

Agile Methodology in Web and Mobile Based App of Tracer Study and Career Center

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ABSTRACT

This research explores the application of Agile methodology in the development of a web and mobile-based Tracer Study and Career Center application. The primary objective is to enhance the effectiveness and efficiency of career and educational tracking for users, including students, alumni, and career center staff. The study is motivated by the need to provide a responsive and adaptable solution that can continuously evolve based on user feedback and changing needs. Using Agile methodology, the development process involved iterative cycles of planning, development, testing, and evaluation, ensuring that the application meets high standards of quality and usability. Key features such as educational tracking, work experience logging, and to address the core requirements of the users. The results indicate that the Agile approach significantly improved the application's functionality and user experience. However, further enhancements in the user interface and additional feature adjustments based on ongoing user feedback are necessary. The research concludes that Agile methodology is effective in developing adaptive and user-centered applications, though it highlights the importance of continuous improvement and comprehensive user engagement in future developments. This study provides valuable insights for developers and researchers in the field of educational and career management applications, demonstrating the practical implications of Agile in creating responsive and effective software solutions.

INTRODUCTION

Tracer studies and career centers play a crucial role in higher education. A tracer study is a tool used to track and monitor graduates of an educational institution to understand their career progression after graduation. Through tracer studies, universities can collect valuable data about the relevance of the curriculum, the quality of education, and the needs of the job market. This data can then be used to improve the quality of education and tailor study programs to better meet industry demands.

Universitas Pamulang, as one of the rapidly growing higher education institutions in Indonesia, recognizes the importance of having an effective and efficient tracer study and career center system. However, the current system still faces several challenges, such as lack of data integration, limited accessibility, and insufficient responsiveness to user needs. Therefore, a solution is needed to address these challenges and provide added value for all stakeholders.

In this context, developing a web and mobile-based tracer study and career system becomes highly relevant. Web and mobile technologies allow for easier and faster access for both alumni and university staff. Additionally, by utilizing the Agile methodology in system development, it is hoped that a more flexible and responsive system to user feedback can be created. Agile is a software development methodology that emphasizes iteration and collaboration, enabling development teams to continuously improve and adjust the system based on changing user needs.

The main objective of this research is to design and implement a web and mobile-based tracer study and career system at Universitas Pamulang using the Agile methodology. This research aims to produce a system that not only meets technical requirements but also provides an optimal user experience. Consequently, it is expected that this system will help Pamulang University monitor the career progression of its alumni and provide better career support services.

This research will include several stages, from requirements gathering, system design, development, to testing and implementation. Each stage will be conducted iteratively, involving users as part of the development process. The results of this research are expected to provide a tangible contribution to improving the quality of the tracer study and career center system at Pamulang University and serve as a reference for other educational institutions looking to adopt a similar approach.

LITERATURE REVIEW

The development of a web-based tracer study system, along with a career management system accessible on both web and mobile platforms using the Agile methodology at Pamulang University requires a comprehensive understanding of theories and previous research related to tracer study systems, career centers, web and mobile-based



technologies, and the Agile methodology. This literature review will critically analyze and synthesize relevant findings and theories, as well as identify research gaps that underpin the development of this system.

Tracer studies have been widely used by higher education institutions to track graduates and assess the relevance of education to labor market needs (Kherid et al., 2021). According to (Schomburg, 2003), tracer studies provide valuable information on the effectiveness of educational programs and the transition of graduates to the workforce (Bueno, 2017). Another study by (Teichler, 2007) shows that tracer studies can help universities design curricula that are more relevant to industry needs. However, these studies also highlight challenges in collecting accurate and up-to-date data, especially in dynamic contexts.

University career centers play a crucial role in supporting students and alumni in their career development. According to (Kahn & Lundgren-Resentera, 2021), effective career centers can enhance graduate employability by providing services such as career counseling, training, and access to job opportunities. Research by (Bitner et al., 2000) emphasizes the importance of integrating career services with technology to improve accessibility and service effectiveness. However, the main challenge is how to create a system that effectively combines various services and user needs.

