Chapter 1

Introduction

1.1 Introduction

The industrial training exposes the students to professional skills and experiences in industrial engineering practices. In preparing the students for the real working environment as engineers, industrial training helps to produce engineering graduates with technical and soft skills competency(Kerjaya, 2022). The industrial training are needed to be expect not only degree student but also by the diploma student that they need to participate if their program requires the training. It is good for student to practice an actual engineering knowledge and skills at the industry. Most of the student can handle the pressure in the university but might not handle the pressure when they pursue the real world job. The purpose of industrial training is to familiarize students with real-world work scenarios, equipping them with the skills necessary for the professional landscape. It aims to bridge the gap between academic knowledge and practical application, fostering a seamless transition for graduates into the workforce (Sofcon, 2024). University student can take this opportunity to improve either technical skills that they learn based on their field of study and soft skills such as communication, critical thinking and problem solving.

The Internship Approval Placement (InternLink) system is proposed to enhance the current internship approval and placement process for Computer Science students. Before entering the industry, students must pass an approval phase, which requires validation from both the internship committee and the coordinator. Currently, students submit their internship placement requests via email, which can lead to data redundancy and an overwhelming number of emails for the coordinator and committee. As a result, applications may be overlooked, delaying the approval process.

Next, the coordinator and committee must assess whether the selected company aligns with the student's field of study, job scope, and industry conditions. This manual verification process is time-consuming, further prolonging approvals. Moreover, students must fulfill academic requirements by passing all subjects before they can undertake industrial training, necessitating a

course verification process.InternLink aims to streamline this entire process by providing an efficient, centralized platform that benefits students, coordinators, and committee members. By automating verification and approval workflows, it ensures a smoother, faster, and more organized internship placement experience.

1.2 Problem Statement

The current internship approval process relies heavily on email communication, requiring university coordinators to verify and update student approvals in Excel manually. With many students applying for internships, this method becomes inefficient and prone to errors. Some students may submit multiple internship applications, unintentionally or due to miscommunication, leading to an overwhelming influx of emails that the university must process. This manual approach increases the likelihood of human errors and delays in verification. Coordinators and committee members often take a long time to review and approve placements, which can disrupt the student's ability to finalize agreements with their chosen industry. If a company is deemed unsuitable after several days of evaluation, the student must restart the placement search, further prolonging the process. This repetitive cycle results in wasted time and effort due to inconsistencies in communication and the lack of an efficient approval system.

Currently, the internship approval process has not reached its full potential in terms of effectiveness and communication. The absence of a systematic and automated approach leads to prolonged approval times, leaving students uncertain about when their applications will be accepted or rejected. Without a centralized system, both students and coordinators face significant challenges in managing approvals efficiently. The Internship Approval Placement (InternLink) system is proposed to address these issues by transforming the approval process into a more streamlined and automated system. It will enhance communication, reduce approval delays, and improve overall efficiency. InternLink will also benefit multiple stakeholders, including academic advisors, who can track their students' internship status, and faculty supervisors, who can monitor assigned students and coordinate industry visits.

In conclusion, InternLink is essential for both students and coordinators, offering numerous benefits in improving the internship approval process. Students can easily track their application

status, while coordinators can manage large volumes of data more effectively, reducing human errors and minimizing delays. The system also will have the feature of a reminder to all users which will help them to notify all changes made during the application process. By implementing InternLink, the internship approval system can reach its full potential, ensuring a smoother and more structured placement process.

1.3 Objective

The main objective of the project is to develop the Internship Approval Placement (InternLink) to help the UMPSA students majoring in computer science for pursuing their industrial training program. There are three objective that need to be fulfilled as shown below:

1. To investigate the current Internship Approval Placement Process to encounter the challenges faced during the approval process by implementing the InternLink.
2. To design and develop a new responsive web-based system for the Internship Approval Placement management system.
3. To test and evaluate the functionality of the Internship Approval Placement Process (InternLink) using appropriate testing methods.

1.4 Scope

Target User:

1. This system is developed for university student majoring in computer science who taking the industrial training program.
2. This system is developed for the Intern Committee and Coordinator to make an verification for the student internship placement.
3. This system is developed for the Supervisor Faculty and Academic Advisor to track the student placement and list of assigned student to each supervisor.

System Scope:

1. The system is fully developed in English Language.
2. The system is a web-based application.
3. The system can be used by the computer science student who currently taking the industrial program only.

Development Scope:

1. The system is developed and tested by using a laptop.
2. The software used for developing the system are Figma, Visual Studio Code and DrawIO.
3. The system will using the Laravel framework as the backend, MySQL as the database, and using API. The programming language for the system is by using HTML, CSS, PHP and JavaScript.

1.5 Thesis Organization

This thesis contains five chapters. Chapter 1 will be discuss the introduction of the project which consists of the background, problem statement, objectives, scopes and thesis organization of the project. This chapter is created to clearly defines the current problem of the internship approval placement process and highlights the efficiency of a centralized platform for the university students to apply for internships.

Chapter 2 explains and discusses the literature review of three related existing systems that relate to this project. This chapter highlights the features that been used by each of the existing systems and the advantages and disadvantages of the existing system and makes the comparison. This chapter will provide the necessary features to include in the InternLink project based on exploring and analyzing these existing systems.

Chapter 3 contains the methodology used and the structure of the project. It also contains the architecture and functionality of the InternLink. It also have the description of the software and hardware specification and explains the design details by illustrating various of diagrams such as use case diagram, context diagram and a storyboard to provide the flow of system to users of how the application works.

CHAPTER 2

LITERATURE VIEW

2.1 Introduction

This chapter analyses and reviews three existing systems that are comparable to the Internship Approval Placement (InternLink). The literature review provides a detailed explanation of three existing systems that can support this project's development. Therefore, this chapter will highlight various features, technologies, the significance of the analysis and the advantages and disadvantages of the selected existing system. The summarization will be used to improve and to be adapted in the InternLink.

2.2 Existing System

This section will review existing systems to obtain information and requirement about the Internship Approval Placement (InternLink). All the advantages, disadvantages and problem occurred will be improve and apply in the system. The functionalities of these three existing system can be compared to the functionality of the InternLink. This section will describe the features, user interfaces, and user experience of these three existing systems.

2.2.1 Sistem Permohonan Pelajar Latihan Industri

Sistem Permohonan Pelajar Latihan Industri (SPPLI) is a system that had been built by Pusat Pengetahuan Komunikasi Teknologi (PPKT) since 2017 and launched officially on 2019. It is used for access to industrial training management for students applying industrial training at Universiti Sains Malaysia (USM). The website consist of a various function such as make an application for industrial training placement, updating the training document, confirmation of the industrial training placement and etc.

Figure 2.2.1.1 show the home page of the SPPLI.

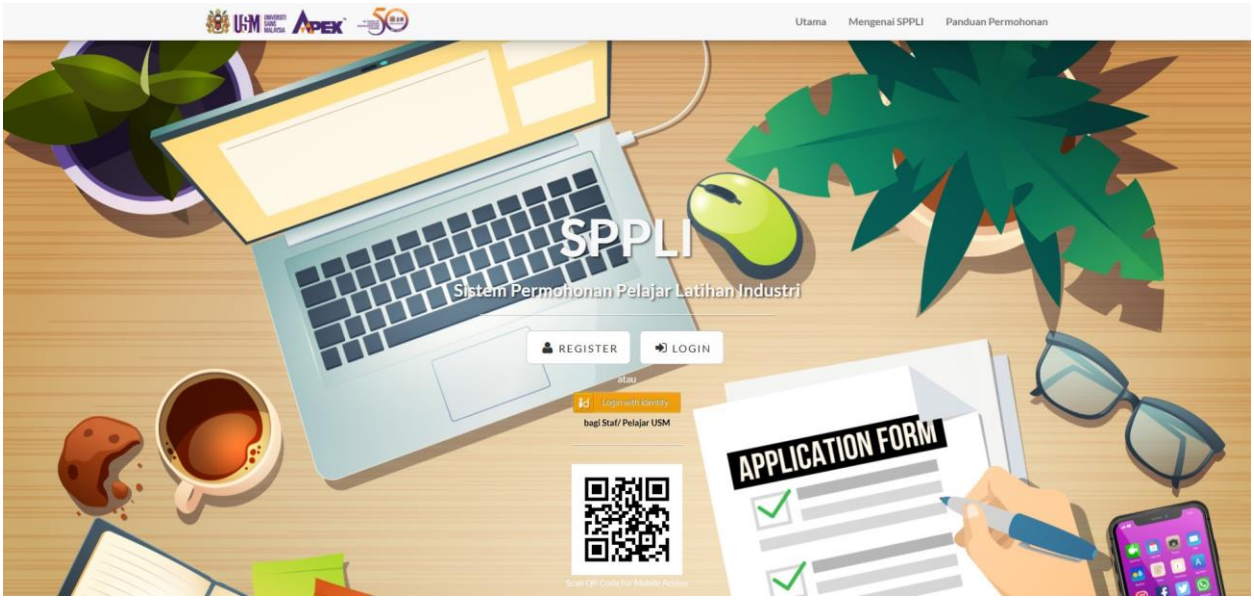

Figure 2.2.1.1 Home Page of SPPLI

Figure 2.2.1.2 show the login page, the user need to enter the valid username and password before entering the system. User also can enter the website using the login with identity if the user are staff or student of USM. If the user are not currently sign up in the system they can click the ‘Daftar Baharu’ to create their own account.

