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Web-Based Employee Recruitment Information System Using Laravel and MySQL at St Cetak

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St Cetak is a printing company that provides production services for various media such as invitations, books, magazines, brochures, and other promotional materials. However, its employee recruitment process is still carried out manually, requiring applicants to send physical documents and relying on WhatsApp for interview scheduling. This manual approach often leads to inefficiencies, including the risk of lost or damaged documents and delays in the selection process. To address these challenges, this study designed and developed a web-based employee recruitment information system using the Software Development Life Cycle (SDLC) waterfall model, which includes the stages of requirements, system design analysis, implementation, testing, and maintenance. This system was built with PHP (Laravel framework) and MySQL as the basic data manager. Blackbox testing results showed that all system features functioned as expected. Furthermore, a usability evaluation using the System Usability Scale (SUS) resulted in a score of 72, categorized as "Acceptable." Compared to the manual process, this new system reduces document handling errors and speeds up applicant data collection, thus demonstrating increased efficiency and effectiveness in the recruitment process. Therefore, the developed system is considered feasible for implementation at St Cetak.

1. Introduction

The development of digital technology has changed the workforce recruitment process to be faster, more practical and efficient through an online system that can save time, costs and increase productivity. company (Habibie et al., 2015). However, ST Printing still relies on the method manual vulnerable to error administration And risk lost document, so that needed system Web-based recruitment information to optimize the recruitment process (Rahmat & Nabila, 2025). Various study previously prove success system online recruitment with the method development such as Waterfall, Rapid Application Development (RAD), and SWOT analysis, Which offer feature registration, login, management data applicant, timetable test, And announcement results

selection (Ardianto & Budi Sulistyo, 2020). Study This designing a more comprehensive recruitment system with registration features, application status monitoring, vacancy management, applicant data, and interview evaluation as a basis for decision making, which is tested using the Blackbox Testing and System Usability Scale (SUS) methods.

2. Method

This research section develops a recruitment information system by applying the Software Development Life Cycle (SDLC) approach using the Waterfall model. This method was introduced by Winston Royce in 1970 and is still widely used in software development today (Royce, 2021). The waterfall method is widely used in the development of web-based recruitment information systems because it provides a clear and easy-to-follow structure and is suitable for small to medium-scale projects (Bagaskoro et al., 2023). The *waterfall approach* emphasizes a systematic and linear workflow, where each phase must be completed before proceeding to the next. Therefore, each stage in the development process needs to be optimized to ensure a smooth transition to the next phase. Its structured and sequential nature makes this model relevant and appropriate for use in the development of the system studied in this research. Broadly speaking, the waterfall model approach consists of several stages: needs analysis, system design, implementation, testing, and maintenance.

2.1 Type And Approach Study

This research falls into the *applied research category*, focusing on solving practical problems in the field, namely optimizing the employee recruitment process at St Cetak Company through the development of a web-based information system. The Waterfall method divides the development process into several interrelated stages: needs analysis, system design, implementation, testing, and maintenance. Each stage is thoroughly completed before proceeding to the next, thus minimizing the risk of inconsistencies between user needs and the resulting system. In addition, this approach facilitates the documentation and evaluation process at each phase, making it relevant for the development of recruitment systems that require clear workflows and system reliability.

2.2 Object And Room Scope Study

Object study This is *a system information recruitment employee based the web* that designed Specifically for St Cetak. This system is designed to facilitate the entire recruitment process, from registering prospective employees and managing applicant data, scheduling interviews, and monitoring application status. The party that becomes users the system consists of from two role main: *administrator* (HRD) companies) and *applicants* (potential employees).

The scope of this research focused on the *development and testing of the system* to meet the company's operational needs. This process did not include integration with other external systems, such as payroll or performance management, so the focus of the research remained on simplifying the recruitment process. Furthermore, this research limited itself to the use of the Laravel framework for backend development and MySQL for database management, in accordance with the company's existing technological infrastructure (Pane & Gaustama Putra, 2023).

2.3 Technique Collection Data

Data collection in this study was conducted through observation and documentation. Observations were conducted to determine workflows, obstacles, and interactions between applicants and the company. Documentation included requirements gathering, interface design references, and functional and non-functional system specifications. These data sources informed the design and functionality of the developed application.

