



Digital Innovation and Rapid Application Development: A New Approach to Staff and Lecturer Recruitment at University

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Abstract

The University encountered challenges with its manual recruitment processes, characterized by inefficient record-keeping, decreased productivity, and prolonged hiring periods. To address these issues, a recruitment application was developed using the Rapid Application Development (RAD) methodology, prioritizing swift iterations and comprehensive stakeholder involvement. We have implemented many features to improve the user experience for job seekers and employers. It includes sign-up and login options for both, CV uploading for job seekers, and the ability to view vacancies. Employers can also view and upload vacancies, delete them if needed, and schedule interviews through the system. Both job seekers and employers can easily edit their profiles and passwords, ensuring flexibility and usability throughout the recruitment process. Notably, User Acceptance Tests revealed high satisfaction levels among users, confirming the application's effectiveness in meeting their requirements and enhancing the overall recruitment experience. The application's user-centric design and agile development approach represent a substantial advancement in the University's recruitment practices.

Keywords: Jobseeker, recruitment management system, Rapid Application Development, User Acceptance, UI/UX.

1. INTRODUCTION

The prevailing manual hiring process at the University presents numerous challenges that impede its capacity to recruit and retain top-tier instructors and staff efficiently. Initially, maintaining records of potential candidates becomes burdensome and susceptible to errors without a centralized and automated system [1]. Subsequently, the manual procedure is time-consuming [2] and labour-intensive [3], resulting in reduced productivity among hiring committees and delays in filling vacant positions. These inefficiencies can compromise the calibre of instruction and support services the University provides [4] while inhibiting its ability to respond adeptly to the evolving demands within the education sector.



To address these challenges and enhance recruitment, the University should consider leveraging technology [5] and implementing more efficient procedures. One solution is to invest in recruitment management software [6]. Such software is a centralized platform designed to optimize and streamline the hiring process for employers and job seekers. Firstly, the user registration functionality enables individuals to create accounts within the system, facilitating access to various features and tools [7]. Job seekers can input their information and upload resumes, while employers can establish profiles to post job vacancies and manage recruitment activities [8]. Upon logging into the application, users can access a dashboard to navigate various functions, including uploading resumes, browsing available job opportunities, and reviewing detailed job descriptions. This interface serves as a hub for all recruitment-related activities, providing a convenient and efficient means of managing the job search and hiring process. For employers, the ability to upload and delete vacancies directly within the system is a fundamental feature of the software [9]. This functionality simplifies the process of advertising job openings, ensuring that positions are promptly listed and removed as needed. Furthermore, employers can view and evaluate resumes uploaded by job seekers, streamlining the candidate screening process and facilitating informed hiring decisions [10]. HR departments also benefit from the software functionality, particularly in scheduling and managing interview appointments [11]. By utilizing the system to coordinate interview logistics, HR professionals can streamline communication with candidates and ensure that the recruitment process progresses smoothly and efficiently. Finally, the ability to edit the application's profiles and passwords gives users control over their account information [12]. This feature allows individuals to update their details as needed, ensuring their profiles remain accurate and up to date throughout the recruitment process.

Several previous studies have explored similar themes, yet they emphasize different objectives. One article delves into how monitoring practices for third-party education agents in international student recruitment, guided by agency theory and best practice guidelines, may necessitate enhancements such as mystery shopping to offer more comprehensive insights into agent behaviour [13]. Additionally, another study investigates the combined impact of lecturer selection, motivation, and utilization on lecturer performance, concluding that they exert a positive and significant influence, tested both partially and simultaneously [14]. In contrast, the other study focuses on teacher profiling [15].

The distinction in this study lies in the fact that the software is designed explicitly for recruiting lecturers and staff at the University. The admin dashboard offers a straightforward interface with essential features for smooth recruitment management. Where there is seamless integration between the roles of registered employers and HRD/Moderator and active communication conducted by the HRD/Moderator with both job seekers and employers, expanding the recruitment

process at the University would yield significant benefits in addressing the dynamic needs of the education sector. By leveraging technology and implementing more efficient recruitment procedures, the University can bolster its pool of high-quality staff and lecturers, elevate the standard of education, and proactively respond to industry demands. These endeavours are pivotal in fortifying the University's reputation as a progressive, forward-thinking educational institution.