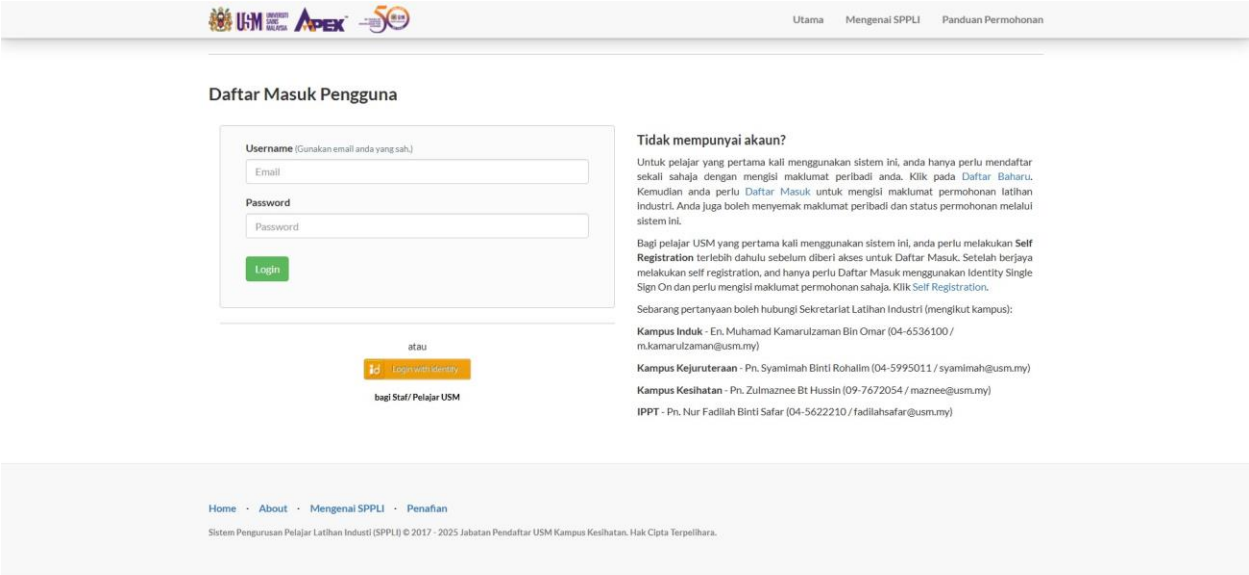

Figure 2.2.1.2 Login Page

Figure 2.2.1.3 show the register page, user need to fill in all the required information before create their own account. The system need the user fullname, gender, number phone, address, postcode, city, state, email, identity card number, password, reconfirm password and verification code. When the user click the register button, the system will send and email to verify the user account.

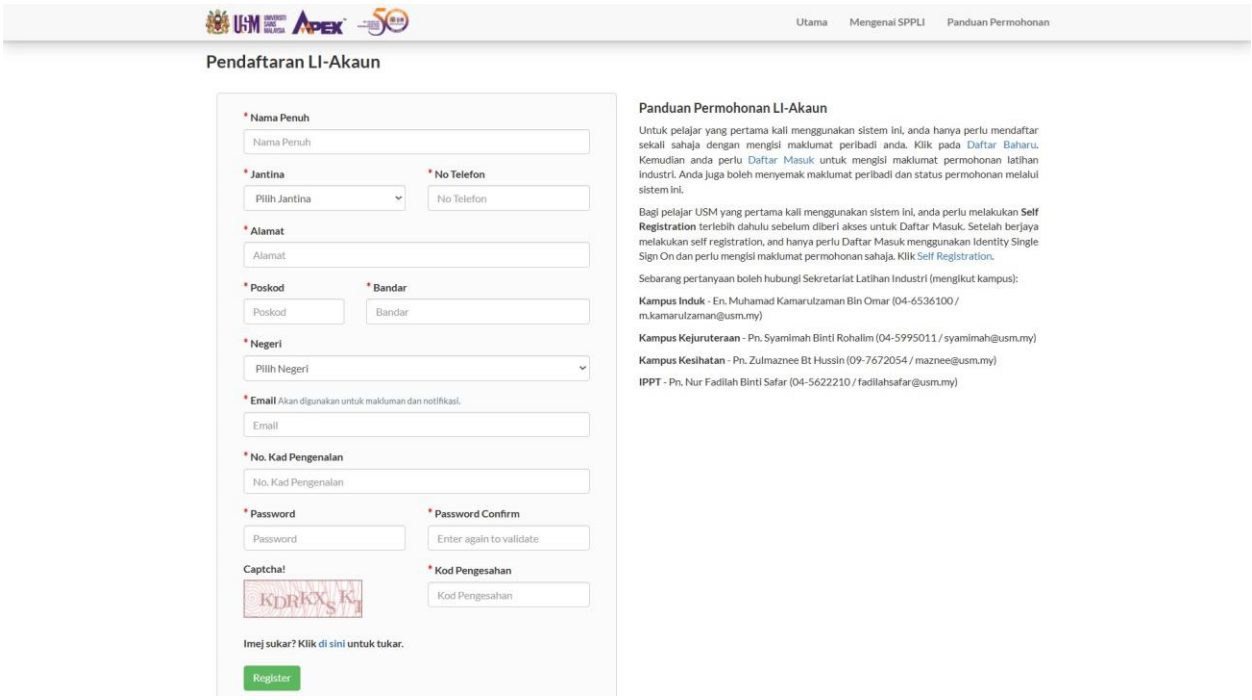

Figure 2.2.1.3 Register Page

Figure 2.2.1.4 show the login page for USM staff and student. The user need to enter their own USM email and password. The system provide a function for user to change their password and forgot account ID.

Figure 2.2.1.4 Login USM Student/Staff Page

Figure 2.2.1.5 show the dashboard page where the user can view the total number of applications, the new or in process, and their application whether it is accepted or rejected.

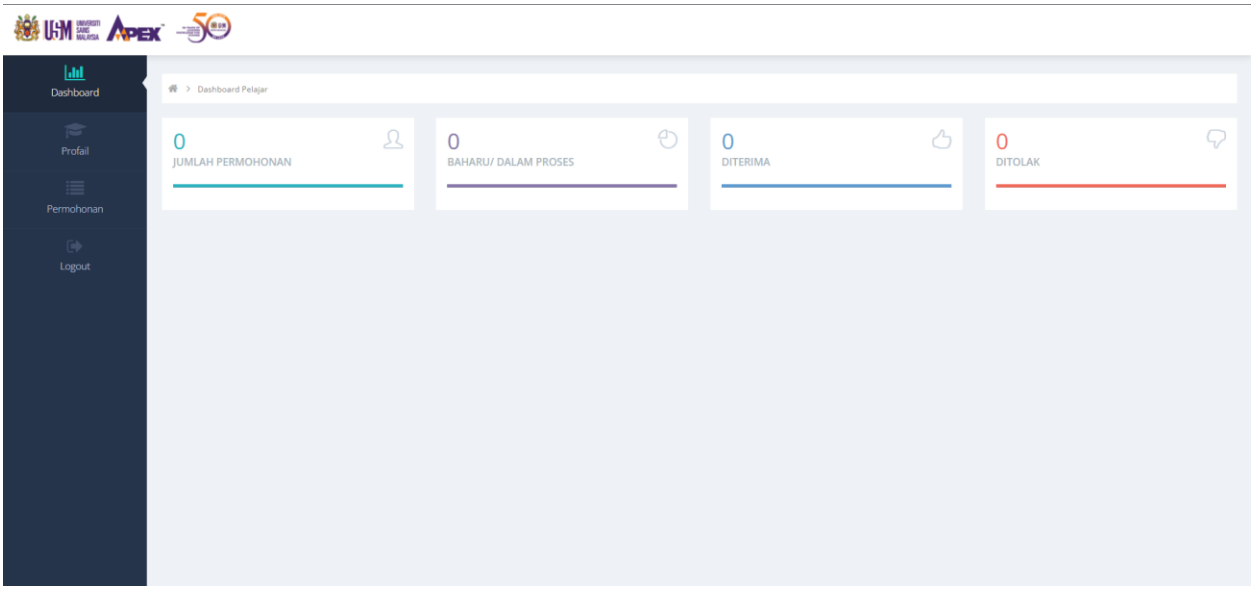

Figure 2.2.1.5 Dashboard Page

Figure 2.2.1.6 show the profile page of the user where they can view all of their information that had been registered in the system. At the bottom of the page, the user can update their profile by clicking the 'KEMASKINI PROFAIL' button.