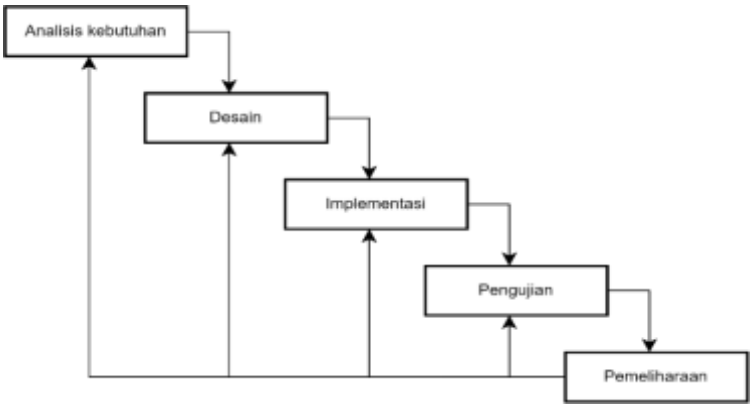
2.4 Tool And Material Which Used

This system was developed using supporting hardware and software. The hardware included a laptop with a minimum specification of an Intel Core i5 processor, 8GB of RAM, and SSD storage, enabling optimal data processing and application development.

The software used includes *XAMPP* as a local server, *Laravel Framework* for backend development, *MySQL* as a database, and *Visual Studio Code* as the main code editor. To beautify the interface, the *Bootstrap CSS framework was used* , while *Figma* was used to design an interactive and user-friendly interface (Tazkiyah & Arifin, 2022).

2.5 Procedure or Stages Study

This research follows the Waterfall work stages, which consist of five main stages: needs analysis, design, implementation, testing, and maintenance.



Picture 1 . Stages Model *Waterfall.*

a. Analysis Need : Gather information from interview And observation For determine functional and non-functional requirements (Al Hasri & Sudarmilah, 2021).

b. Design : Make modeling system use Use Case Diagram, Activity Diagram, And and designing user interfaces (Essebaa & Chantit, 2018).

c. Implementation : Change design become code program use Laravel And MySQL.

d. Testing : Do verification function system with method Blackbox Testing (Rambe et al., 2020)(Wulandari et al., 2022) and evaluate user experience using the System Usability Scale (SUS) (Hyzy et al., 2022).

e. Maintenance : Ensure system walk with Good And do update as needed (Management et al., 2024).

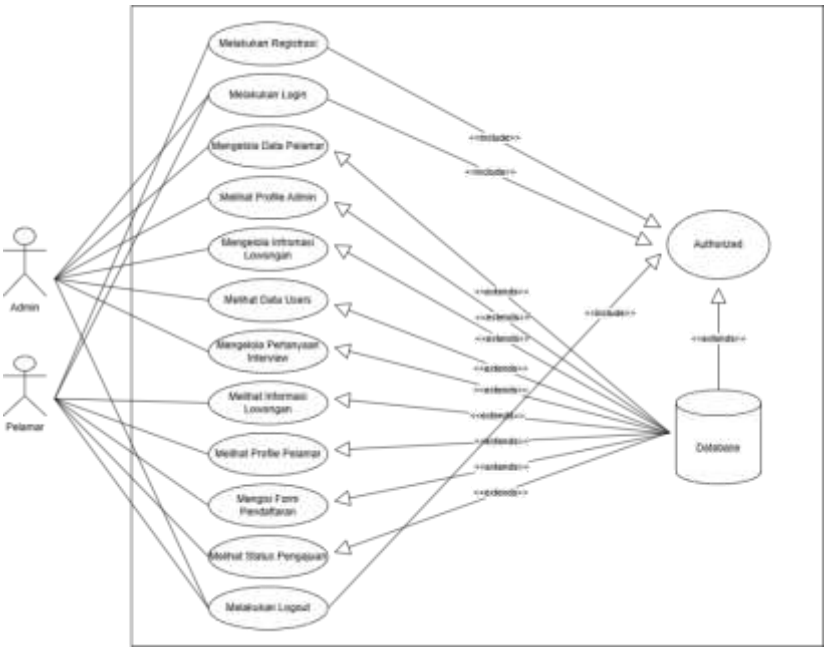
2.6 Technique Analysis Data

Data analysis was performed to evaluate whether the system met user needs. Qualitative data from interviews and observations were analyzed to refine system features, while quantitative data was obtained from *System Usability Scale (SUS) testing results, which provided a system feasibility score. Blackbox* testing results were used to validate system functionality against specifications. This combined analysis provided a comprehensive overview of technical performance and user satisfaction.