2. METHODS

The project is conducted at Universitas Multimedia Nusantara. The University's recruitment application for staff and lecturers utilizes RAD (Rapid Application Development), a method characterized by its practicality and structured approach to application development. RAD is chosen for its emphasis on practicality, adaptability, and stakeholder engagement [16]. RAD methodologies prioritize rapid prototyping and iterative development, enabling swift turnaround times and enhanced responsiveness to evolving requirements [17].

This methodology ensures a systematic progression through requirements planning, user design, construction, and cutover [18]. As can be seen in Figure 1, RAD expedites development processes, accommodates evolving requirements, and facilitates comprehensive testing. Implementing RAD is paramount in crafting a responsive and efficient recruitment application explicitly tailored to the University's needs.

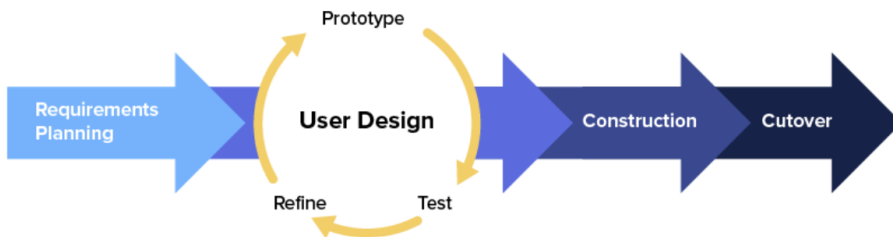


Figure 1. Rapid Application Development [19]

The foundational phase of Requirement Planning addresses the manual hiring challenges encountered. This stage involves comprehensively examining the current hiring process, engaging key stakeholders such as the HR department and faculty to solicit feedback, and documenting operational and non-operational requirements. This phase establishes the trajectory for developing the recruitment application by delineating the project's scope and objectives. Various tools, including stakeholder consultations, requirements gathering sessions, document analysis, and digital collaboration platforms like Microsoft Teams, facilitate effective communication and planning.

Subsequently, the User Design phase focuses on crafting a design prototype for the recruitment application. It involves designing an intuitive interface to streamline the hiring process, creating wireframes and mockups to illustrate the application's structure and functionalities visually, and incorporating stakeholder input to ensure alignment with their expectations. Emphasis is placed on adaptability and accessibility, with Figma as the primary design tool for generating wireframes, mockups, and interactive prototypes. Stakeholder feedback is solicited through Figma comments and collaborative efforts, ensuring the design meets predefined criteria.

During the Construction phase, Figma is a helpful tool for developing the prototype of the University's staff and faculty recruitment application [20]. Several compelling reasons support this choice, including Figma's real-time collaboration features that enhance the speed and efficiency of the design team's efforts and its capacity for interactive prototyping, facilitating comprehension of the application's functionality by both the team and stakeholders. The application is crafted during development utilizing HTML, PHP scripting language, and the MySQL database, favoured for developing recruitment management software [21].

Finally, the cutover phase tests the prototype to ensure proper functionality before full deployment. It encompasses User Acceptance Testing (UAT) [22] with designated users, resolution of identified issues, and development of educational materials and sessions for end-users. Furthermore, a migration strategy is devised to seamlessly transition from the manual hiring process to the new application. Testing tools for UAT, documentation tools for instructional materials, and project management tools are deployed throughout this phase to monitor the migration process effectively.

3. RESULTS AND DISCUSSION

Applying the RAD methodology in developing the Staff and Lecturer Recruitment Application showcased systematic progress through key stages, from Requirement Planning to User Design, Construction, and ultimately the Cutover phase, resulting in a well-tested system ready for deployment. This approach emphasized meticulous planning, user-centric design, and comprehensive testing, ensuring the resulting system aligned with stakeholders' needs and demonstrating its reliability in delivering a thoroughly tested and functional application.