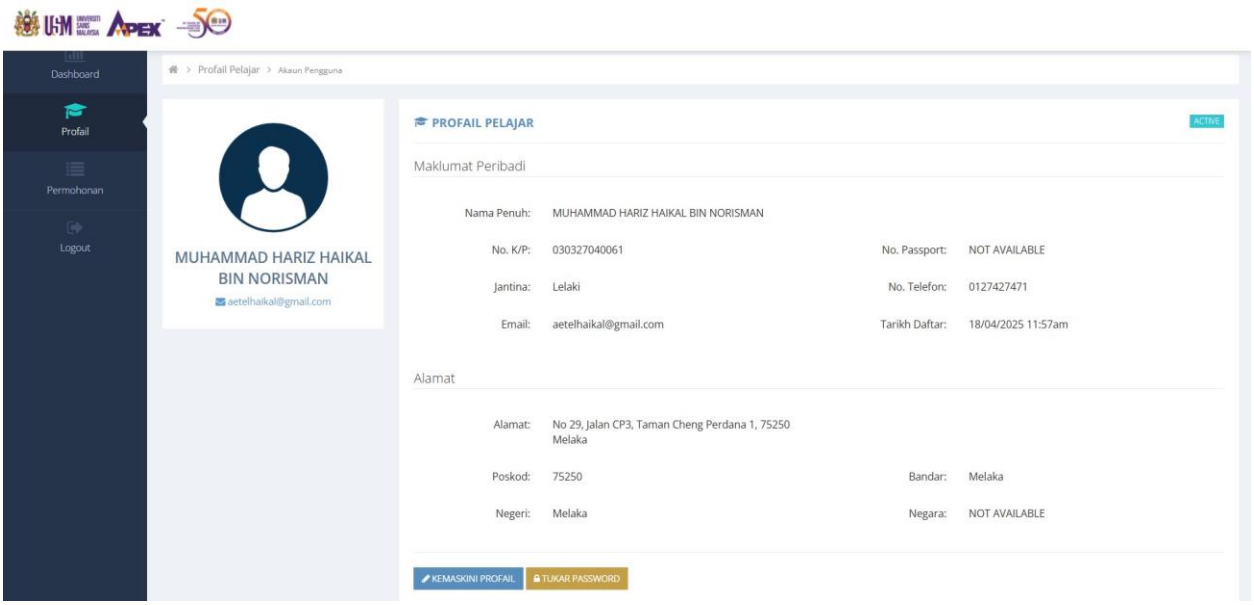

Figure 2.2.1.6 Profile Page

Figure 2.2.1.7 show the update profile page, the user can change their name, gender, number phone, address, postcode, city, state, and their email. After clicking the ‘Save changes’ button the system will update the user new information.

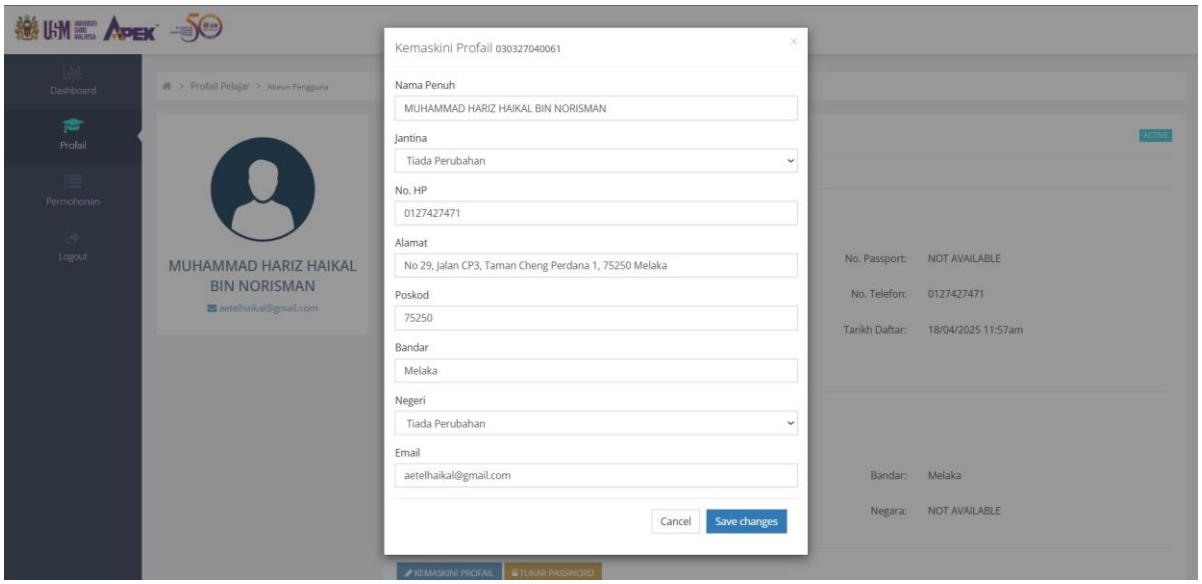

Figure 2.2.1.7 Update Profile Page

Figure 2.2.1.8 show the application page, where the user can apply for their internship in the website. The user need to choose the selected campus in USM and fill in all the form required in the system.

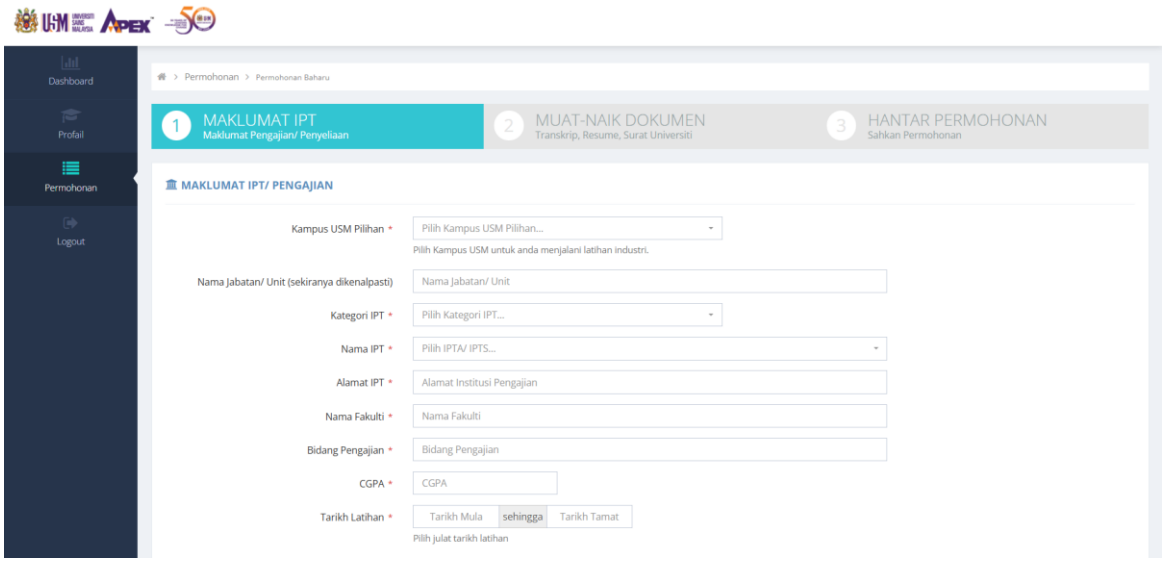

Figure 2.2.1.8 Application Page

Figure 2.2.1.9 show the application document page where the user need to submit their documents such as their transcript, resume and university letter. After the user upload the document they need to click the ‘Save & Next’ button to continue the application.

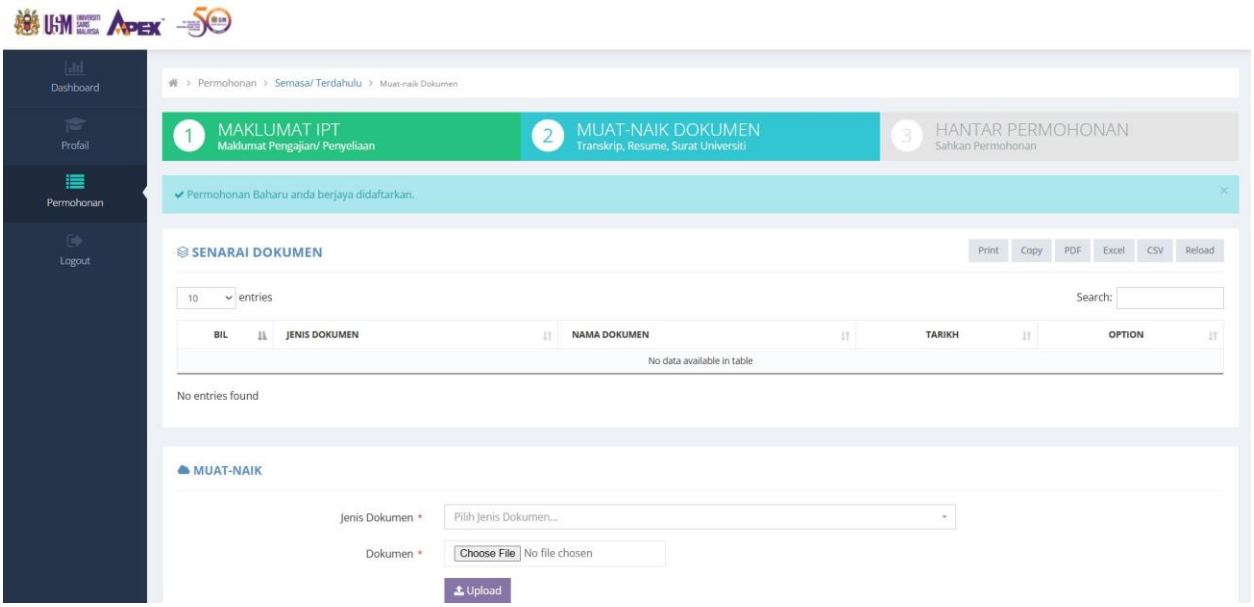

Figure 2.2.1.9 Application Document Page

Figure 2.2.1.10 show the confirmation page where the user need to click the submit button to make a confirmation of application to applying the internship at USM.

