

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter is presenting the review of any existing system that already exists in literature from reputable publisher and relate it with the development of this project, Student Talent Profiling App for comparison and improvement from the existed system. It focuses on domain case study, method of technology that used for developing the system, and study of existing related systems. The purpose of this chapter is to provide theoretical background and justification for the proposed system by analysing the system, identifying any gaps, and explaining how the project will contribute to solving the real-world problems in real case.

The structure of the chapter will include description of current situation system used in FSKTM, UTHM and followed by discussion on the method technology in developing the new system. Three existing related system are analyzed, compared to and evaluated. Lastly, the proposed system is described in detail, and its features are compared with the existing systems.

2.2 Domain Case Study

Fakulti Sains Komputer dan Teknologi Maklumat (FSKTM) at Universiti Tun Hussein Onn Malaysia (UTHM) playing a vital role in produce quality skilled graduates' student in computer science and technology. However, the current process of managing student talents relies heavily on manual data collection through google forms and local digital storage in office computers.

According to the project background, only administrative staff have access to updating and analyzing the data, leading to inefficiencies and limitations of access during outside office hours. This problem highlighted the need for a centralized, digitized, and accessible system that allows students to create and manage their own profiles, achievement and enabling the lecturer to view and analyze talent-related data efficiently.

A digital platform like the Student Talent Profiling App will streamline this process by allowing real-time updates, cloud-based data storage and user-based access control. This will address the limitations of the current system by providing dynamic, flexible, and interactive approaches to managing student talents.

2.3 Method and Technology

2.3.1 Mobile App System

For the mobile app development, **Flutter** is used as the primary framework. Flutter is a powerful, open-source framework by Google that allows for the development of high-performance, cross-platform mobile applications for both **Android** and **iOS**. The use of Flutter ensures that the mobile app runs seamlessly on both platforms, offering a consistent user experience across devices.

Just like the web-based system, the mobile app is connected to **Firebase**, which serves as the backend for real-time data storage and authentication. The app allows students to create and manage their talent profiles, showcase achievements, and track progress. The connection with Firebase ensures that all data entered in the mobile app is synchronized with the web-based system, providing administrators with real-time updates.

The mobile app also integrates various functionalities, including **notifications**, to alert students when there are updates or changes to their profiles or achievements. This enhances the app's interactivity and engagement, allowing students to stay up to date with their career development.

2.3.2 Web-based System

The web-based component of the Student Talent Profiling App serves as the Admin Dashboard. The dashboard allows administrators to manage student profiles, generate reports, and analyze data. For the front-end development, we use a combination of HTML, CSS, and JavaScript. These technologies are essential for building the user interface (UI), providing an interactive and responsive experience for the administrators.

The front-end is connected to Firebase, which serves as the backend to store and manage the data. Firebase is used for real-time data synchronization, authentication, and database management. It allows for secure and efficient data handling, ensuring that all student profiles and credentials are stored and accessed securely. Additionally,

Firebase integrates seamlessly with JavaScript, enabling dynamic updates to the dashboard without needing to refresh the page.

The data mining functionality is an integral part of the web-based system. It is used to generate reports and analytics on student performance, skills, and achievements. By leveraging Firebase's real-time database, the system can quickly process and analyze student data to generate insights. These reports can help administrators and faculty members track the progress of students, identify trends, and make informed decisions about student development and career planning.

2.3.3 Object-Oriented Approach (OOA)

The Object-Oriented Approach (OOA) plays a crucial role in the design of the Student Talent Profiling App. This software development methodology is focused on organizing the system around objects rather than functions and logic. Objects represent entities within the system, such as students, admin, achievements, and skills, each with attributes and behaviours.

In this system, each entity, such as a student, has a corresponding class that contains attributes like name, email, achievements, and methods for updating and managing the data. Similarly, other entities such as Achievements or Skills are modelled as classes that can store data and allow for easy retrieval, modification, and interaction.

OOA allows for better modularity and reusability in the system, making it easier to manage the development and maintenance of the application. Each module of the app is treated as a separate object, allowing the development team to focus on specific parts of the system without affecting other components. This modularity also facilitates easier debugging, testing, and scaling of the system over time.