3.1 Requirement Planning

Table 1 shows the functional analysis for the University staff and lecturer recruitment application. The requirements are gathered from an HR staff member and two information system lecturers. The solution for the problem that has been

identified is that recruitment applications will strictly protect user privacy and encrypt sensitive data such as CVs and personal information. We aim to streamline recruitment by providing a single platform for job seekers and employers. Job seekers can easily register, upload their CVs, view vacancies, and get detailed job descriptions. On the other hand, employers can view uploaded CVs, post new vacancies, and even schedule interviews. Both parties can edit their profiles and passwords as needed. By combining these features, recruitment applications make it easier for job seekers to find suitable jobs and employers to find potential candidates, thereby simplifying the recruitment process.

Table 1. Functional Requirements Analysis

No	Requirements	Features
1	User registration functionality for Application Access	Jobseeker & Employer Sign-Up
2	The system can be used to log in to the application	Jobseeker & Employer Login
3	The application can be used to upload a CV into the system	Jobseeker upload CV
4	The system can be used to view vacancies in the application	Jobseeker view vacancies
5	The system can view vacancies and detailed job descriptions in the application.	Jobseeker view vacancies detail.
6	The system can be used to view Jobseeker uploaded CV	Employer View CV
7	Employers can use the system to Upload vacancies into the application	Employer upload Vacancies
8	Employers can use the system to Delete vacancies from the application	Employers delete Vacancies.
9	HRD can use the system to make interview appointments in the application	HRD interview appointment
10	The system can be used to edit profiles in the application	Jobseeker and Employer edit profile
11	The system can be used to edit passwords in the application	Jobseeker and Employer edit password

3.2 User Design

3.2.1 Use Case

The JobSeeker Recruitment Application facilitates the recruitment process for both lecturers and staff. In this Use Case Diagram (Figure 2), jobseekers can search for vacancies, submit applications, and track their application status. On the other

hand, Job Creators can create job openings, review Jobseeker CVs, and either approve or reject applications. HRD staff or moderators oversee and coordinate the subsequent stages of the application process.

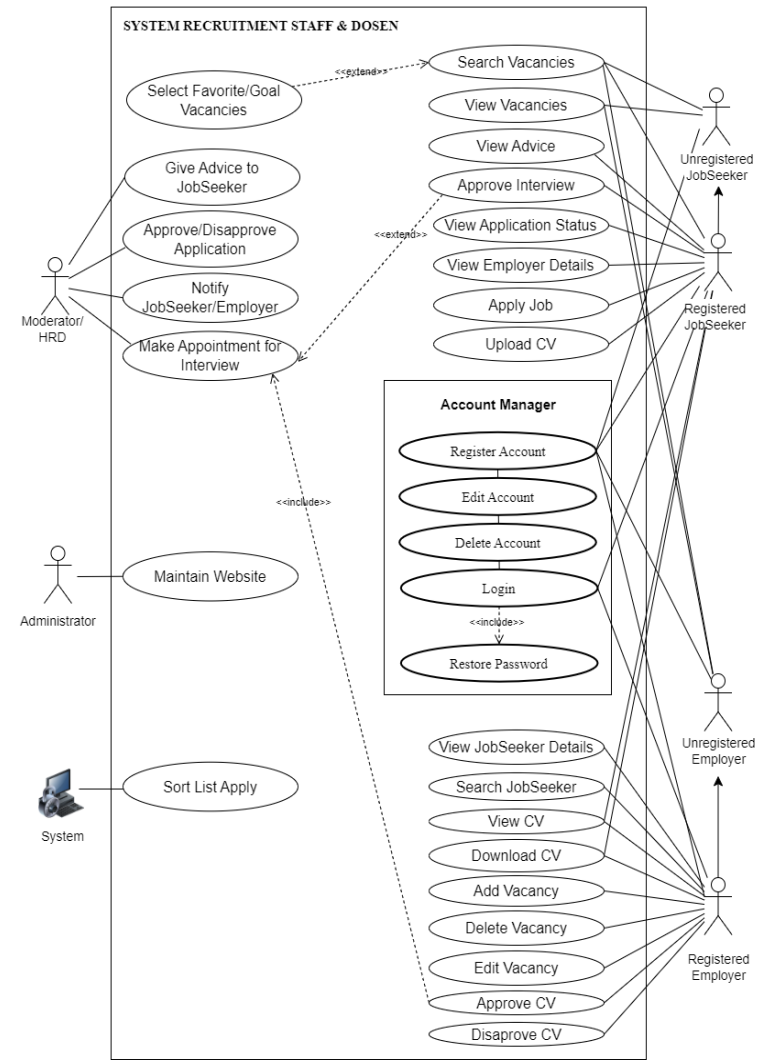


Figure 2. Use Case Diagram

Moreover, unregistered Jobseekers must create an account to become Registered Jobseekers, granting them access to additional opportunities for browsing and applying for vacancies. Once registered, Jobseekers can log in using their password and manage their accounts, including editing and deleting them. Upon registration, Jobseekers' status is verified as Registered Jobseekers, unlocking functions such as