2.7 Design System

2.7.1 Diagram Use case

Use case diagrams serve as a liaison between system users and software developers, and provide a visual representation of the system's overall functionality. The system developed in this study involves two main actors: the administrator (admin) and the applicant.

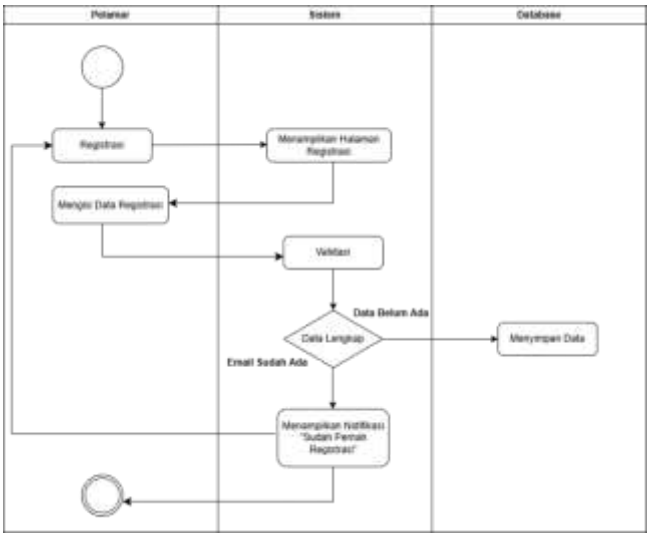


Picture 2 . Use case Diagram.

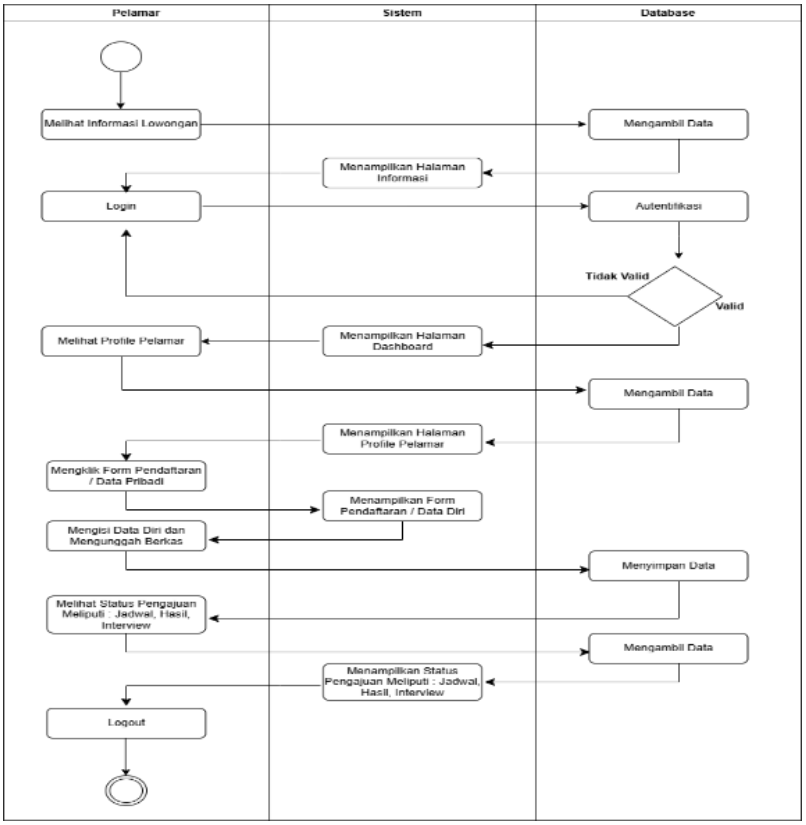
2.7.2 Activity Diagram

An activity diagram is a type of diagram used to depict the flow of procedural activities between classes in processing a particular action. This diagram emphasizes the sequence of steps taken by an actor from the initial stage to the completion of the process. Figure 3 shows *an activity* diagram of the *registration process*. In this scenario, applicants are required to create an account before they can access the main page. system. During the *registration process* , the system will check the email address used. If the email address entered has been previously registered, the registration process will proceed. canceled in a way automatic And users No can continue to stage next. Picture