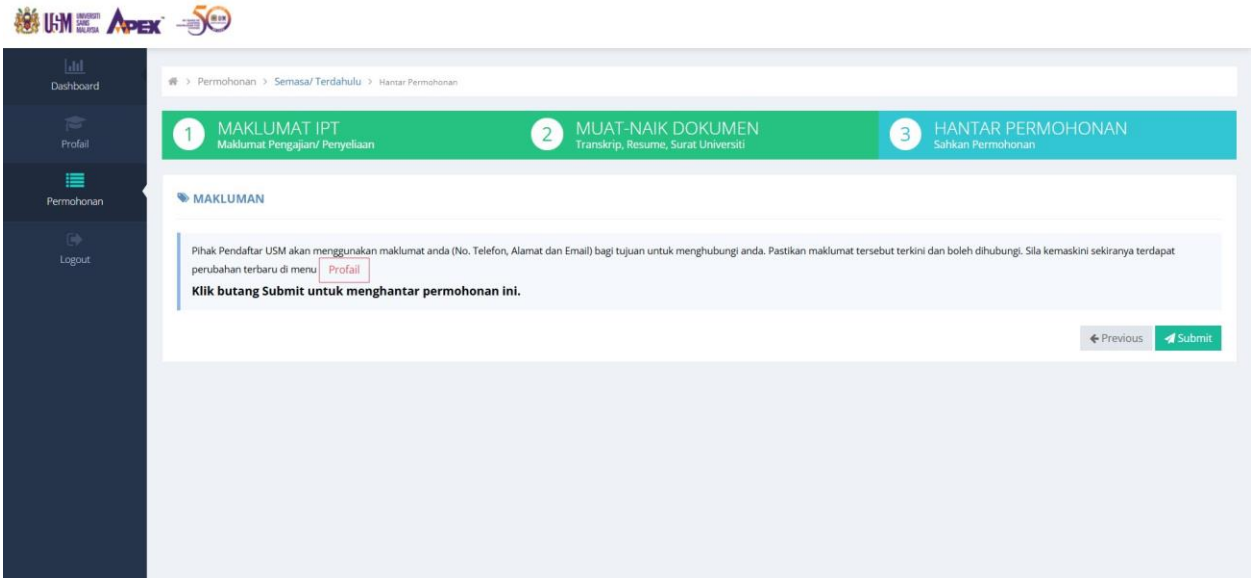

Figure 2.2.1.10 Confirmation Page

Figure 2.2.1.11 show the application status page where the user can review their application. The system provide a function where the user can modify their application. The system also had a function where the user can create a copy of PDF, Excel and CSV for the application.

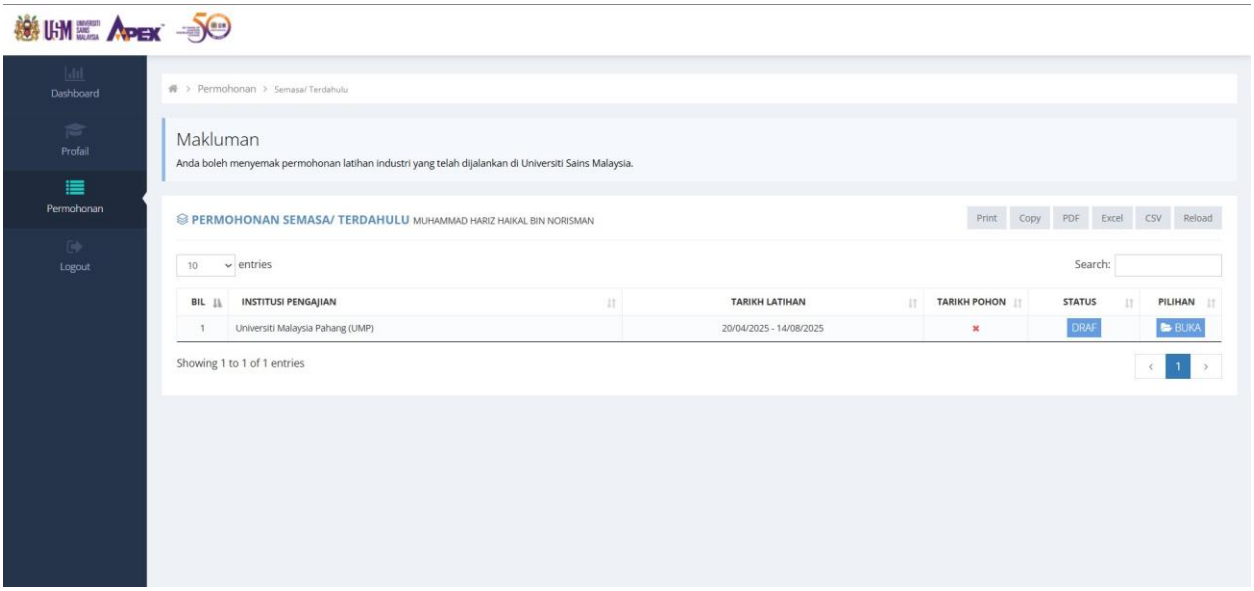

Figure 2.2.1.11 Application Status Page

2.2.2 OSCAR University Malaysia Pahang Al-Sultan Abdullah

UMPSA offers a system for the alumni of the university to view the activity that will be held at the university. The system provides the alumni the news and event at the university which will help the alumni to get to know the current activity at the university. It also provide the job opportunities in the system where it can help the postgraduate student or undergraduate student who want to pursue their next internship or next job. The system also help who want to share their company open vacancy to help the UMPSA alumni.

Figure 2.2.2.1 show the homepage of the OSCAR UMPSA.

Figure 2.2.2.1 OSCAR Dashboard Page

Figure 2.2.2.2 shows the list of news & events where all the news can be viewed by the alumni in the system. The system provide the user to make an action to participate the registration for the chosen event.

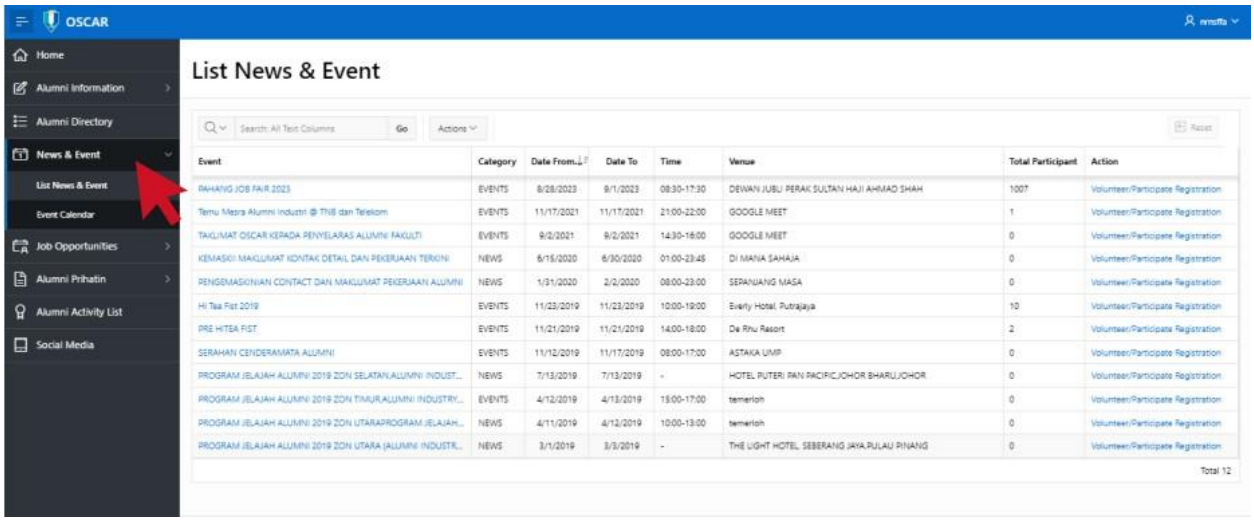

Figure 2.2.2.2 List News & Event Page

Figure 2.2.2.3 shows the popup after clicking on the event link for the user to get the details information. This figure will help the user to understand more about the event before submit their participation.