Login, Apply Job, Upload CV, View CV, Download CV, View Application Status, and View Employer Details.

Registered Employers can add, delete, and edit job vacancies, facilitating their connection with potential candidates. They can also view and search Jobseeker details and access CVs for evaluation. The decision to approve or reject Jobseeker CVs rests with the Employer. Approved CVs are then forwarded to HRD/Moderator for further processing, including scheduling interview sessions. Ultimately, the choice to participate in an interview lies with the Jobseeker. HRD/Moderator communicates updates on the recruitment process to both Jobseekers and Employers.

3.2.2 Class Diagram

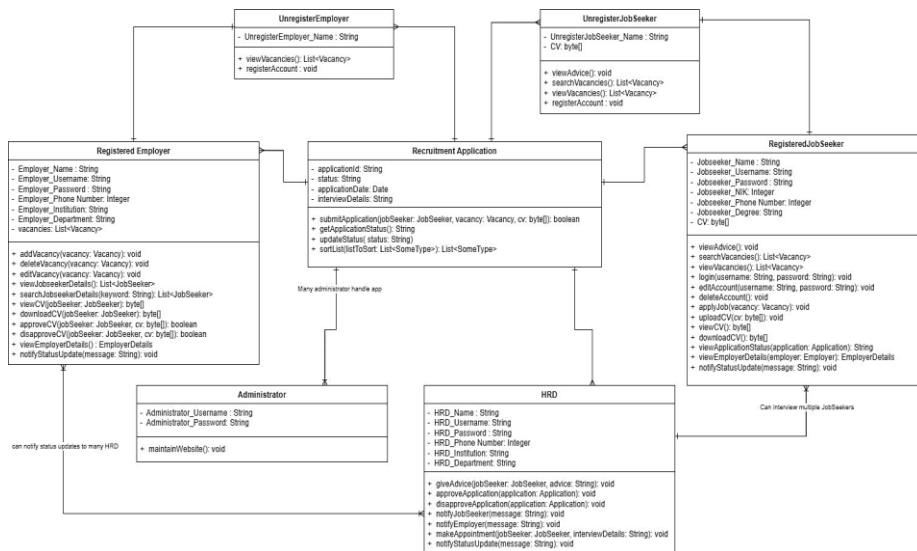


Figure 3. Class Diagram

The class diagram in Figure 3 outlines the structure of a Digital Innovation and Rapid Application Development system, specifically focusing on revolutionizing staff and lecturer recruitment. It is divided into three essential classes: Registered Employer, Recruitment Application, and HRD. The diagram visually depicts relationships between these classes, such as the connection between Registered Employer and Employer, indicating that Registered Employer is a subclass of Employer. It suggests that all instances of Registered Employer are also instances of Employer, establishing a one-way relationship. The diagram provides a clear and concise overview of the system's structure, enhancing understanding of entity interactions. As a valuable tool for visualizing and documenting system structure,

it aids in planning and designing software development projects. This visual representation lets developers grasp how system components interact quickly, identifying and resolving potential issues or inefficiencies. Furthermore, it serves as a reference tool throughout the development process, helping developers understand the context of their work within the overall system structure.

3.2.3 Sequence Diagram

The "Jobseeker Search & Apply Vacancies Process" flowchart outlines a job seeker's steps to search and apply for vacancies within a system. As seen in Figure 4, in the "Search Vacancies" section, job seekers initially input keywords or titles into the UI search box to find vacancies that align with their criteria and interests. They can refine their search results by filtering based on location, salary, or industry. The system then presents matching results to the job seeker. In the subsequent "Apply Vacancies" section, job seekers can select the desired vacancy and initiate the application process by clicking the Apply button. They fill out an application form with personal and professional details such as name, email, resume, and cover letter. After the job seeker applies, the system validates it and forwards it to the Employer. Additionally, the system notifies the job seeker of their application status (accepted, rejected, or pending). Upon receiving the notification, the job seeker can either return to the search vacancies section to explore further opportunities or log out of the system.