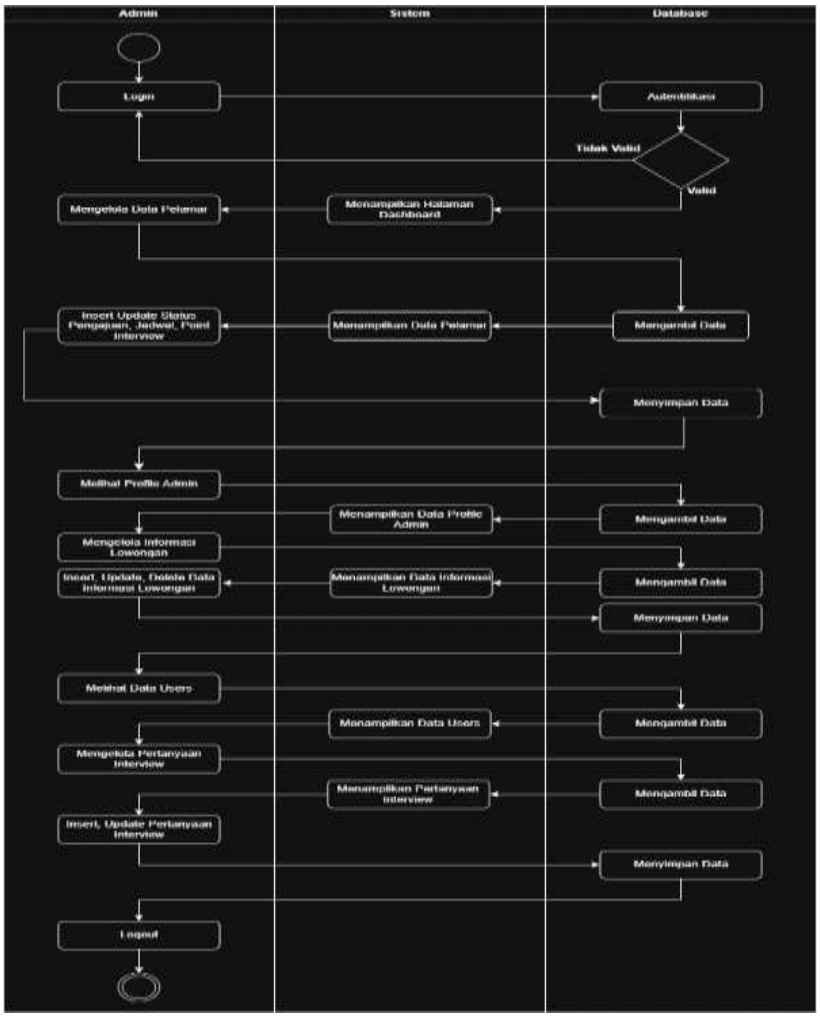
4 presents *an activity diagram* for a user acting as an applicant. This diagram explains that the applicant has access to the page information vacancy, which contain Details regarding available job positions. Before accessing other system features, applicants are required to authenticate by *logging in* . If the login information entered is incorrect, in accordance, so users will directed to appearance dashboard applicant. After After successfully logging in, applicants can complete their personal data through the registration form and access their personal profile information. The inputted data will be automatically saved to the system database. Furthermore, applicants can monitor the progress of the recruitment process through the application status page, which contains information regarding the date and time of the interview. Finally, applicants are given the option to exit the system through the *logout feature* . Figure 5 depicts *an activity diagram* showing the activities that can be performed by users with the admin role. In the process, admins have access to authenticate by logging in first. After successfully logging in, admins can manage applicant data, including actions such as updating application status, setting interview schedules, and providing assessments through interview points. In addition, admins can also process interview data by performing *insert* , *update* , or *delete actions* . Other additional features include access to view admin profiles, manage information related to job openings, and review system user data, as well as manage questions used in the process Interview. All changes or data manipulations made by the admin will be automatically saved to the database system.



Picture 3. Activity Diagram Registration.



Picture 4. Activity Diagram Applicants.



Picture 5. Activity Diagram Admin

2.7.3. Physical Entity Relationship Diagram (PERD)

A Physical Entity Relationship Diagram (PERD) is a visual representation that depicts the relationships between entities in a system, complete with the required attributes for each entity. This diagram serves as a reference for creating a physical database structure, which is then implemented using the MySQL database management system (Naseri & Nurgiyatna, 2021).

Picture 6. Physical Entity Relationship Diagram

Picture 6 shows the physical design of the database for the recruitment information system being developed, which consists of 15 main tables as data storage components.