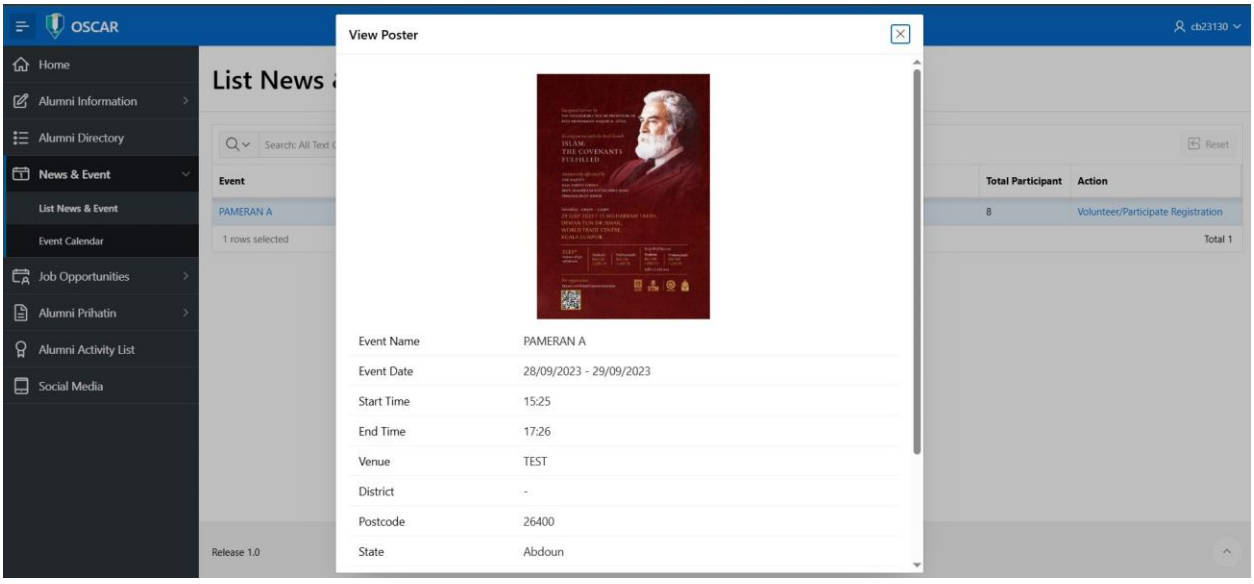

Figure 2.2.2.3 Popup Event Page

Figure 2.2.2.4 shows the list of job opportunities to help the unemployed alumni to find their job. The list of job vacancies will appear when clicking the ‘List of Job Opportunities’ and it will appear at the ‘My Job Opportunities’ section when the alumni have made the application on the job vacancy.

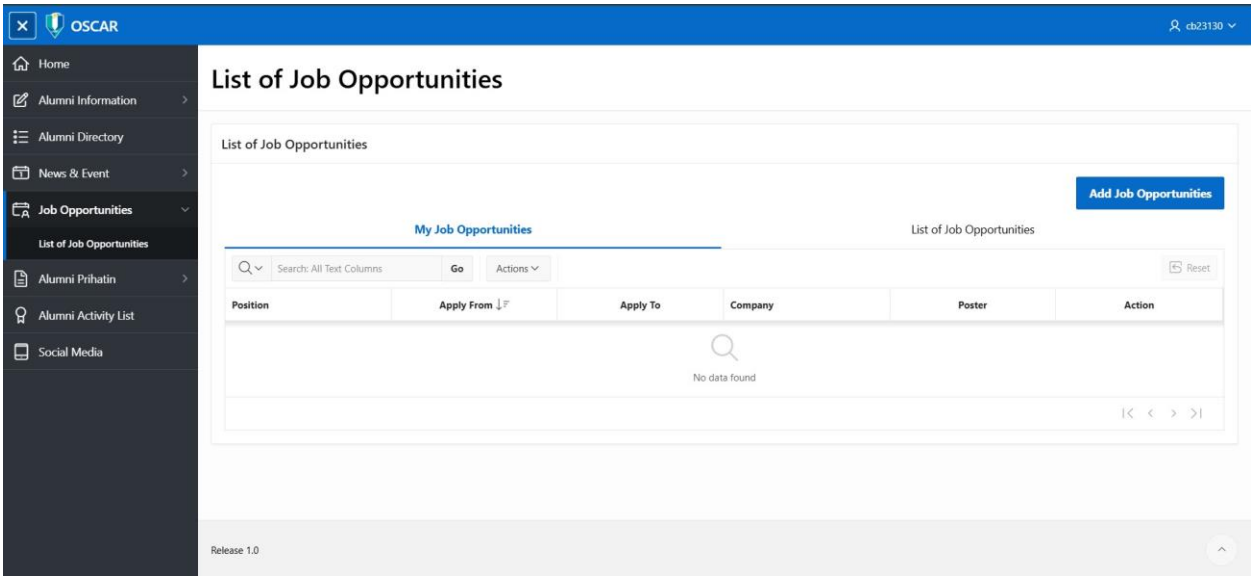

Figure 2.2.2.4 List of Job Opportunities Page

Figure 2.2.2.5 shows the form of job opportunities when the alumni want to add their vacancies in the system. The user need to fill in all the required information and click the upload button to successfully added their vacancies in the system.

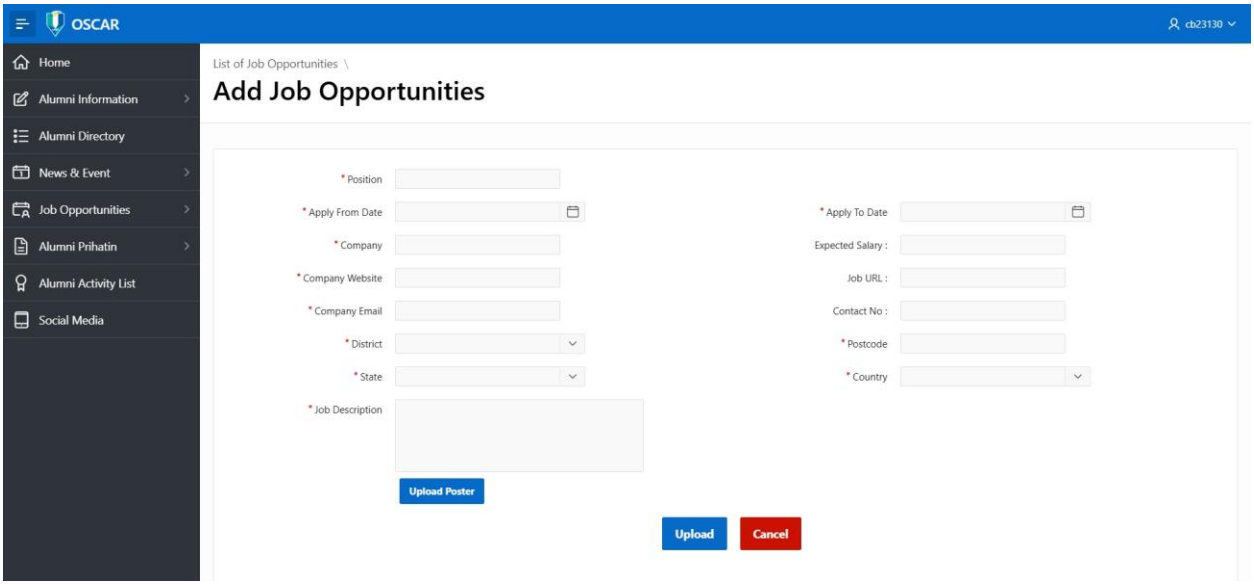

Figure 2.2.2.5 Add Job Opportunities Page

2.2.3 e-LI Universiti Tun Hussein Onn Malaysia (UTHM)

e-LI UTHM system provide a systematic flow for student to pursue and completing their industrial training. The system had a function for student to make a new application on their industrial training. With this function the student do not need to make an application through email and needed a paperwork to have an approval from the coordinator. Next, the system provide a function for student to add the company that they had approach and receive the offer letter to submit in the system. Then, the system also provide the student a different resume template to help them get an idea to create their own resume using their creativity. Lastly, the system provide an online logbook where the student does not need to make a physical logbook which can cause a missing information.

Figure 2.2.3.1 show the registration page of the system where the student can make a new application and view the information session and supervising for the current year and semester. The student need to click the 'NEW APPLICATION' button to continue make a new application.

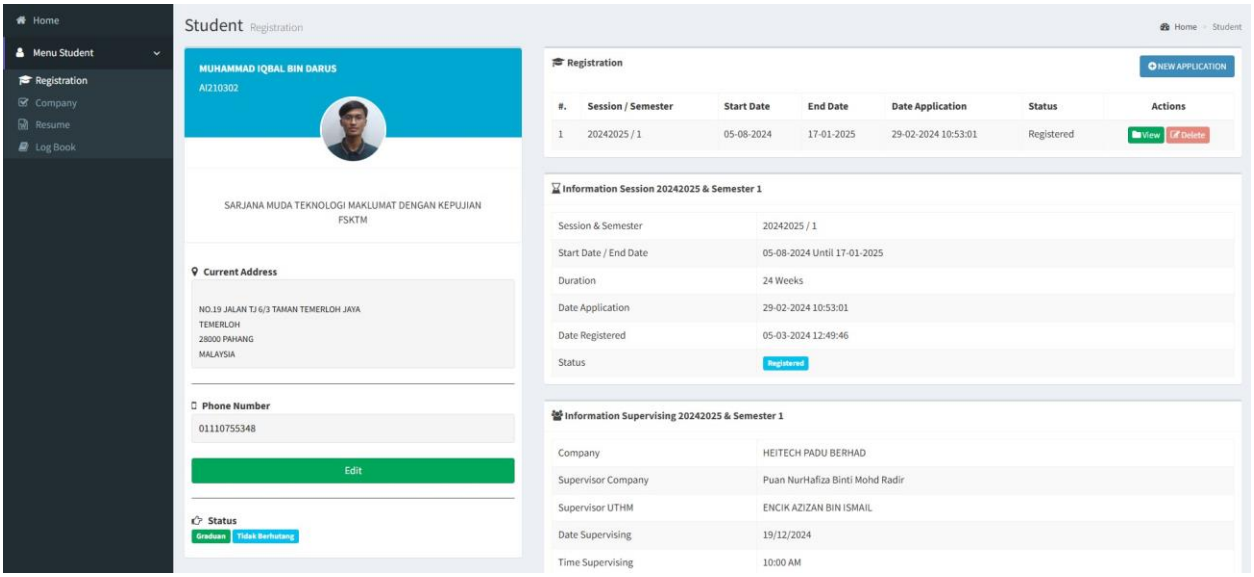

Figure 2.2.3.1 Registration Page

Figure 2.2.3.2 shows the registration internship information which is the start and end date, the duration of internship, registration phase.