The use of web and mobile-based technology in education has shown significant improvements in accessibility and interactivity. According to (Greenhow & Robelia, 2009), this technology enables easier and faster communication between students, alumni, and universities. Another study by (West, 2012) indicates that mobile platforms can increase user engagement through user-friendly features and more flexible access. Nonetheless, there is a gap in how this technology can be effectively integrated into a comprehensive tracer study and career center system.

The Agile methodology, known for its iterative and collaborative approach, has been widely used in software development to increase flexibility and responsiveness to changing user needs (Rantung, 2024; Sinuraya et al., 2024; Tonggiroh et al., 2024). According to (Peraza-Baeza et al., 2016), Agile allows development teams to work in short cycles and receive continuous feedback, which is crucial in developing complex systems. A study by (Serrador & Pinto, 2015) shows that applying Agile can improve project success by enhancing communication and collaboration among teams. However, the main challenge is how this methodology can be adapted to the higher education context, which has specific dynamics and needs.

From the above literature review, it is evident that although there has been extensive research discussing each element separately (tracer studies, career centers, web and mobile technology, and Agile), there is still a gap in research that integrates all these elements into a comprehensive system. Furthermore, research specifically examining the application of the Agile methodology in developing web and mobile-based tracer study and career systems in the context of Indonesian universities is very limited.

This gap forms the foundation for this research to develop a web and mobile-based tracer study and career system at Pamulang University using the Agile methodology. This study aims not only to integrate the various elements discussed but also to test the effectiveness of the Agile approach in the context of higher education system development (Kertati et al., 2023; Riswan, 2024). It is hoped that the results of this research will provide significant contributions to the literature and practice of developing more effective and efficient tracer study and career center systems.

METHODE

This research employs the Agile methodology, which consists of several iterations (sprints) focusing on the development of key features of the Tracer Study and Career Center application. Each iteration will involve the phases of planning, development, testing, and evaluation (Suty, 2023).

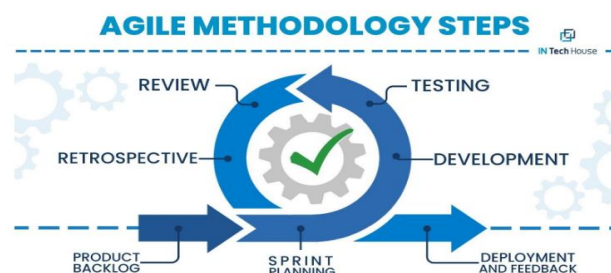


Figure 1. Agile Methodology Steps

The application development will be carried out in several sprints with the following steps: Sprint Planning to determine the objectives and work plan for each sprint, Development to develop application features based on the backlog, Testing to ensure the application's quality and alignment with user needs, and Review and Retrospective to evaluate the sprint results and improve processes for the next sprint.

Data will be gathered through interviews, surveys, and document studies. Interviews will capture insights from

key stakeholders such as students, alumni, and Career Center staff. Surveys will utilize online questionnaires to obtain feedback on user needs and expectations for the application. Document studies will involve analyzing relevant documents, such as previous Tracer Study reports, career reports, and literature on Agile-based application development.

The collected data will be analyzed using thematic analysis for qualitative data and descriptive statistical analysis for quantitative data. The results of the analysis will be used to identify the primary needs of users and areas that need improvement in the application.

RESULT

This project will result in the development of a Tracer Study and Career Center system or application. The Tracer Study application is designed to track the careers and achievements of Universitas Pamulang alumni, providing an interactive platform to collect relevant data and enabling the university to continually improve and enhance its curriculum and educational facilities based on alumni experiences. Meanwhile, the Career Center will be a comprehensive platform for alumni, students, and university partners. It will provide resources and information related to career development, job opportunities, and various training and skill enhancement programs. With this Career Center, it is expected to create an ecosystem that supports the integration of students into the workforce and facilitates alumni in achieving career success.