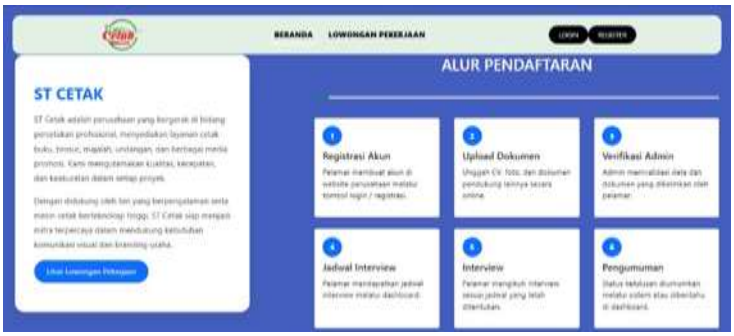
3. Results and Discussion

This research produces an information system employee recruitment based A website specifically designed for use in the St Cetak workplace. This system was developed with the primary goal of simplifying all stages of the recruitment process for both companies and applicants. Furthermore, this system is expected to accelerate and simplify the employee selection process, making it more efficient.

3.1 Presentation of Results Study

3.1.1 Page Home

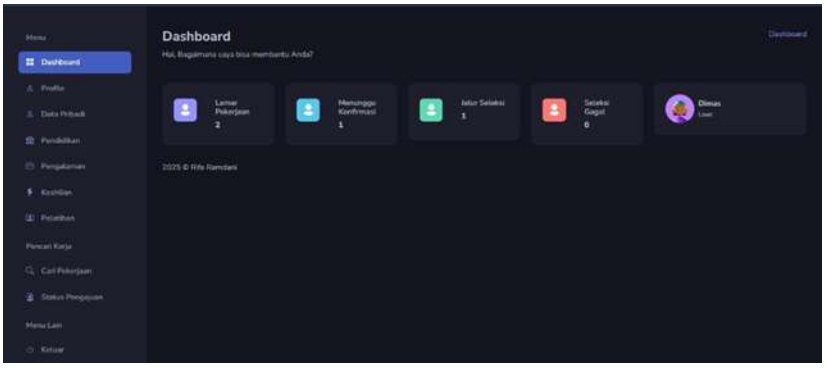
The home page is the initial display displayed when users, particularly applicants, first access the website. This page provides various information regarding current job openings, a brief description of the company profile, and a user manual to facilitate system navigation. It also provides access to the login and registration menus. An illustration of the home page is shown in Figure 7.



Picture 7. Page Home

3.1.2 Page Dashboard Applicants

The applicant dashboard is the initial display accessed after successfully logging into the system.This page displays various information related to the recruitment process, such as job applications, awaiting confirmation, selection paths, and failed selections. Key features Which available covers appearance profile applicant, form registration Which consists of This includes personal data, educational history, work experience, skills, and training. Additionally, there's a feature to monitor application progress via the submission status and vacancy information pages. Figure 7 illustrates the dashboard. Applicants can complete their personal information using the provided form and monitor any changes in recruitment status directly within the system.



Picture 8. Page Dashboard Applicants

3.1.3 Page Form Registration

Picture 8 display interface page form registration Which must filled by Prospective applicants must complete all personal information in detail and upload the required documents. The registration form includes information about their education history, work experience, skills, and training. Please note that once data is submitted through the system, it cannot be deleted or changed by the applicant.

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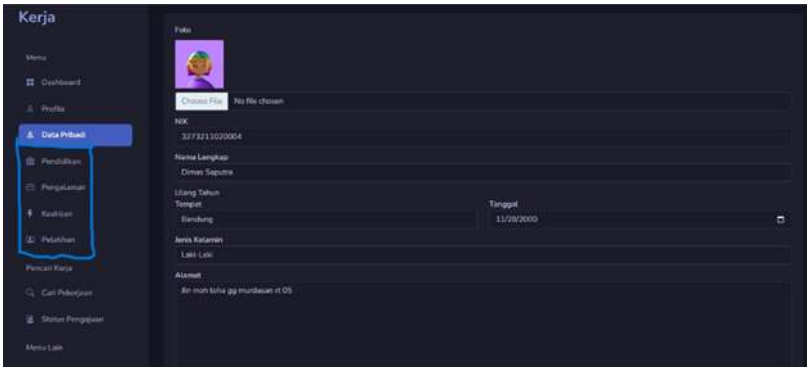


Picture 9. Page Form Registration

3.1.5 Page Page Submission Status & Vacancy Work

On the application status page, applicants can monitor the latest progress in the recruitment process. Five stages are displayed: file selection, interview process, passed interview, failed file selection, and failed interview. All over information important like date And time implementation interview Also displayed on this page. Meanwhile, the job openings page allows applicants to review detailed information about the position being offered. Once applicants apply for a position, the system will automatically direct them to the job status page. submission. Illustration about second page This can seen on Figure 10 and Figure 11, which show the application status page and the job vacancy page.