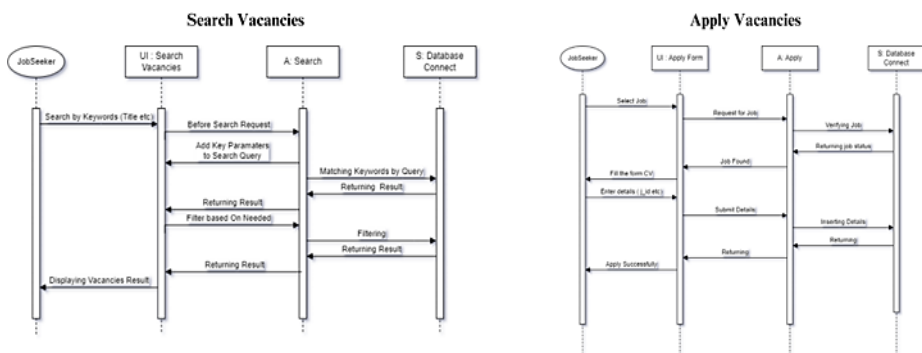


Figure 4. Jobseeker Search & Apply Vacancies

3.2.4 Activity

The activity diagram in Figure 5 illustrates the sequential process undertaken by job seekers within the system. It encompasses actions such as viewing available vacancies, applying for jobs by submitting their CVs and other necessary documents, and the subsequent processing of their application by the system. Upon successfully validating their application materials against the job

requirements, the system stores the details in persistent data storage. It then generates a success message and notifies the Employer or relevant stakeholders about the new application for their review and consideration.

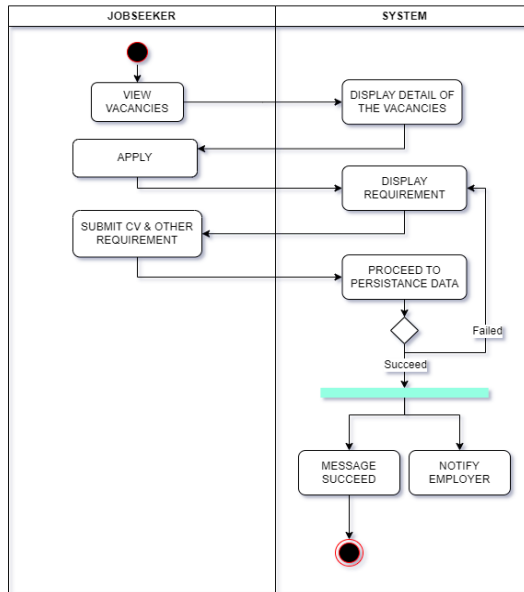


Figure 5. Jobseeker Apply

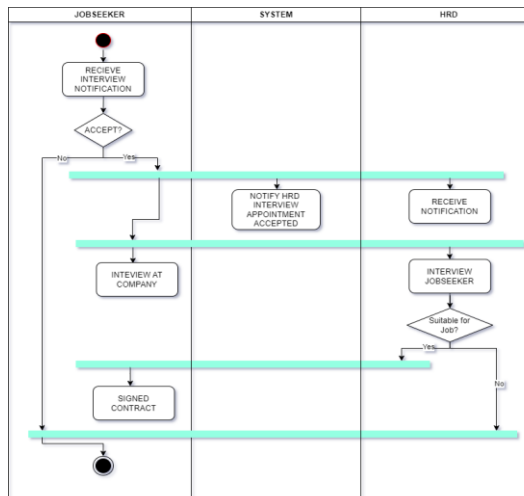


Figure 6. Jobseeker Interview Process

The Jobseeker interview process is depicted through three columns representing the Jobseeker, system, and HRD (Human Resources Department) as outlined in

Figure 6. The Jobseeker progresses from receiving an interview notification to signing a contract, with the system managing notifications, interview logistics, and hiring decisions. Various paths emerge based on jobseeker choices, such as accepting or declining interviews. If an interview is accepted, the HRD evaluates the Job, sends an offer letter, and the Jobseeker signs a contract, triggering system notifications to the company. However, if an interview is declined, the vacancy remains open, and rejections prompt the system to notify the company and update the vacancy status accordingly. This diagram offers a clear overview of the process, ensuring transparency and efficiency throughout the jobseeker interview.