Figure 2. Tracer Study application home page



Figure 3. Tracer Study application landing page (news)

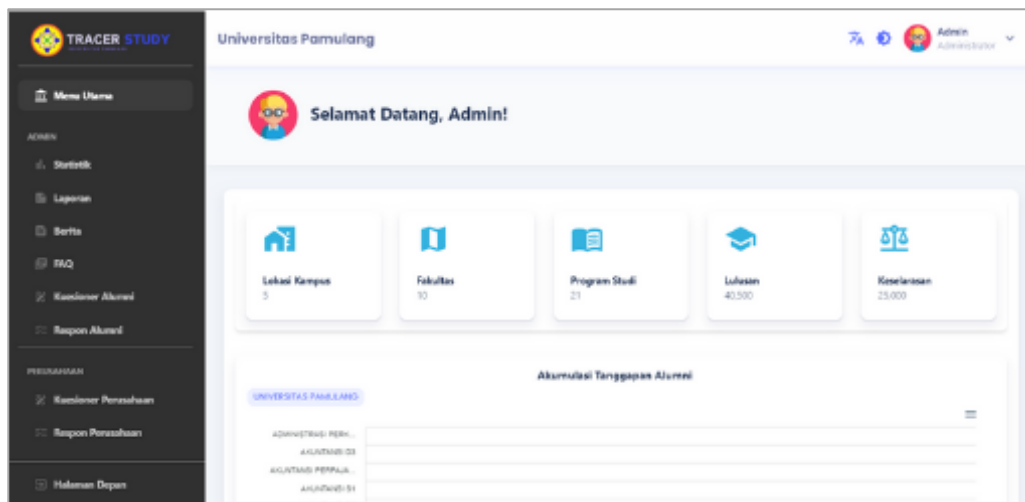


Figure 4. Tracer Study application admin main menu

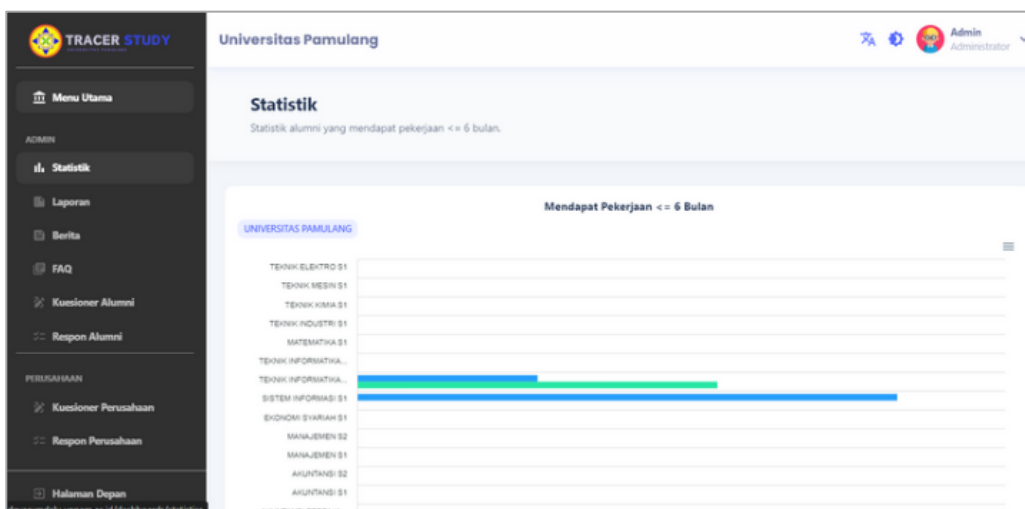


Figure 5. Tracer Study application statistical menu

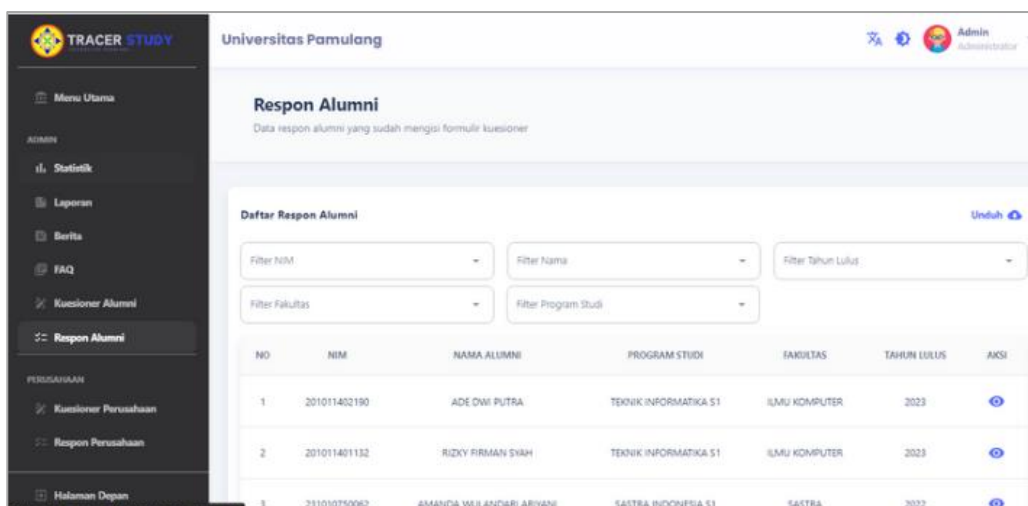


Figure 6. Tracer Study alumni response menu

Figure (2) displays the main interface of the home page for the Tracer Study application. It typically presents general information, access to various application features, and may include links for new or returning users. Figure (3) shows the landing page of the Tracer Study application focused on news or recent updates. This page serves as an

information portal, providing users with the latest updates, especially news relevant to alumni and related activities. Figure (4) depicts the main menu interface for administrators within the Tracer Study application. The menu provides admins with access to manage various aspects of the application, such as user settings, content, and data