel department is integrated, producing transparent information reports, increasing work productivity, and meeting the requirements of payroll tax laws set by the government. Some of the benefits of HRIS include single data entry, reduced costs for data entry, better service for employees, and available reporting formats [25]. HRIS plays a crucial role in Human Resources (HR) activities by systematically collecting and managing information related to human resource functions. The information in question is HR planning, recruitment, selection, performance appraisal, training and development, compensation, maintenance that can be used as a basis for making appropriate decisions [26]. As an intersection between human resource management and information technology, HRIS integrates workforce planning with digital data management. It facilitates structured data processing, streamlines HR operations, and supports organizational resource planning through standardized steps within a comprehensive system [27].

The Human Resources Information System is a comprehensive and essential system due to its usefulness. In a university setting, HRIS serves as a practical tool, for students to apply. The use of HRIS is considered an opportunity for professional human resources to have a strategic relationship with top management and to participate administratively and operatively in organizational activities [20]. The Human Resources Information System also allows to help HR functions to become more efficient and to provide better information, that aids in well-informed decision-making. As a result, it serves as a bridge between human resource management and information technology. This integrated system is designed to collect, process, store, and distribute data, facilitating decision-making, coordination, control, analysis, and visualization of HR activities within an organization [28].

## METHODS

### Type of research

The type of research used in this study is Research and Development. This study employs ADDIE model due to its effectiveness, dynamic nature, and ability to enhance performance of the program itself [29]. The ADDIE model consists of 5 components that are interrelated and systematically structured, which means that from the first stage to the fifth stage in its application must be systematic and cannot be ordered randomly. Compared to other instructional design models, ADDIE offers a simpler yet comprehensive framework. 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 study if presented in the form of a chart are as follows:

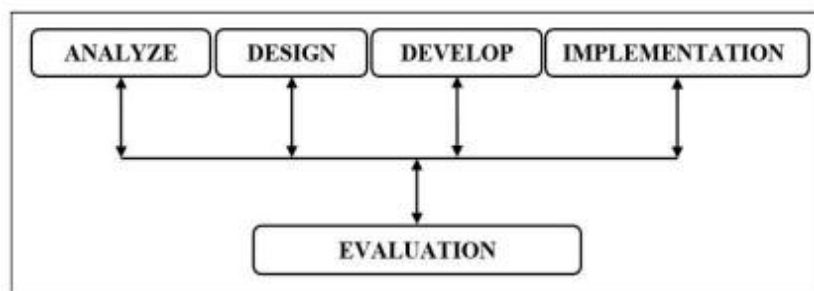


Figure 1. ADDIE model stages

### **Research setting**

The research was conducted at the Department of Business and Finance, Faculty of Vocational Studies, Yogyakarta State University in March-August 2023.

### **Development procedures**

Development procedures are steps that must be taken to produce a product. The learning media development model uses the ADDIE development model. The development procedures in this study are analyze and design.

#### **Analyze**

The activities carried out at the analysis stage involve the requirements for the research by collecting data for the development of learning media. The data collection focuses on students' practical learning in the laboratory or class, teaching materials used during learning, the number of students who have access to Android-based smartphones, the challenges faced in correspondence learning, and students' needs for learning media. The analysis activities carried out are as follows: a. Needs Analysis, analyzing serves as a reference for product development and to find out the needs of students and lecturers to support learning of HRM courses. b. Content Analysis of Material, where this involves examining the material and learning components in the learning plan or syllabus. The content of the material to be developed in the media must be in accordance with the learning objectives. c. Resource Analysis, resource analysis is carried out to identify the resources available at the research location, which includes the availability of facilities owned and analysis of human resources, namely lecturers and students.

#### **Design**

The design stage is a process carried out before system development begins. At this stage, the method or strategy to be used is determined, followed by selecting the model to be applied to the application. The outcome of this stage is a design that effectively addresses the issues identified in the previous analysis process. To design this HRIS information system, a flowchart and DFD are required to analyze user needs and PDM is used to design the system.

- 1) Formulating a Flowchart  
Formulating a flowchart aims to make the process of system creation activities clearer and can describe the overall system flow.
- 2) Programming Language  
The researcher uses PHP, JavaScript as the backend (Server Side) - frontend (Client Side) programming language and SQL for the programming language that is responsible for handling the database section and uses XAMPP for the web server application.
- 3) Designing the media display design After knowing the program flow design in the form of a flowchart from the HRIS design as an innovation in learning the Human Resource Management course, the next step is to design the program design into the form of input, output, and interface designs. This design uses the Pencil application tool as its design, the explanation of the design is: Input Design, Output Design, Interface Design.