Figure 10. Page Vacancy **Drawing** Work

Figure 11. Page Status Submission

3.1.6 Page Dashboard Admin

Figure 12 shows the admin dashboard that appears after a successful login. On this page, admins can view the total number of applicants, including application status details such as those still in process, accepted, and those that failed the selection process. This feature makes it easier for admins to monitor and manage applicant data comprehensively and efficiently.

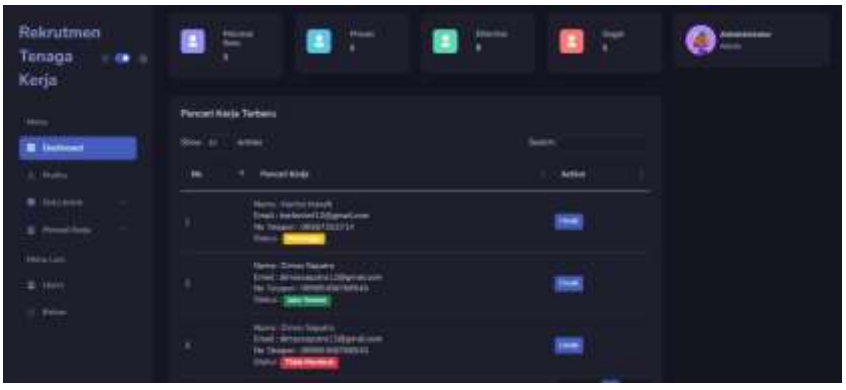


Figure 12. Page Dashboard Admin

3.1.7 Page Manage Data Applicants

The applicant data management page, as shown in Figure 13, provides comprehensive information on all applicants who have completed the registration form and applied for the position. On this page, a details button allows administrators to update the application status of each applicant. Additionally, there's an interview score feature that administrators can use as a reference during the interview process.

Picture 13. Page Manage Data Applicants

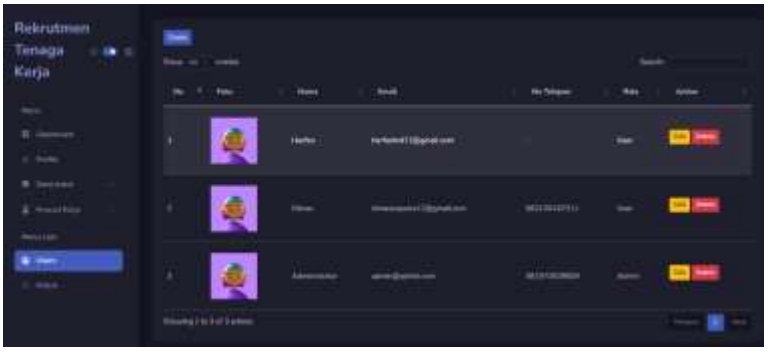
3.1.8 Page Manage Information Vacancy

The job information management page allows admins to add, delete, and update data related to job openings. Additionally, admins can insert divisions currently recruiting for display. page vacancy Work in feature applicant, as well as on page main Which appear before the applicant login process. An illustration of this page display can be seen in Figure 14.

Picture 14. Page Manage Job Vacancy Information

3.1.9 Page Users

Figure 14 displays the user data page. On this page, the system displays information related to the admin and applicant accounts registered on the website, such as profile photos, Name users, address e-mail, number telephone, as well as role (role) each. Every time a user goes through the account registration process, their registration data will be automatically recorded and displayed on this page.



Picture 15. Page Users

3.1.10 Page Question Interview

The interview questions page serves as a platform for admins to add various types of new questions for use in the interview process. Questions entered through this page will be automatically integrated. to in page management information vacancy And will displayed on

The application status page is accessible to applicants. An illustration of this display can be seen in Figure 16.