collected from the tracer study. Figure (5) illustrates the statistical menu in the Tracer Study application, where users can view collected statistical data. This menu allows admins and users to analyze the results of the tracer study through graphs, tables, and other analysis tools. Figure (6) shows a menu dedicated to managing and reviewing alumni responses within the Tracer Study application. Here, admins can view alumni responses, categorize them, and conduct analysis on the collected data for further evaluation and reporting.

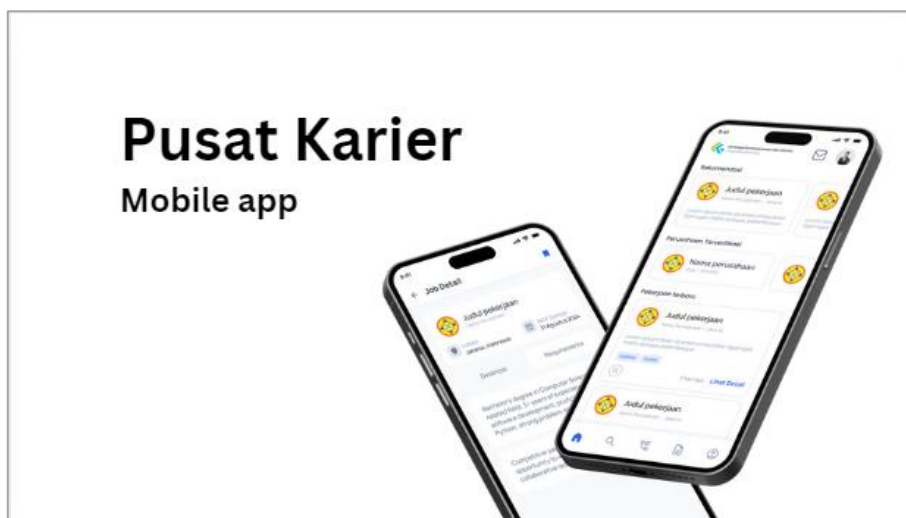


Figure 7. Career center mobile application



Figure 8. View on the Career center mobile App

Figure (7) showcases the mobile application interface for the Career Center, providing users with access to career-related features on their mobile devices. Figure (8) illustrates a specific view within the Career Center mobile app, highlighting how users can interact with various functionalities, such as job listings, application tracking, and other career services, all optimized for mobile use.