### **Research subjects**

The research subjects involved in this study were students who were or had taken courses in Human Resource Management and Management Information Systems.

### **Data collection techniques**

Data collection in the study involves employees, admin (HRD), and super admin (manager). The following describes the design of the HRIS application which utilizes documentation, questionnaires, and focus group discussion methods. Documentation is used to obtain data and information about study programs that have HR management courses. Questionnaires are used during usability testing. Validation data from material experts and a. media experts collected using questionnaires and focus group discussions.

### **Data analysis techniques**

The data collected in this study consisted of qualitative and quantitative data. Quantitative data in the form of validation by material experts, media experts and usability tests will be analyzed using quantitative descriptive analysis. The steps in data analysis include: (a) collecting raw data, (b) scoring, (c) the scores obtained are then converted into values with a scale of 5 using the conversion reference from [30].

Table 1. Sukardjo's assessment criteria

Value	Criteria	Formula	Calculation
A	Sangat Baik	$X_i + 1,8 Sd_i < X$	$4,2 < X$
B	Baik	$X_i + 0,6 Sd_i < X \leq X_i + 1,8 Sd_i$	$3,4 < X \leq 4,2$
C	Cukup	$X_i - 0,6 Sd_i < X \leq X_i + 0,6 Sd_i$	$2,6 < X \leq 3,4$
D	Tidak Baik	$X_i - 1,8 Sd_i < X \leq X_i - 0,6 Sd_i$	$1,8 < X \leq 2,6$
E	Sangat Tidak Baik	$X \leq X_i - 1,8 Sd_i$	$X \leq 1,8$

Qualitative data obtained from documentation and FGD results will be analyzed using content analysis techniques introduced by Lodico, Spaulding, & Voegtle. Based on the data analysis model, the stages of qualitative data analysis are: 1) organizing data and conducting careful data examination, 2) re-examining data, 3) conducting further data processing. Researchers describe, summarize, and organize coding containing categories that are more specific and differentiated from other categories, 4) conducting final analysis, making interpretations and final conclusions.

## RESULTS AND DISCUSSIONS

### System design stage

In designing the HRIS application system, a flowchart is used to illustrate the flow of each process within the program, while UML (Unified Modeling Language) is a modeling that uses the concept of object orientation, namely: use case diagrams, and class diagrams. The design of a web-based HRIS application as a learning innovation in the HR course uses 3 user roles, namely as an employee, admin (HRD), and super admin (manager). The following is the design of the HRIS application:

#### Employee flowcharts

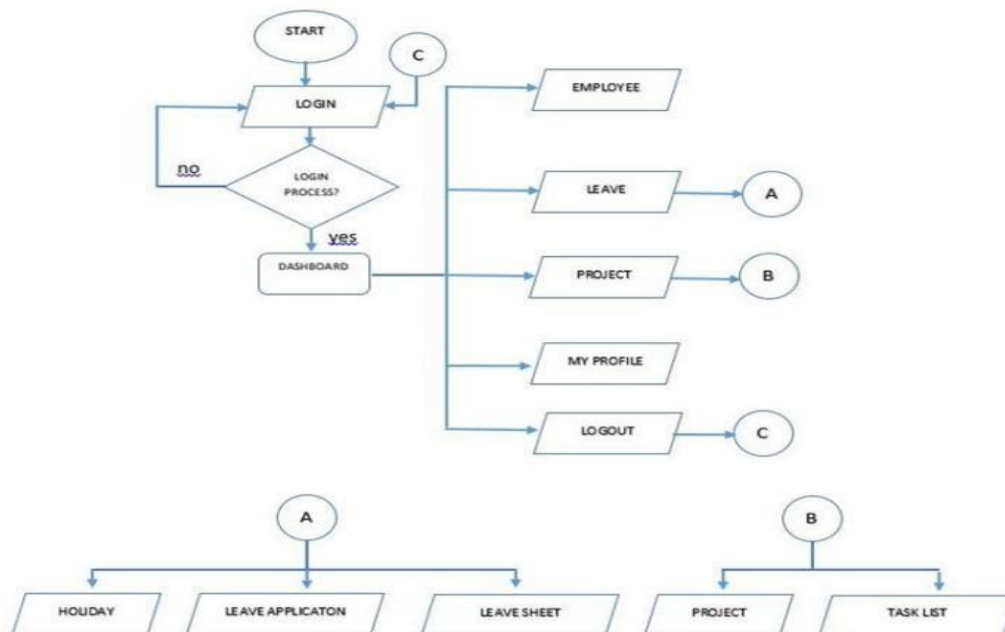


Figure 2. Employee flowchart

*Admin flowchart (HRD manager)*

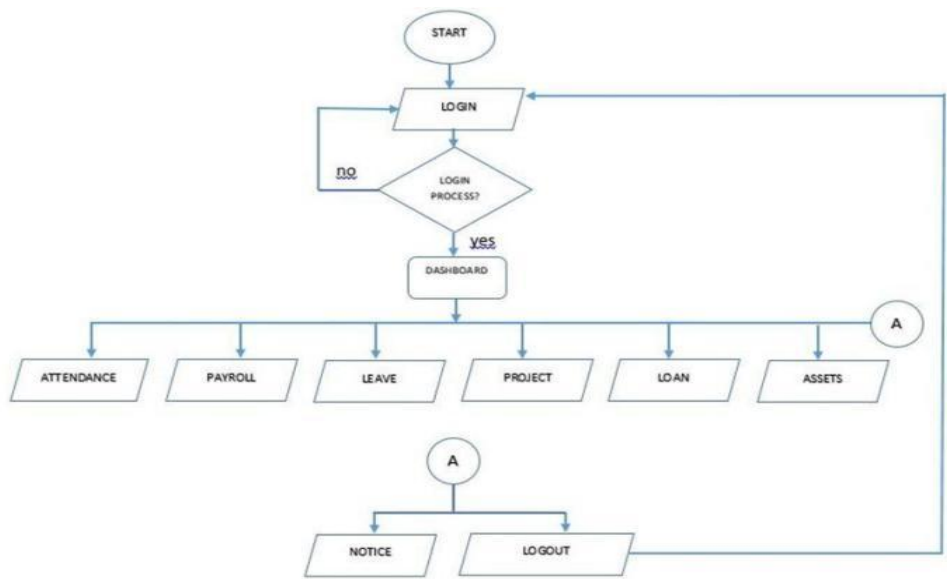


Figure 3. Admin flowchart (HRD manager)