3.3 Construction

The Thumbnail Page, shown in Figure 7, represents the University recruitment staff and lectures application, which is recruitment demonstrating the integration of thoughtful design and technological innovation. Figure 8 presents a user-friendly interface comprising (a) Create an Account, (b) User Login, (c) Home Page, (d) Job Details, (e) Apply Job, and (f) Messages. When creating an Account, users will be redirected to the Sign-Up page to create a new account. They'll have to supply a password, email address, and username. A notice about the license, agreement, terms of use, and privacy policy will also be present. The user can click the Login button next to Register at the top if they already have an account. Afterwards, Users login only need to enter their password and email address to log in. Selecting "Remember" will send a password reset to the registered email address if the user forgets their password. Next, the home page, or main page of the application, will then be displayed by the application. It has a notification bell in the upper right corner, filters, a search engine, ads, and suggested job openings. A detailed editable profile will appear when you click on the profile section in the upper left corner. There is a bookmark button on each job posting, and clicking it saves the offer to the Saved Offers section.

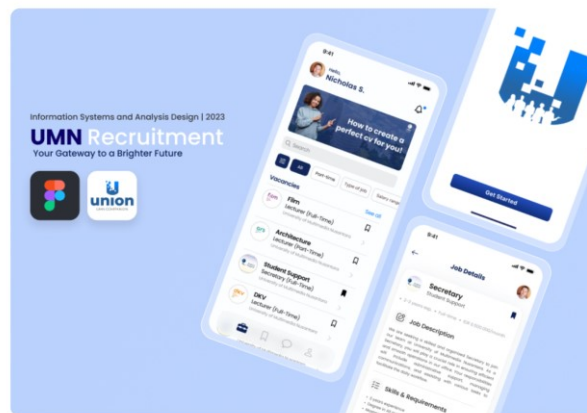
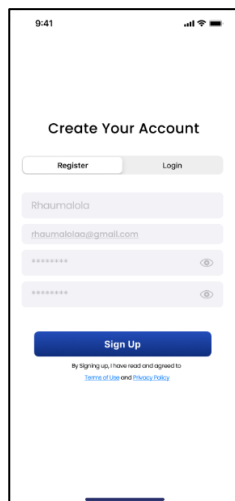
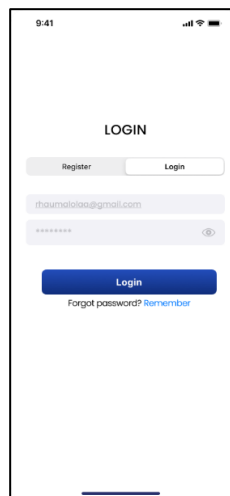


Figure 7. Thumbnail

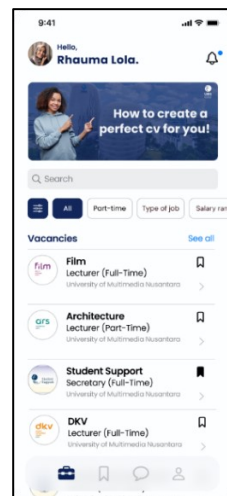
In the Job Detail Feature, prospective job applicants can explore the details of available job positions. This feature is a comprehensive repository of detailed job listings, offering a clear overview of each vacancy. Users can access crucial information such as job responsibilities, required qualifications, and any specific skills or experience sought. Furthermore, when applying for Job, this page's "Resume" section will prompt users to upload their CV or resume. The user can also check their profile to ensure all the information is correct and complete.