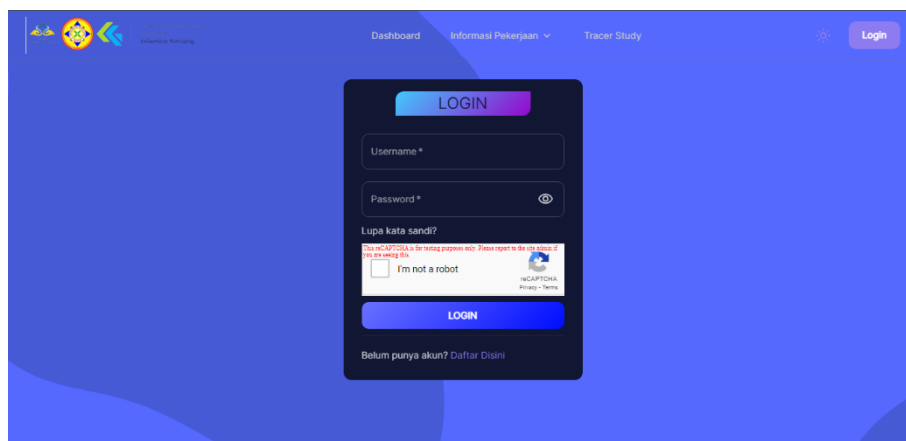


Figure 9. Career center application login page

Figure (9) displays the login page of the Career Center application, where users must enter their credentials to access the system.

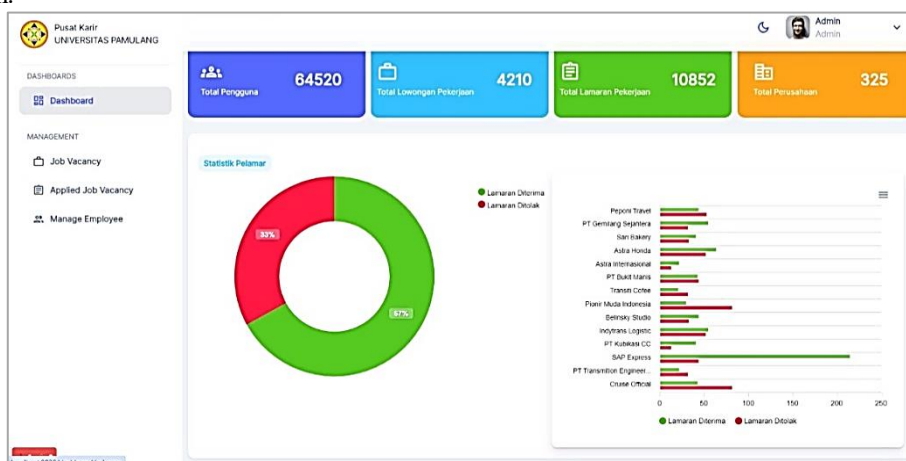


Figure 10. Career center application admin homepage

Car Perumahan/Posisi				
NO	COMPANY	POSISI	KUALIFIKASI	ACTION
1	PT Transisi Engineering	Sewing Engineer	S1	Action Detail Terima posting pekerjaan Tolak posting pekerjaan Action
2	PT Transisi Engineering	Sewing Engineer	S1	
3	PT Transisi Engineering	Sewing Engineer	S1	
4	PT Transisi Engineering	Sewing Engineer	S1	