*Super admin flowchart*

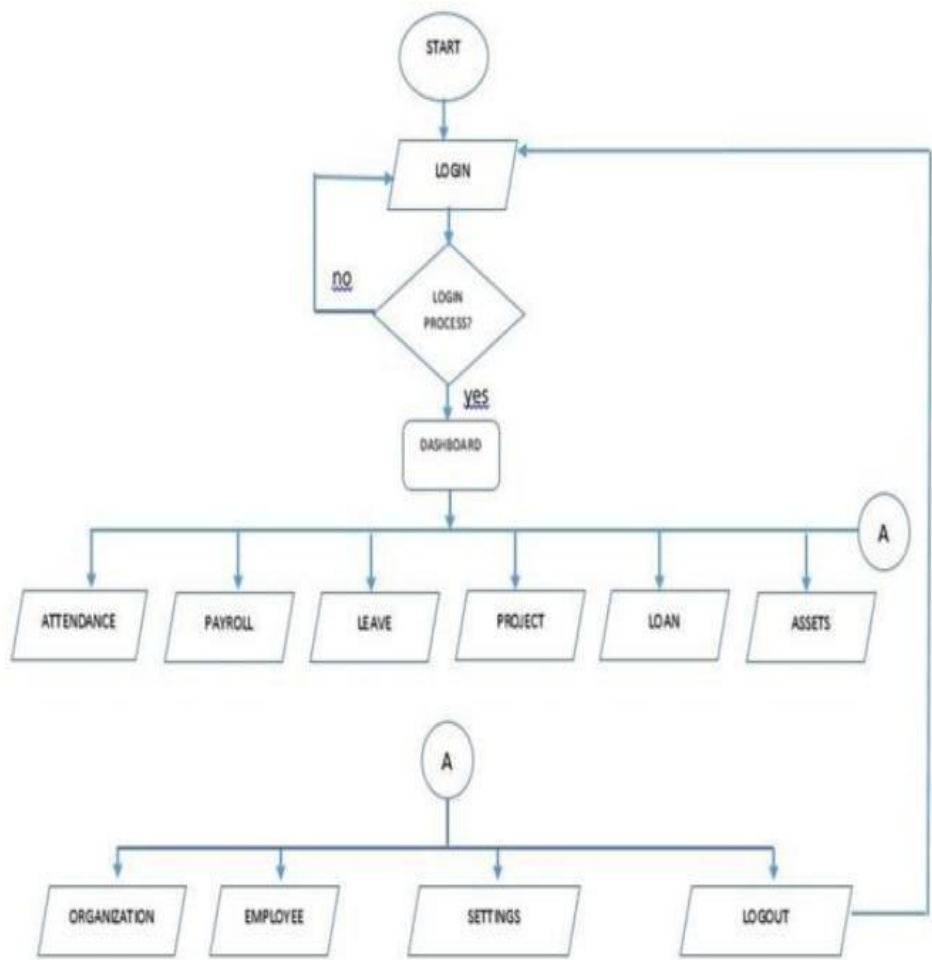


Figure 4. Super admin flowchart

## Class Diagram

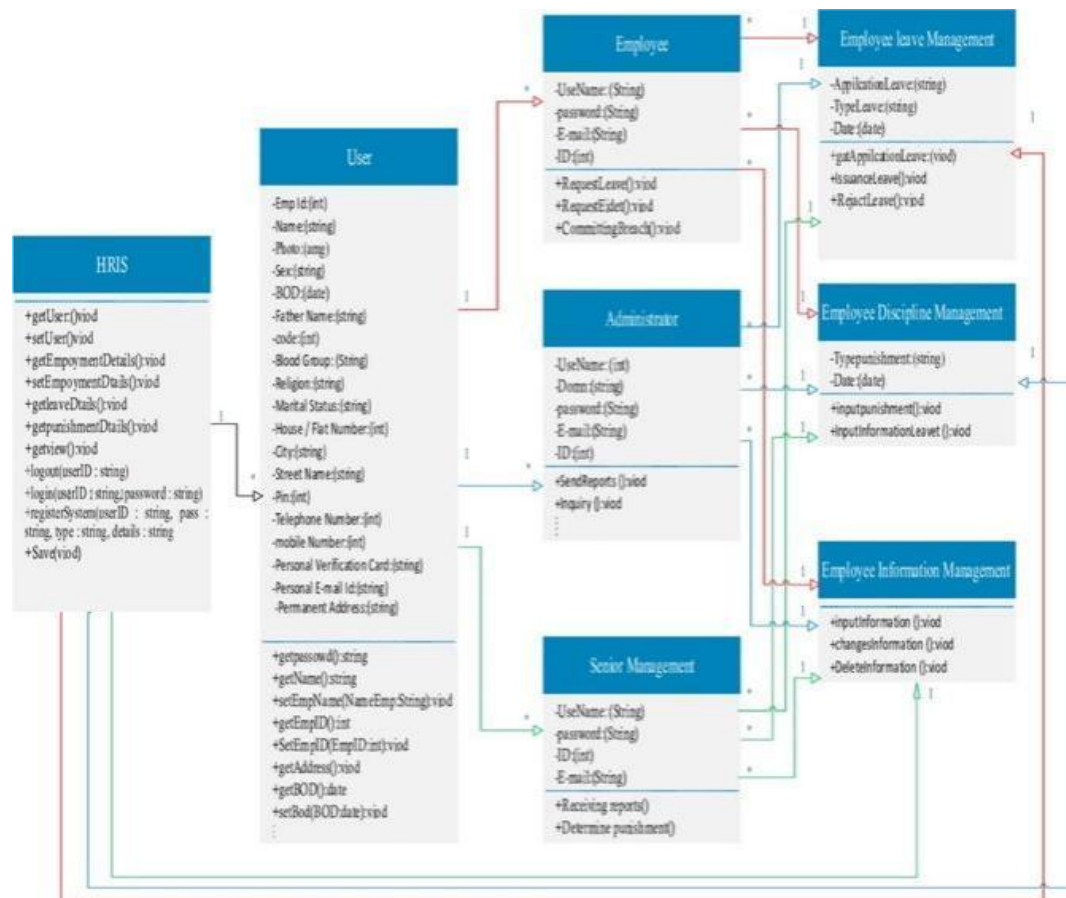


Figure 5. Class diagram

Class diagrams are used to provide a clear representation of the web-based HRIS design system as a learning medium in human resource management courses, to be developed in the future. By creating a class diagram, it is expected that programmers have a clear flow on how to build HRIS applications related to data requirements, programming languages, frameworks, and the database systems used. The primary objective of building a web-based HRIS application is as a media for student practice in the HR course that is more flexible, has a high effect, and can be developed and successfully implemented in a professional work environment.