Figure 16. Page Question Interview

The testing process for the web-based employee recruitment information system at St Cetak was conducted using the Blackbox testing method. This testing technique is carried out by evaluating the output. system based on input Which given, use evaluate whether system Which developed has been running according to its function and is able to operate as it should. The results of this test are presented in Table 1.

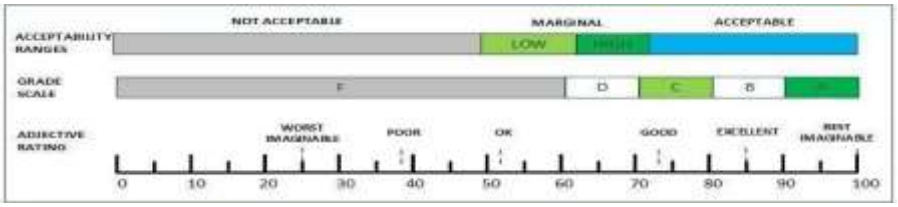
Table 1. Results Testing Method *Black box.*

No	Testing	Scenario	Results which are expected	Results
1.	Registration	Applicants enter their name, username, e-mail And password	Enter to page *login*	*Valid*
2.	*Login*	Applicants/Admins enter email and password that Correct	Enter to dashboard page Applicant/Admin	*Valid*
3.	Menu job vacancy information	Applicants click on the job information menu on the page *home* and on the job search menu	System display page information vacancies that containing Name job, requirements, period, status, and job details	*Valid*
4.	Menu registration form	Applicants enter personal data along with upload complete files	The system will display alerts, and data Which Already successfully sent will be saved	*Valid*
5.	Menu application status	Applicants click on the application status menu and follow *interview* test and psychological tests.	The system will display application status based on the results Which changed by admin and the score results will appear	*Valid*

No	Testing	Scenario	Results which are expected	Results
6.	Menu managing applicant data	Admin does *input* , edit, And *delete* applicant data	The system will display *an alert* that system successfully done change data	*Valid*
7.	Menu manage job vacancy information	Admin does input, edit, And delete on the information page vacancy	The system will display an alert that system successfully done change data	*Valid*
8.	Menu users	Admin click on the users menu	The system will display all account data users website	*Valid*
9.	Menu interview questions	Admin inputs and edits interview question types	The system will display an alert that system successfully done change data	*Valid*
10.	Logout	Applicants/ Admin clicks feature logout of the system	Successfully logged out and back in to home page	*Valid*

3.2 Analysis Findings

Analysis results Testing *System Usability Scale* (SUS) is method evaluation Which done with spread questionnaire to users. In process This, respondents consists of from general public as well as a team from St Cetak. The purpose of this test is to evaluate the extent to which the web system work in a functional And give experience users Which good (Welda et al., 2020). Participants were asked to respond to a number of statements using a rating scale ranging from "strongly disagree" to "strongly agree." The assessment results in the SUS method were then classified into three main categories: " *Not Acceptable* ," " *Marginal* ," and " *Acceptable* ," as shown in Figure 16, which shows the classification of feasibility levels in the SUS test.



Picture 17. Group Evaluation System Usability Scale.

Source : Fitri Purwaningtias et al. 2022

In method calculation score *System Usability Scale* (SUS), there is rule certain that must be followed. For odd-numbered questions, namely Q1, Q3, Q5, Q7, and Q9, the scores given by respondents must reduced 1 use get score contribution. Temporary That, For question even like Q2, Q4, Q6, Q8, And Q10, mark contribution counted by reducing the score Which The total score contribution is then multiplied by a factor of 2.5 to obtain the total SUS score. Once the total score is obtained, the next step is to divide it by the number of respondents. For get average final score. Based on processing data Which

As shown in Table 2, the average result was 72, which is included in the " *GOOD* " assessment category with a *C value scale* . This indicates that the system is at the " *Acceptable* " feasibility level, meaning that the system has met the acceptance criteria and is considered suitable for use by users.

Table 2. Results Calculation Testing SUS.