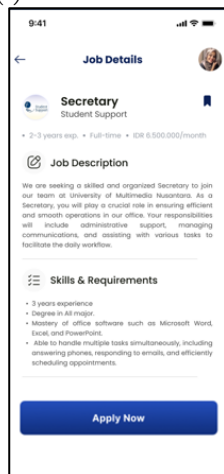
(a) Create an Account



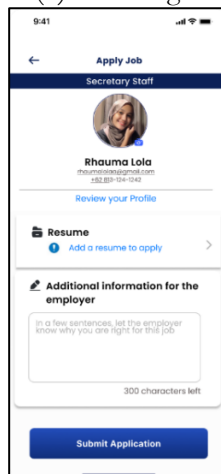
(b) User Login



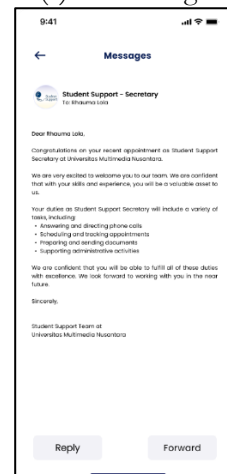
(c) Home Page



(d) Job Details



(e) Apply Job



(f) Messages

Figure 8. User Interfaces

Additionally, there is a text field where the user can describe and clarify why they should be considered for the Job. After that, the user can submit their application by clicking "Submit Application.". Finally, In the Messages feature, users can view notifications regarding the status of their application – whether it has been accepted or declined. If the user submission is accepted, they will receive a message detailing when the initial selection process takes place and the subsequent steps in the selection process.

3.3.2. Systems

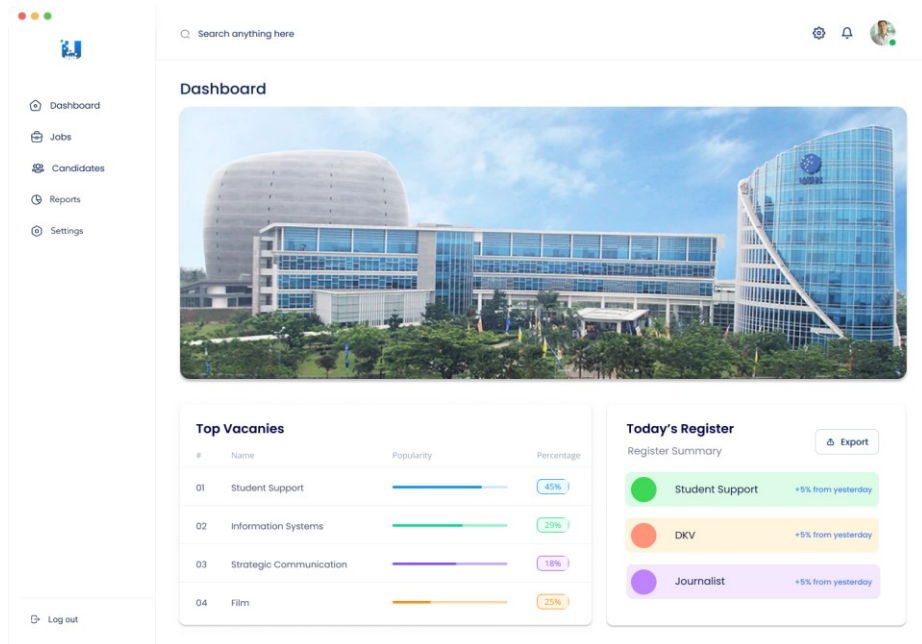


Figure 9. Admin Dashboard

Figure 9 in the University Staff and Faculty Recruitment Application shows that the Admin Dashboard is a central control panel designed for efficient oversight. It offers a straightforward interface with essential features for smooth recruitment management. Noteworthy functionalities include the ability to quickly assess the popularity of job positions through the Top Vacancies feature and stay updated on daily registrations with the Today Register feature. Admins can seamlessly edit job listings using the Edit Jobs feature, ensuring adaptability to evolving recruitment needs. The See Candidates feature is a crucial decision-making tool, allowing admins to review and select from the applicants' pool.

3.4 Cut Over

During the transition phase of the recruitment application, the pivotal integration of the new system marks a significant shift for both recruitment teams and applicants, replacing familiar processes with innovative features. Effective communication becomes crucial to guide stakeholders through the seamless navigation of the new platform. The adaptation of users, including recruitment administrators and candidates, poses a notable challenge, requiring thorough education and support for a smooth learning curve. Successful implementation demands robust system protection mechanisms to address potential glitches and ensure a secure environment for sensitive recruitment data. Prioritizing data security is imperative, necessitating strong encryption and cybersecurity measures. This comprehensive approach, involving communication strategies, user education, and robust security measures, contributes to successfully integrating the University Staff and Faculty Recruitment Application, establishing it as a transformative tool in academic recruitment.