Figure 11. Career center application job vacancy page

Applied Job Vacancy				
Lihat dan pantau pelamar pekerjaan pada suatu perusahaan secara detail disini.				
Cari Nama Pelamar				
NO	NAMA PELAMAR	POSISI	COMPANY	STATUS
1	Rahmat Fadilah	Sewing Engineer	PT Transmisi Engineering	Menunggu
2	Rahmat Fadilah	Admin	PT Baja Besi	Ditolak
3	Anggara Budi Wahyudi	Barista	Roman's cofee	Diterima
4	Andri Eliatiawan	Software Engineer	IT Center Universitas Pamulang	Diterima
5	Radilah	Nozzle Maintainer	PT Pertamina mina	Ditolak

Figure 12. Career center application applied job vacancy page

Figure (10) shows the admin homepage of the Career Center application, where admins can access various management tools and features. Figure (11) illustrates the job vacancy page within the application, where admins can view and manage job postings submitted by companies. Figure (12) depicts the applied job vacancy page, where admins can monitor and review job applications submitted by students and alumni, along with their current statuses.

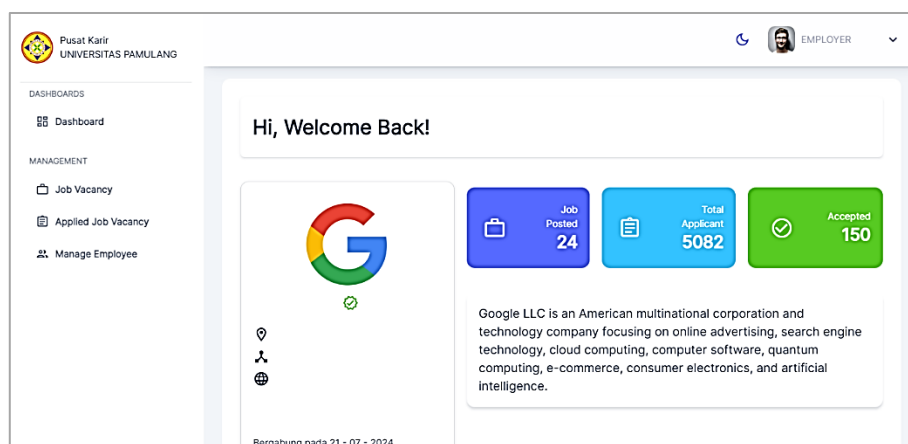


Figure 13. Career center application employee dashboard page

Figure 14. Career center application job posting form by employer

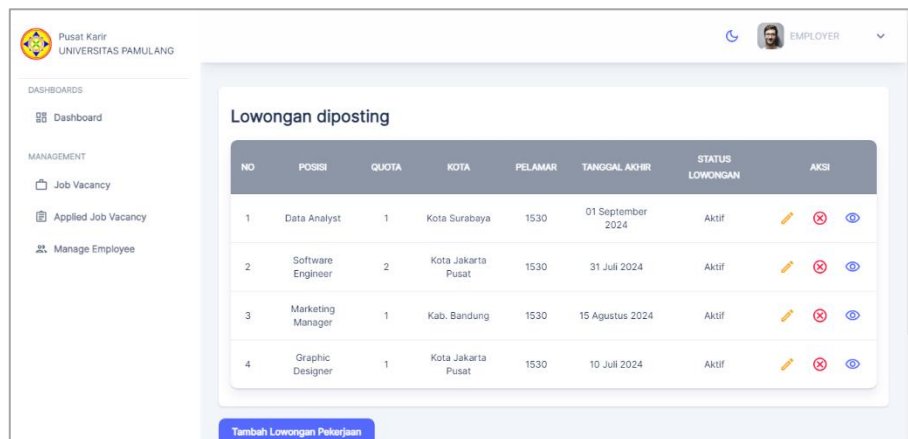


Figure 15. Career center application job vacancy employer page

Figure (13) presents the employee dashboard page of the Career Center application, where employees can view and manage their job search activities and applications. Figure (14) shows the job posting form used by employers to submit new job vacancies to the Career Center application. Figure (15) illustrates the job vacancy employer page, where employers can manage their posted job listings, view applicant details, and track the status of their job openings.