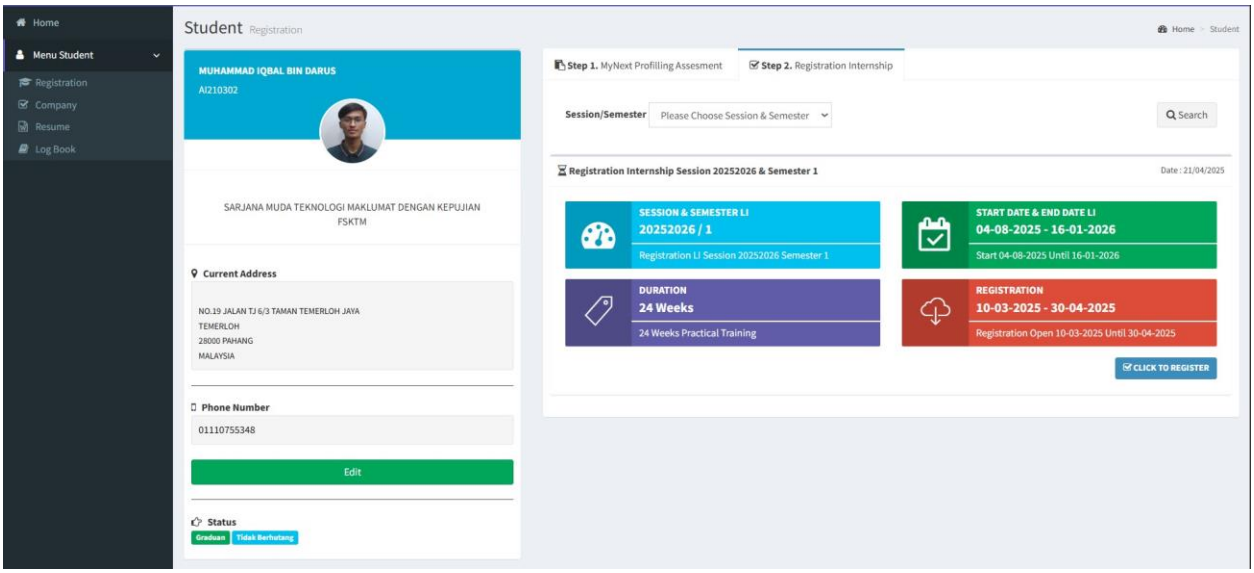

Figure 2.2.3.2 Registration Internship

Figure 2.2.3.3 shows the company interface where the student need to add the company information that they had approach and got the offer letter. When the student successfully add the company, the coordinator will make a decision either it is suitable for the student or not. It will display at the status placement row for the approval.

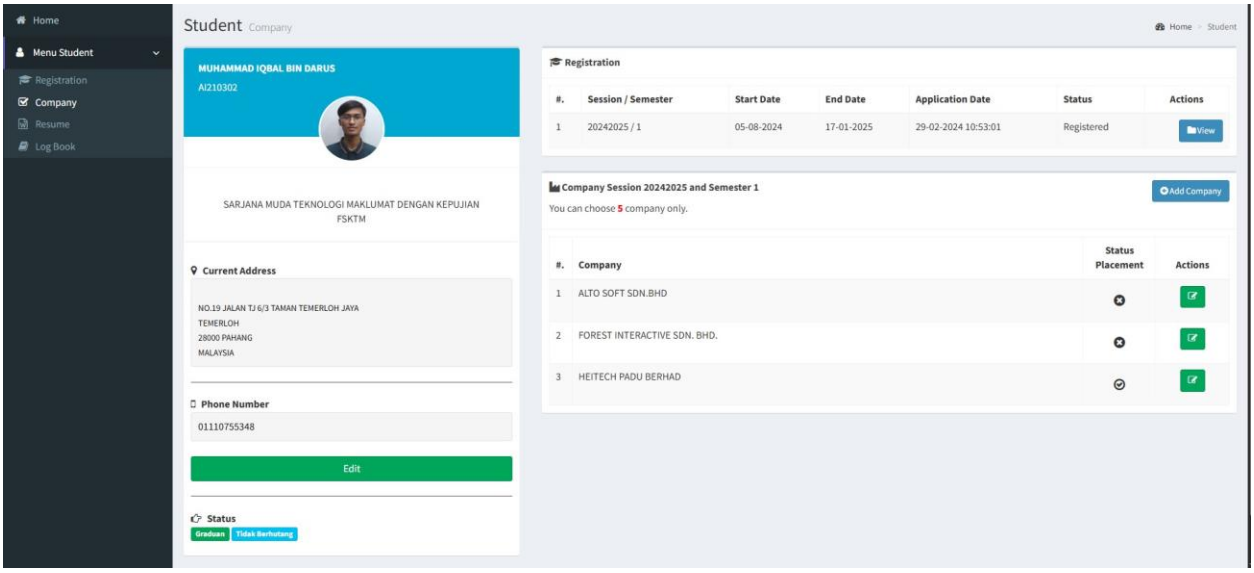

Figure 2.2.3.3 Add Company

Figure 2.2.3.4 shows the interface of the detail of the company when the coordinator had accepted the application. The student need to update the duty form and view the company feedback status.

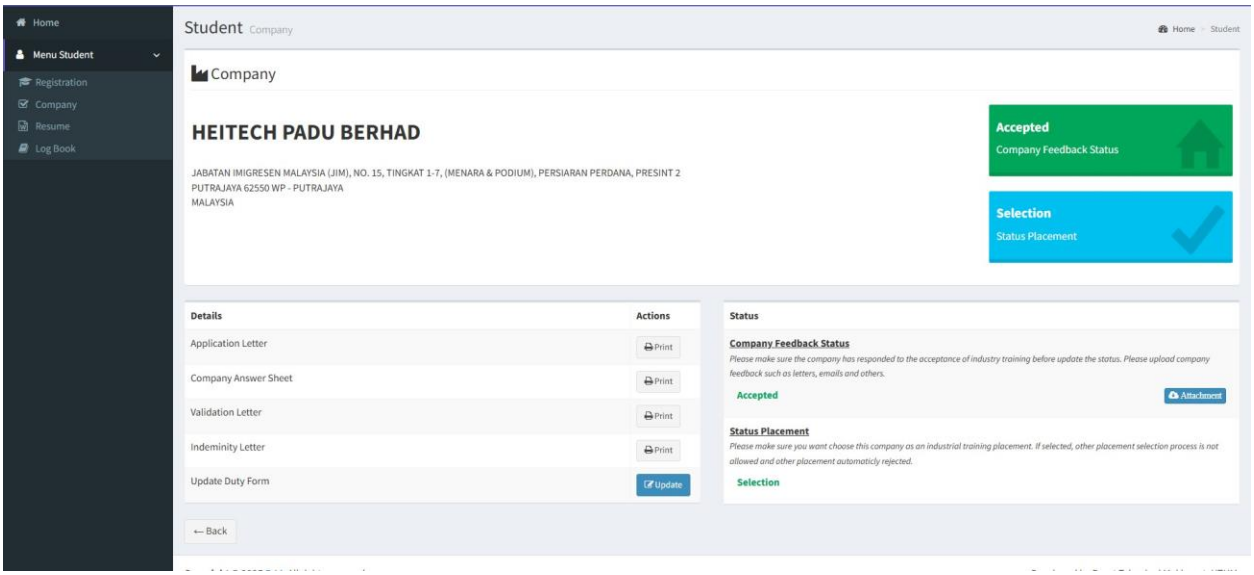

Figure 2.2.3.4 Detail Company

Figure 2.2.3.5 show the interface of resume template page. In this page the student can download any resume template to help them create their own resume for applying the internship.