Respondents	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Amount	Value (Amount) × 2.5)
1	3	3	3	1	3	2	3	3	3	1	25	63
2	4	3	4	3	1	1	3	1	2	2	24	60
3	3	1	4	0	3	0	3	1	3	1	19	48
4	3	2	2	2	2	2	2	2	2	2	21	53
5	3	3	3	1	3	2	3	3	2	2	25	63
6	3	3	4	2	3	3	4	2	3	1	28	70
7	4	1	4	3	3	2	3	3	4	2	29	73
8	4	3	4	3	4	3	4	3	4	3	35	88
9	4	2	3	2	4	2	3	2	4	4	30	75
10	4	4	4	3	4	3	4	4	4	2	36	90
11	3	3	4	4	4	3	3	4	4	2	34	85
12	4	4	4	4	4	4	4	4	4	4	40	100
13	4	4	4	4	4	4	4	4	4	4	40	100
14	4	4	4	4	4	4	4	4	4	4	40	100
15	4	4	4	4	3	3	4	2	4	4	36	90
16	3	1	4	2	3	3	3	3	4	2	28	70
17	3	4	3	4	3	4	3	4	3	4	35	88
18	4	4	4	4	4	4	2	1	2	3	32	80
19	2	1	4	0	3	3	2	3	4	2	24	60
20	3	2	2	3	3	2	2	1	3	3	24	60
21	2	2	2	1	3	3	3	3	2	3	24	60
22	1	2	3	2	0	3	4	2	1	1	19	48
23	4	3	2	0	1	2	4	3	2	0	21	53
24	3	2	3	2	3	2	3	2	3	2	25	63
25	4	2	4	2	4	2	4	2	4	2	30	75
Amount											**724**	**1810**
Average Results End											**72**	

3.3 Implications of Results

The implementation of this recruitment information system has several positive implications for St Cetak. First, the system helps accelerate HR workflows by automating the selection process and managing applicant data, allowing staff to focus more on evaluating candidate quality. Second, the user experience improves because applicants can register and monitor their application status without having to visit the office in person, which aligns with the trend of digitizing HR processes (Septiani et al., 2024).

From a strategic perspective, this system enables the company to reach more qualified candidates online, ultimately contributing to increased productivity and competitiveness. Furthermore, SUS testing results demonstrated the system's good feasibility, providing a strong foundation for full-scale implementation.

Compared to manual systems, the web-based recruitment process demonstrates significant efficiency gains. In manual systems, collecting and verifying applicant files can take an average of 3–5 days because HR staff must review physical documents in person. With a web-based system, file processing time can be reduced to just one day because all data and documents are automatically stored in the database. This represents a reduction in processing time of approximately 60–70%. Furthermore, the risk of document loss, previously quite high in manual systems, can be reduced to 0% with centralized digital storage. This difference confirms that the web-based system not only improves operational efficiency but also ensures the accuracy and security of applicant data.

3.4 Research Limitations

Although the research results indicate successful implementation, there are several limitations that need to be addressed. noted. First, study This only covers development system recruitment internal without integration with other HR modules, such as payroll or performance management. Second, system testing was limited to respondents from environment St Print and society general, so that level generalization satisfaction users to a wider scale still requires additional testing.

Furthermore, the Waterfall model, while providing a clear work structure, has limitations in handling sudden changes in requirements that may arise mid-development. For future development, a more flexible approach such as Agile is recommended, as well as expanding the system's functionality to support data-driven candidate analysis and integration with other platforms.

4 Conclusion

The research conducted has successfully developed a web-based employee recruitment information system for St Cetak, which simplifies the employee selection process. This system underwent two testing methods: Blackbox Testing and System Usability Scale (SUS). Testing using the Blackbox method demonstrated that every function in the system operated according to the specified specifications and functioned as intended. Meanwhile, the evaluation using the visual SUS method demonstrated that the system was acceptable to users, with an average score of 72. St Cetak's feedback on the system development was very positive, with participants expressing satisfaction with the performance and available features.

However, this study has several limitations. First, the system testing was conducted only at one company, St Cetak, so generalizability is limited. Second, the system was not integrated with other modules, such as payroll and performance management, which could provide more comprehensive benefits for human resource management.

For future development, this research could be directed at adding new features, such as implementing artificial intelligence (AI)-based candidate ranking to support decision-making, integrating with cloud platforms for more flexible and secure access, and integrating across HR modules such as attendance, payroll, and performance appraisals.

From a strategic perspective, the implementation of this web-based recruitment information system has the potential for wider adoption by small and medium-sized enterprises (SMEs), particularly in the printing sector and similar industries with similar characteristics. Digitizing the recruitment process in SMEs can improve operational efficiency, expand access to qualified candidates, and strengthen the company's competitiveness amidst increasingly fierce industry competition. Therefore, the results of this research not only provide practical benefits for St Cetak but

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