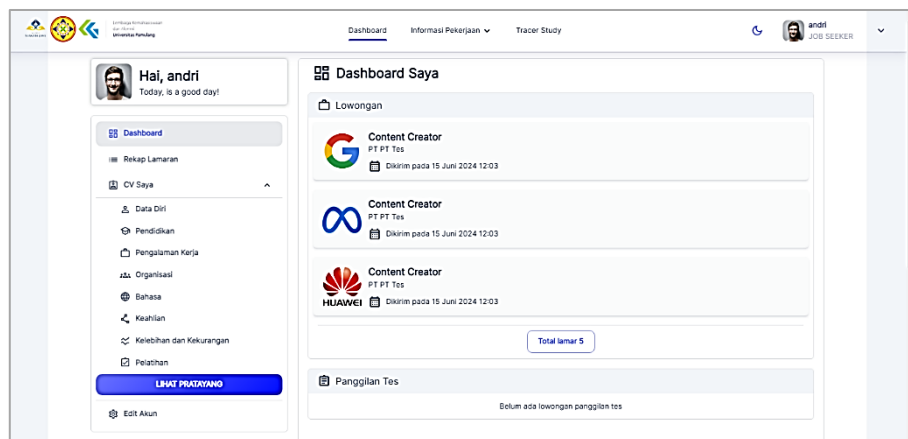


Figure 16. Career center application jobseeker dashboard page

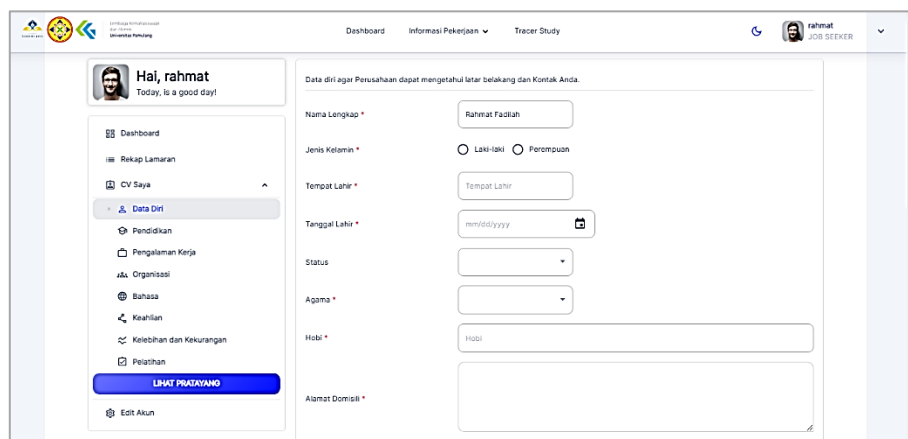


Figure 17. Career center application jobseeker personal data

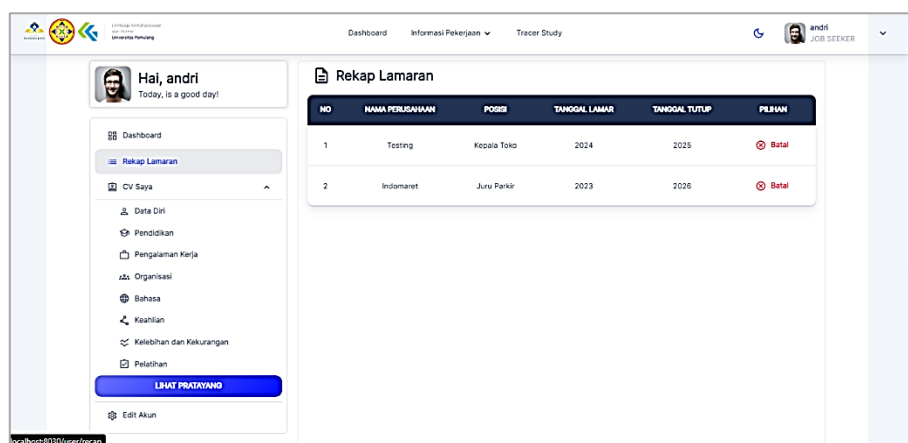


Figure 18. Career center application jobseeker summary

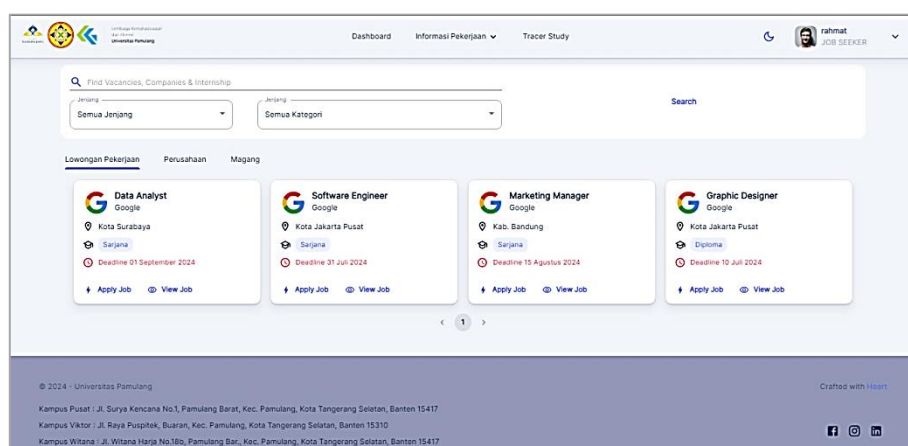


Figure 19. Career center application jobseeker job information

Figure (16) displays the jobseeker dashboard page of the Career Center application, where jobseekers can manage their job search activities, track applications, and access relevant tools. Figure (17) shows the jobseeker personal data page, where users can input and update their personal information within the application. Figure (18) illustrates the jobseeker summary page, providing a comprehensive overview of their profile, including skills, experience, and application history. **Figure 19** presents the jobseeker job information page, where users can view detailed information about job opportunities, including job descriptions, requirements, and application status.

DISCUSSION

This section provides a straightforward analysis of the trial results related to the web and mobile-based application for Tracer Study and Career Center using Agile methodology. The research findings indicate that the implementation of Agile methodology in the development of this application has a significant impact on the application's effectiveness and efficiency.

Firstly, compared to the measured data from the application trials, the results show that features such as educational tracking, and work experience. The comparison between measured data and the application model demonstrates a high degree of alignment in functionality and usability, with the application effectively addressing career and study tracking issues.

Additionally, a comparison of different modeling methods shows that the Agile approach provides better flexibility in responding to user feedback and making iterative improvements. This methodology allows for rapid adjustments to user needs and changes during the development process, which cannot be achieved with conventional modeling methods.