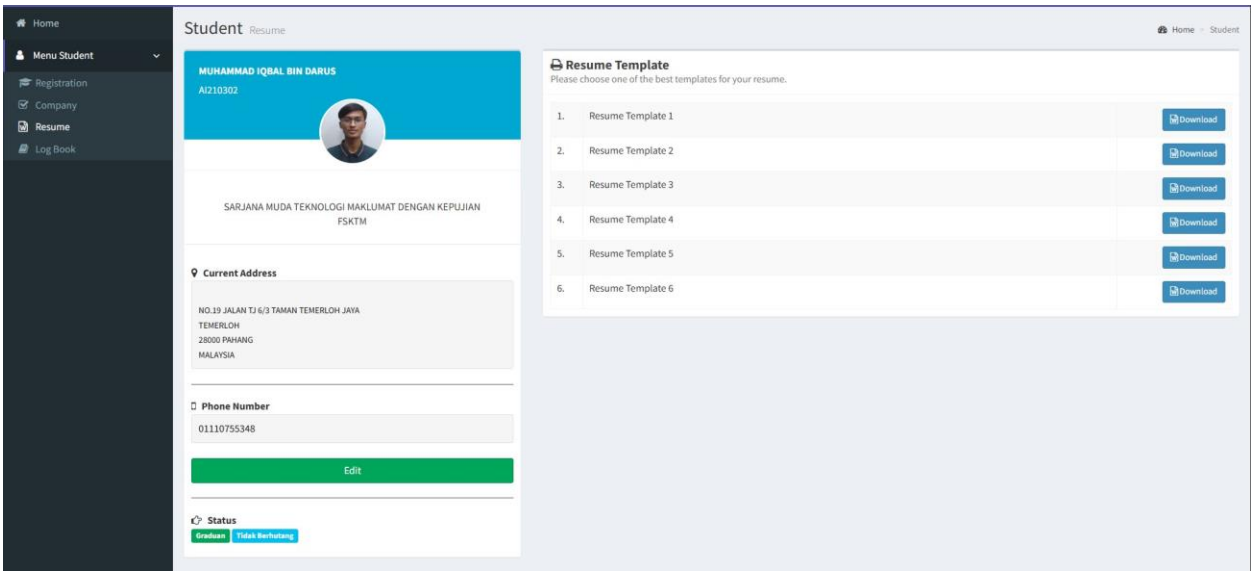

Figure 2.2.3.5 Resume Template

Figure 2.2.3.6, 2.2.3.7 and 2.2.3.8 shows the interface of e-Logbook for student to fill in every week of their activity during their internship progress. This is to help them keep updating in the system to avoid missing information and easily to reach their supervisor using the e-Logbook system.

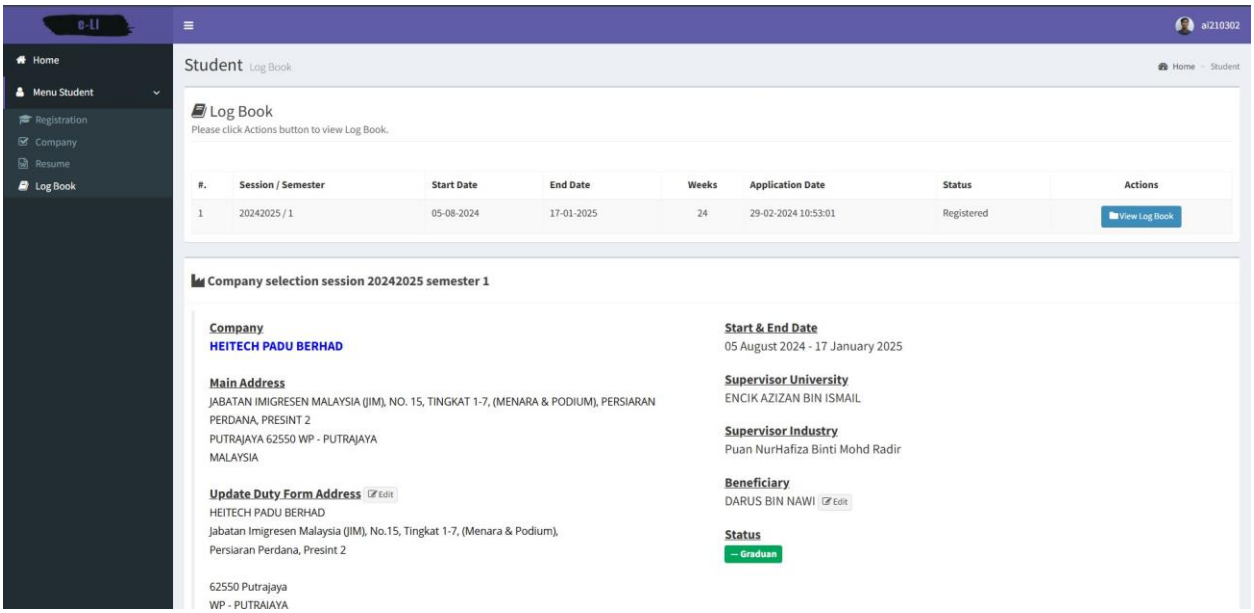

Figure 2.2.3.6 e-Logbook

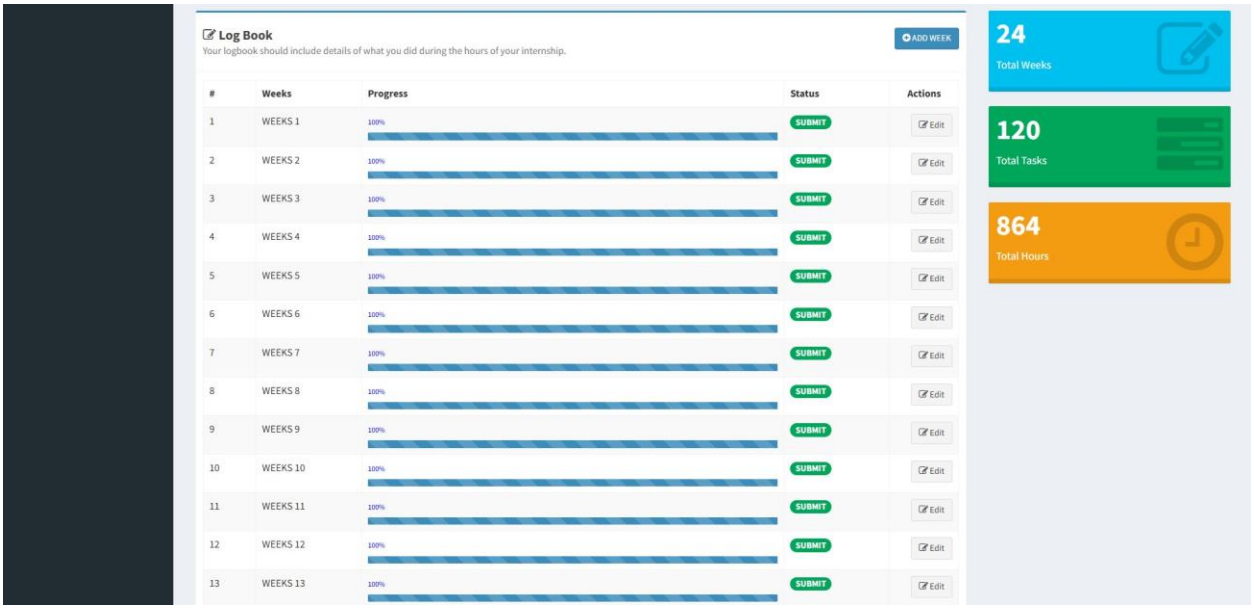

Figure 2.2.3.7 e-Logbook List

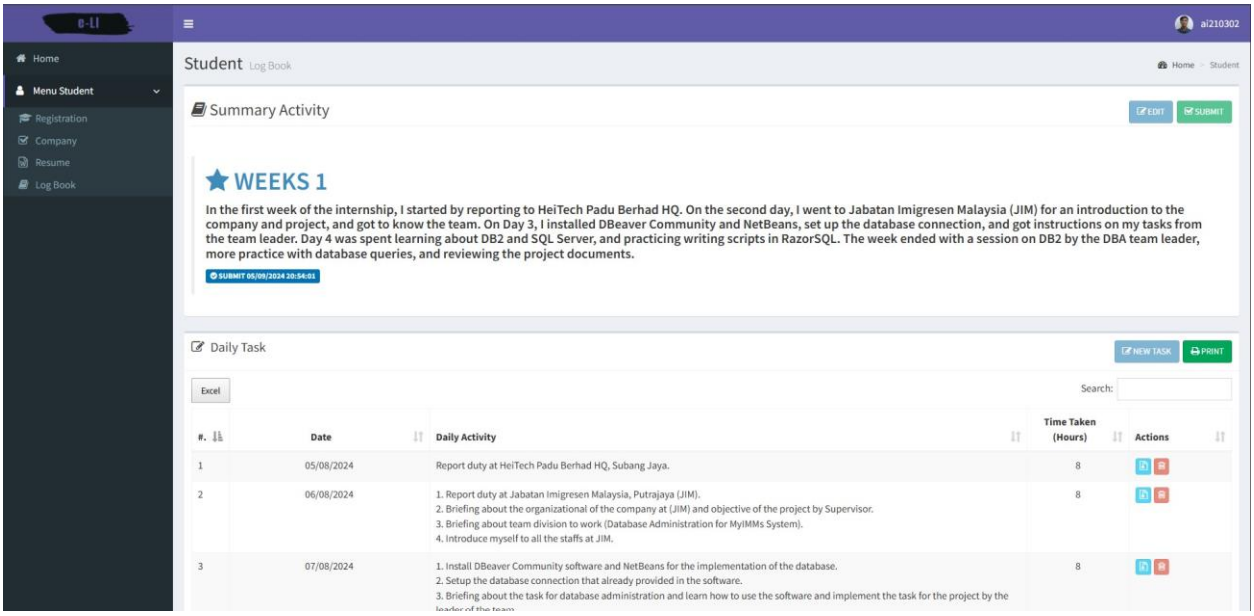

Figure 2.2.3.8 Logbook Task and Activity

2.3 Comparison of Existing System

2.3.1 Analysis of comparison on existing system

Table 2.1: Comparison of existing system

Criteria	SPPLI USM	OSCAR UMPSA	e-LI UTHM	InternLink
Deployment Platform	Website-based	Website-based	Website-based	Website-based
Supported Operating System	Any digital devices with web browsing	Any digital devices with web browsing	Any digital devices with web browsing	Any digital devices with web browsing
System Focus	Serve internship placement at USM	Gather alumni information, news and job opportunities	Industrial training activity and information.	Making approval placement before industrial training using online system
Interface Language	Bahasa Melayu	English	English	English
Advantages	Provide PDF, CSV, Excel, Print generated functions.	Centralized the information of alumni in one place	Students can keep tracking their logbook.	Ease students to gain placement approval faster.
Disadvantages	No direct interaction with the supervisor	Keep pop up an acceptance T&C every log in session.	Does not provide any user guidance	Requires SMS API to keep reminding the students and

				supervisor.