### Interface design stage

The development of SINERGI as a web-based learning platform for HR management was carried out using the PHP programming language and the Code Igniter framework and using the MySQL database, with a total duration of approximately six months. The URL address of the Sinergi website can be accessed via a web browser at <https://sin3rgi.my.id/>. The first step in developing Sinergi involved analyzing user needs, designing the system and database, and creating a user-friendly interface.

Then, implementation (coding) is carried out in the CodeIgniter framework, after which internal testing is carried out in the localhost network to ensure that there are no errors or mistakes in the Sinergi website. After testing and ensuring that there are no errors, the next step is to purchase hosting and domains to make the SINERGI website publicly accessible. As a result, the SINERGI website serves as a valuable source of information and learning and a reliable platform to improve the understanding and skills of HR management for its users. In its use, there are three levels of users/roles according to the theory in management and organization. The differences in accounts and features for the three levels are as follows:



Table 2. Differences in user roles or levels and variations in menu access right

Role	Username	Password	Menu Variations/ Access
<b>Owner</b>	arjunada	Admin123456	Manage all functions/ features of the program
<b>Manager</b>	rusdiyanto	Admin123	Manage employee data, attendance, tasks, payroll, report access, manage clients
<b>Staff</b>	farhan	User123	Attendance, overtime/leave requests, assignments, salary information