Significant new findings from this research include the enhanced user experience due to an intuitive and responsive interface and features that align with real user needs. Trials show that the application not only facilitates the tracking of career and educational paths but also increases user engagement by providing a comprehensive platform for managing career and study-related information.

Overall, the research supports the use of Agile methodology in developing web and mobile applications, demonstrating that this approach can deliver more adaptive solutions tailored to user needs and make a significant

contribution to the development of Tracer Study and Career Center applications.

CONCLUSION

The research on the web and mobile-based application for Tracer Study and Career Center using Agile methodology concludes that this approach significantly enhances the effectiveness and efficiency of the application. Features such as educational tracking, work experience, and with a high degree of alignment between measured data and the application model. This indicates that Agile methodology can address development challenges by providing responsive and adaptive solutions.

However, there are areas that need improvement for future learning and development. Enhancing the user interface is necessary to simplify navigation and improve the overall user experience. Some features may also require further adjustments based on user feedback to ensure the application remains relevant and responsive to evolving needs.

The benefits of this research include the development of a more adaptive application that meets user needs and makes a significant contribution to career and study management. Nonetheless, this study has limitations, such as a trial scope that may not fully represent all user groups. Future research should involve a more diverse user group and conduct more thorough trials. Recommendations include adding new features, improving the user interface design, and continuous iteration based on user feedback to enhance the application's quality and functionality.

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