Table 2. UAT Result

No	Features	Average Score	Status
1	Jobseeker & Employer Sign-Up	5	Excellent
2	Jobseeker & Employer Login	5	Excellent
3	Jobseeker upload CV	5	Excellent
4	Jobseeker view vacancies	5	Very Good
5	Jobseeker view vacancies detail	4.7	Very Good
6	Employer View CV	5	Excellent
7	Employer upload Vacancies	5	Excellent
8	Employers delete Vacancies	5	Excellent
9	HRD interview appointment	4.7	Very Good
10	Jobseeker and Employer edit profile	5	Excellent
11	Jobseeker and Employer edit password	5	Excellent

3 Job Seekers and 3 Employers contribute to fulfilling the UAT. The score went from 1 (Very bad) to 5 (Excellent). The UAT result is shown in Table 2. During User Acceptance Testing (UAT), the Jobseeker and Employer functionalities received high ratings, with an average score of 4.7 (Very Good) for features like viewing vacancies and scheduling interview appointments. These features were

found to be highly satisfactory, meeting user expectations effectively. Additionally, features like sign-up, Login, and profile editing garnered an excellent score of 5, indicating flawless performance and seamless user experience. Overall, the UAT results underscore the successful implementation of key functionalities, demonstrating the application's robustness and user-centric design.

3.5 Discussion

RAD is a systematic and successful approach to developing recruitment applications for university staff and lecturer recruitment applications. The development of practical and responsive recruitment applications specifically for the University was made possible by the RAD methodology, which strongly emphasizes rapid iterations and stakeholder involvement. With careful execution of the crucial phases of requirement planning, user design, construction, and cutover, a thoroughly tested system prepared for deployment was produced.

One of the primary strengths lies in the user-centric design fostered by RAD. Stakeholder involvement and the iterative development process ensured the application's interface was contemporary, aesthetically pleasing, and perfectly conforming to user expectations. Stakeholders could actively participate in the development process through real-time collaboration, which was made possible using Figma for design. Another positive aspect of the hiring process is its efficiency. The application effectively tackles the manual tasks of registering candidates (Jobseekers), posting available vacancies (Employers), evaluating applicants, and setting up interviews (HRD). The prototype system's ability to streamline these procedures is evidence of how technology can improve the hiring process and make it more responsive to the changing demands of the education industry.

The depth of the Requirement Planning phase is commendable. Strong groundwork was established for later stages by involving important stakeholders, evaluating the hiring procedure, and setting specific project goals. The development process was largely successful overall because of this careful planning. Delivering a dependable and functional application is demonstrated by the testing methods during the Cutover phase, especially User Acceptance Testing (UAT). With proactive issue resolution and an organized testing framework, the prototype system is a reliable and tested solution prepared for implementation.

4 CONCLUSION

We have achieved our aim by successfully implementing RAD methodologies for developing recruitment management software tailored to the needs of the university staff and lecturer recruitment. We have successfully implemented

comprehensive features to enhance the user experience for job seekers and employers. It includes functionalities such as Jobseeker & Employer Sign-Up, Login capabilities, CV uploading for Jobseekers, and the ability to view vacancies and their details. Employers can view Jobseeker CVs, upload vacancies, and delete them as needed. Additionally, the system facilitates interview appointments by HRD. Jobseekers and Employers can conveniently edit their profiles and passwords as required, ensuring flexibility and ease of use throughout recruitment.

The UAT results indicate that our system has performed exceptionally well, with all features receiving excellent scores. Sign-up, Login, CV uploading, and vacancy management have garnered perfect scores, demonstrating flawless execution and user satisfaction. Other features like viewing vacancies and scheduling HRD interviews have also received outstanding ratings, highlighting their effectiveness in meeting user expectations. Overall, the system has successfully passed UAT, affirming its excellence in enhancing the recruitment process. Suggestions for future development, smooth navigation, and an extensive system of instruction and assistance are required.

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