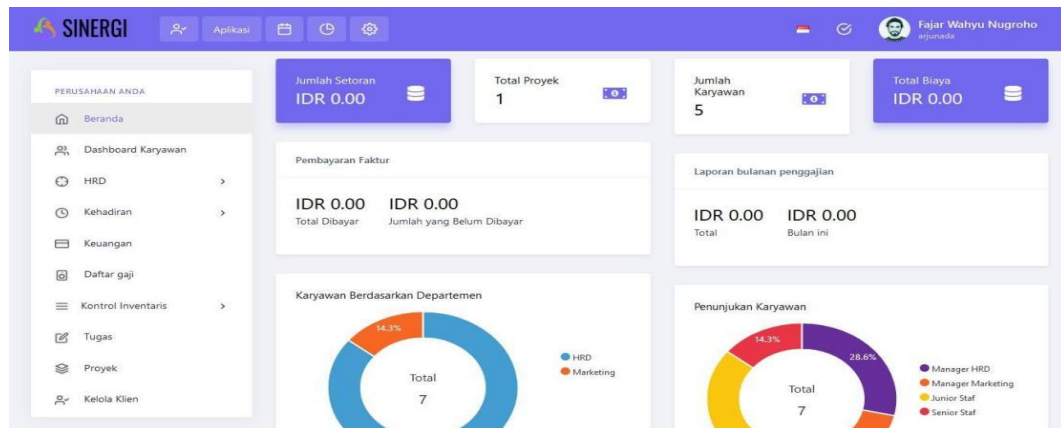


Figure 6. Owner dashboard

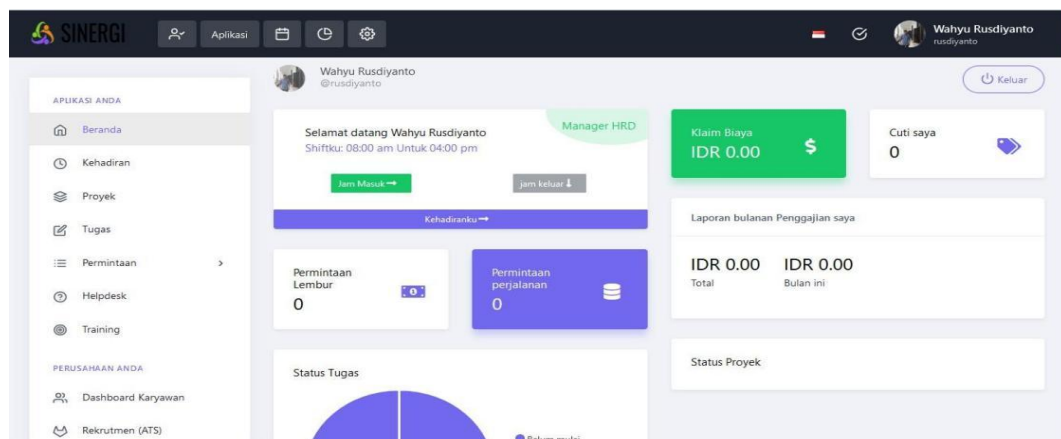


Figure 7. Manager dashboard

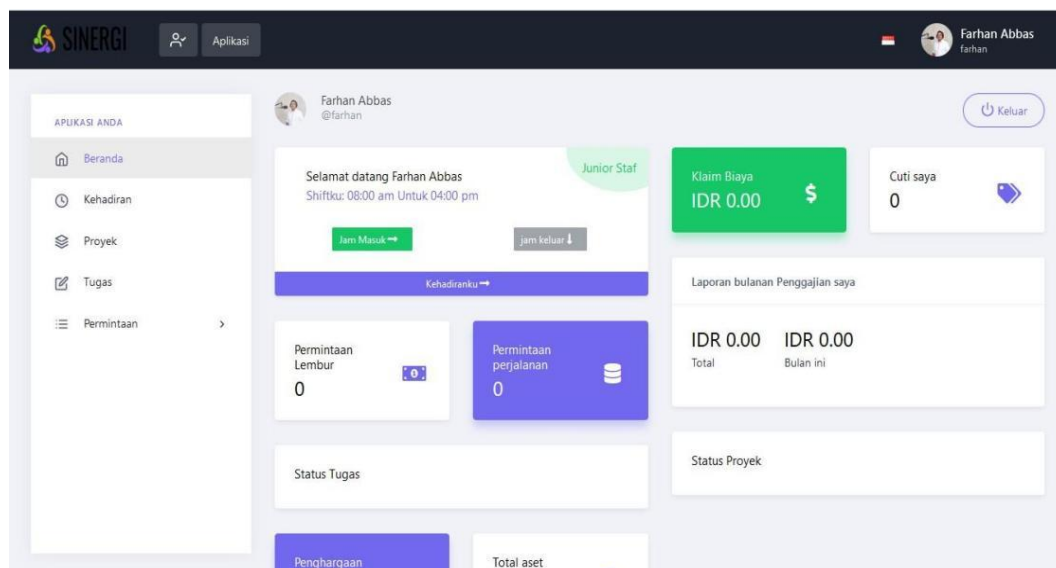


Figure 8. Staff dashboard

Based on the three images above, each user level has different access rights within Sinergi. The number of menus accessible to the owner is greater than those available to the manager, and the manager has access to more menus than the staff. The owner has full authority over all menu access, while the manager and staff have access rights based on their specific roles and functions in management.

The features and menus developed in Sinergi were designed based on input from practitioners and academics in previous research. The available features include attendance tracking linked to location, an employee database menu, an employee salary information menu, and a leave request menu. Sinergi has been evaluated by both material and media experts. Material validation was carried out by academics with over three years of experience in HR management, and the system received ratings of Very Good and Good. Media validation was carried out by academics with extensive experience in the field of learning media for more than years. In terms of media, Sinergi received Very Good and Good ratings.

In addition to the material test and media validation, a usability test was conducted to assess the ease of use of Sinergi. The usability test is given to students who have taken courses in human resource management and management information systems. The features in the synergy are relevant to the material and discussion in both courses. The usability test results showed that 54% of participants rated the system Very Good, while 43% rated it Good.

## CONCLUSION

The learning of the HR management course in the Department of Business and Finance, Faculty of Vocational Studies, UNY includes a practicum component. So far, the practicums carried out have varied depending on the lecturer who teaches. Based on the results of the study, students and lecturers agree that the HRIS practicum is considered necessary and important to complement the learning of HR management. In the current technological era, HRIS has been widely used in companies and government organizations. The HRIS practicum is believed to provide a real picture of HR management with the help of information technology. This practicum is expected to provide knowledge and skills for students. Not all HR management functions will be facilitated in HRIS. The HRIS that will be used in HR management learning has a menu or feature of employee database, employee attendance tracking, payroll, and performance assessment.

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