2.3.2 Relevance of comparison with project title

The three existing systems that chosen to be compared are in the same domains as the project title (InternLink) which is the internship approval placement.

Table 2.2: Comparison of Features of existing system and proposed system

Features/System	SPPLI USM	OSCAR UMPSA	e-LI UTHM	InternLink
User-friendly interface	✓	✓	✓	✓
Course Verification	✗	✗	✗	✓
Internship Placement Approval	✓	✗	✓	✓
Reminder for Evaluation	✗	✗	✗	✓
Assign Supervisor Process	✗	✗	✗	✓
Smart Recommendation Internship Placement	✗	✗	✗	✓
Multiple User Account System	✓	✗	✓	✓

Update Personal Profile Details	✓	✓	✓	✓
Tracking Internship Approval	✓	✗	✓	✓
Provide Online Logbook	✗	✗	✓	✗
News and Activity Information	✗	✓	✓	✗

Some pros and cons of each existing system can help decide which specific features and techniques need to be applied and avoided in the InternLink project.Many universities have developed web-based platforms to facilitate internship and alumni related processes. The primary objective of InternLink is to create an online internship placement approval system to reduce paperwork, minimize delays and enhance coordination between students and supervisors.

SPPLI USM, Oscar UMPSA, and e-LI UTHM serve as examples that are website based and support access via any digital device with web browsing capability. They provide functionality specific to their institutional needs such as alumni tracking, internship logbook management, and document export. However, all systems come with disadvantages that might affect their efficiency and user experience. SPPLI have no direct interactions with the supervisor, OSCAR have an interface problem where the terms and conditions keep popping up everytime the user logs in to the system, and e-LI does not provide any user guidance as the system is quite complicated for new users. Oscar and e-LI use an english language interface, and SPPLI serve the user using a bahasa melayu language. The InternLink is design to be an English language interface as it is a general language that can be understood by everyone.

All of the existing systems provide an user friendly interface with a good simple and minimalist design. Both e-LI and SPPLI provide a functionality to make an internship placement approval while Oscar focusing on centralizes the alumni data. They provide a function to keep track of the user internship approval as it is an important information that the user needs to know everytime they use the system. They also have a multiple user account system where the students and the staff can use the system with different interfaces depending on the user role but Oscar only has one main user to use the system. One of the e-LI main strengths is it provides an online logbook for the student to update their internship activity in the system and help to reduce data loss and not be required to use physical notes. Oscar and e-LI provide a news and activity feed to keep the user get in touch with the latest updates of activity that happen in the system. Sll of the existing systems provide a function to let the user keep updating their user profile.

In conclusion, the comparative analysis plays a significant role in determining the project direction and ensuring the suitable alignment and technology used in this project. It offers valuable information and insights for developing an effective and user-friendly Internship Approval Placement system.

2.4 Summary

In chapter 2 , the three existing system SPPLI USM, OSCAR UMPSA, and e-LI UTHM are analyzed and compared. Through the analysis of these three systems, the advantages and disadvantages of these systems were summarized in the tables. By comparing these three existing systems, there are some essential features and critical aspects that need to be included in InternLink to improve the potential of the proposed system. Firstly, the system shall make a course verification for students before pursuing their industrial training. This is to ensure that the students have finished all of the subjects that need to be passed before taking the industrial training. Then, the system shall remind the supervisor and students to make an evaluation for the assessment using an email. Besides, the system shall assign the recommended lecturer to be the faculty supervisor for students. In addition, the system shall help the student by providing a smart recommendation for internship placement to achieve the most suitable place for their industrial training. Next, the system shall allow the students to track the status of the approval placement application, view past placement applications and receive the notification on the approval.

The system shall have a multiple user account system as the student will need to make an application for the internship placement and the coordinator needs to make an approval for the student application. Finally, the user interface of the proposed system should be user-friendly and simple to use because the high complexity of the user interface will affect the interest of users in using the system. The proposed system should have straightforward features and functionalities that make it easy for students to apply for internships.

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter describes all the methodology details in this project by providing a clear explanation why the Rapid Application Development (RAD) is the selected methodology and each stage of the RAD model to provide a roadmap for the project and implementation. Every phase of the chosen software development life cycle (SDLC) explain the foundation for understanding the overall approach and framework for the project. The chapter include the software process, Gantt chart, project requirements, proposed design, data design, proof of concept and testing plan for this project.

3.2 Project Management Methodology

Rapid Application Development (RAD) is the chosen one for this project after reviewing other methodologies like waterfall, prototype, agile and so on. This is because RAD is an excellent approach to quickly develop prototype with little emphasis on planning in a short period. The RAD model accommodates changes and end-user feedback more flexibly in the development process to ensure the final product closely aligns with their expectations (Zoho, 2025). RAD have been popular in the past decade due to its low cost, rapid delivery, and flexible to requirement changes (Beynon-Davies et al., 1999).

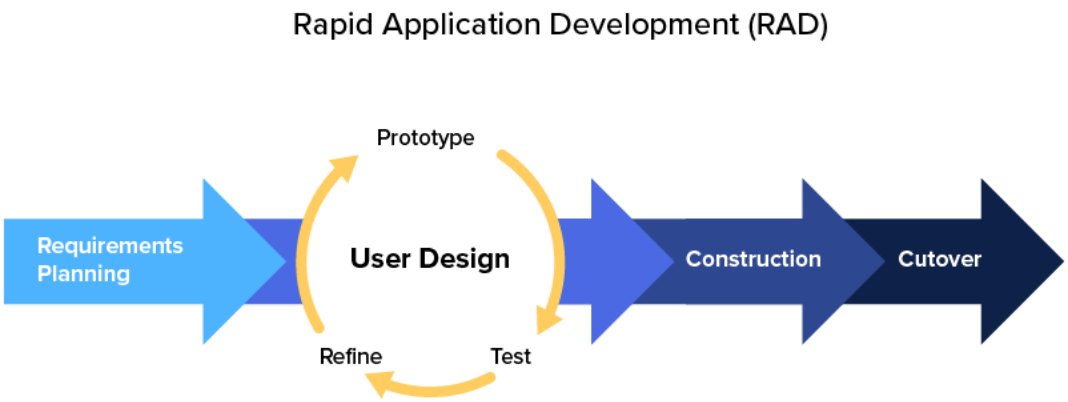

Figure 3.1: Rapid Application Development (RAD) Methodology

Figure 3.1 show the overview of Rapid Application Development (RAD) methodology use in this project. This methodology consist of 4 phases which are requirements planning, user design, construction and cutover. In the user design phase, it will go through an interactive technique which are prototype, test, and refine.

In requirements planning phase, the users which are the students and staff of faculty computing in UMPSA are involved to gather and analyse the requirements details of the InternLink system. It is to identify the main requirements and functionalities like goals, expectations, timelines and budget of the system. By analysing and comparing the three existing system, it can extract the information to identify the specific functionalities and features to the system. The requirement will be the foundation for constructing the context diagram, flowchart, entity relationship diagram, and data flow diagram.

In user design phase, the goal is to developed the prototype using Figma tool. It is to rapidly make a visual design to demonstrate to the stakeholders. The prototype provides an initial concept and flow of the system's user interface, features and workflow. The working prototype will keep evolving based on the user feedback to maintain and satisfy user needs in the system.

Next in construction phase is to developed the system according to the feedback and final prototype design produce from the user design phase. The coding development will be using Laravel Framework as the main language for the system with HTML, CSS and PHP for web based applications system. During this phase, it will focusing on the functionality over perfect design

since visual and workflow models were already reviewed by users. After developing, the system will undergo the testing to ensure that the system is free of eros and meet the requirements from previous phases.

Lastly is the cutover phase, which means the system has been completed in every aspects and ready to deploy to a live production environment and enable the users to access. During deploying, all hardware and software requirements as well as network configuration will be considered to ensure that the system can be deployed successfully and ready to use. Then, user acceptance testing (UAT) will be conducted to verify and validate that the system is working as expected and meets the requirements defined in the planning phase. The system will be officially launched and ready to use by the target users after the system is validated and approved.

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