Since OOA is a methodology that guides the software design rather than a specific technology, it fits within the System Design section of the report, where you will explain how the system was organized and structured. This methodology allows for clear separation of responsibilities, smooth data flow, and the ability to easily extend the system with new features.

2.4 Study of Existing Related Systems

The management and recognition of student achievement have evolved significantly with the advent of digital credentialing platforms. These platforms offer a secure, verifiable, and sharable means to acknowledge student's skill and accomplishments. There are three existing system to be compared, start with Credly, LinkedIn, and CertifyMe highlighting their features and relevance to the proposed Student Talent Profiling App.

2.4.1 Credly by Pearson

The source of the platform is <https://info.credly.com/>. Credly is a leading digital credentialing platform that enables organizations to issue, manage, and share verifiable digital credentials. It supports the Open Badge standard, allowing for rich metadata to be embedded within each credential, such as the issuer's identity, criteria for earning the badge, and evidence of achievement. This transparency enhances trust and recognition among employers and educational institutions.



Figure:

The platform is widely used adopted across various sectors, including education, corporate training, and professional certification. It integrates with learning management systems (LMS) and offers analytics tools to track the impact and reach of issued credentials. Credly's scalability and security features make it a robust choice for institutions aiming to implement a comprehensive digital credentialing system.

This system offer significantly functionality with the proposed system, it have credentials issuance where organizations can create and issue digital badges,

verification and security, analytics and reporting, a mobile application for on the go and single Sign-On (SSO).

There are areas where Credly lack and can be improved to suit better the needs for Student Talent Profiling App. The improvement is localized language support, integration with local systems, and customizable reporting.

2.4.2 LinkedIn

<https://www.linkedin.com/> is the URL for the website. LinkedIn is a globally recognized professional networking platform that facilitates connections among professional, organization, and educational institutions. The platform allow users to add certificates to their profiles, providing a dedicated section where achievements can be displayed. These certificates often include metadata such as the issuer's name, the data of issuance, and the credential's validity period, offering transparency and verifiability to potential employers and collaborators. Additionally, LinkedIn supports the integration of digital badges, which are visual representation of specific skills or accomplishments. These badges can be shared across various platforms, including social media, enhancing the individual's professional presence and reach.



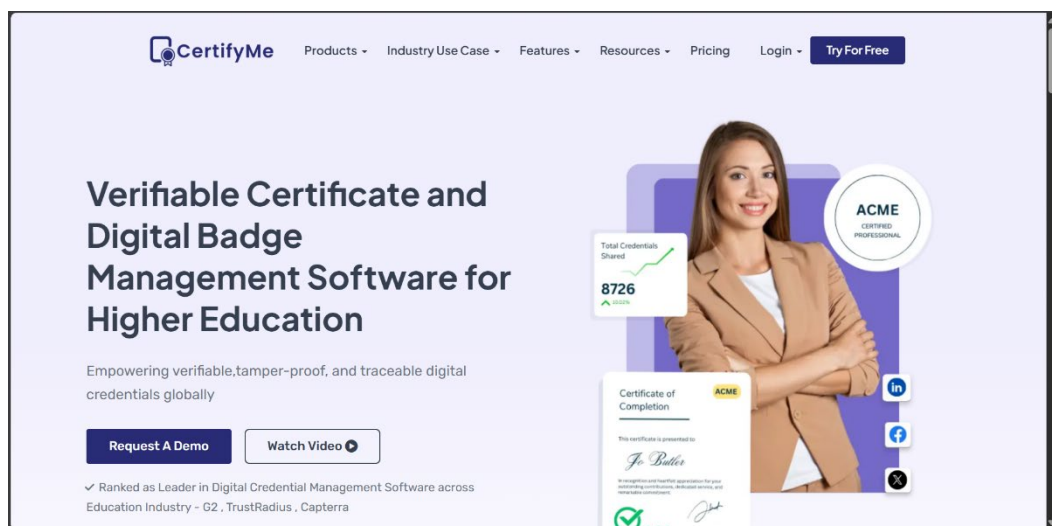
Figure:

LinkedIn offer several functionalities that can be complement the Student Talent Profiling App. The student can link their digital credentials from Student Talent Profiling App directly to their LinkedIn profile, providing a seamless representation of their achievements. By displaying their credentials, students can attract the attention of potential employers, collaborators, and industry professionals, fostering valuable connections. Sharing achievements on LinkedIn can enhance the student's professional visibility, leading to increased recognition within their field of study. LinkedIn allows connections to endorse skills and write recommendations, further validating the student's competencies and experience.

While LinkedIn provides robust features, there are areas where customization could better suit for the project proposed. By implementing multilingual option can cater a diverse student body. Ensuring compatibility with local LMS and database can streamline processes. Developing tailored analytics dashboards can provide more relevant insight for admin. With this, Student Talent Profiling App can offer a comprehensive solution for recognizing and showcasing student achievement.

2.4.3 CertifyMe

<https://www.certifyme.online/> is the URL of the website. This system is a robust digital credentialing platform designed to streamline the creation, issuance, and management of verifiable digital certificates and badges. It offers a comprehensive suite of features tailored for educational institutions, corporate training programs, and professional associations. These features include customizable templates for certificates and badges, integration capabilities with Learning Management Systems (LMS), analytics tools for tracking credential usage, and white-labelling options to align the platform with an organization's branding. CertifyMe's platform supports the issuance of Open Badge-compliant credentials, ensuring that each credential is secure, tamper-proof, and easily shareable across various digital platforms.



CertifyMe offers several functionalities that can complement and enhance the Student Talent Profiling App at FSKTM, UTHM. The platform's customizable templates allow the creation of digital credentials that reflect the university's branding, providing students with professional-looking certificates and badges that they can

proudly share. The integration with LMS platforms ensures that credentials are issued automatically upon course completion, streamlining the process and ensuring timely recognition for students. The analytics tools provide valuable data on credential usage, such as views, shares, and downloads, offering insights into student engagement and the effectiveness of the university's programs. Additionally, CertifyMe's white-labeling options enable the university to maintain a consistent brand presence across all digital credentials, reinforcing its identity and enhancing its reputation.

While CertifyMe offers a comprehensive suite of features, there are areas where customization could better suit the needs of FSKTM, UTHM. Implementing multilingual support can cater to the diverse linguistic backgrounds of students, ensuring that digital credentials are accessible to all. Integrating with local job portals and professional networks can enhance the visibility of students' achievements and facilitate their transition into the workforce. Additionally, developing mobile applications or optimizing the platform for mobile devices can provide students with convenient access to their digital credentials, allowing them to showcase their accomplishments anytime and anywhere. By leveraging CertifyMe's capabilities and customizing its features to align with the university's specific needs, FSKTM, UTHM can provide students with a comprehensive solution for recognizing and showcasing their achievements, thereby enhancing their academic and professional prospects.

2.4.4 Your proposed system

The proposed system, the Student Talent Profiling App, is designed to streamline and enhance the management and visibility of student achievements, skills, and qualifications at the Faculty of Computer Science and Information Technology (FSKTM), Universiti Tun Hussein Onn Malaysia (UTHM). The app aims to serve as a centralized digital platform where students can create and manage comprehensive profiles, showcasing their academic accomplishments, skills, certifications, extracurricular activities, and personal projects. This system offers a dynamic and user-friendly interface that allows students to present a detailed and interactive representation of their talents and experiences.

The key functionality of the proposed system revolves around the creation of personalized digital portfolios. Students can input and update their information,

including their educational background, skills, achievements, and any certifications or awards they have earned. The app integrates with external platforms like LinkedIn and Credly, allowing students to automatically import and display digital credentials such as certifications, badges, and endorsements. This feature ensures that students can maintain a current, professional, and verifiable record of their accomplishments, which can be shared easily with potential employers, collaborators, and academic institutions.

In addition to portfolio management, the system includes skill assessment tools that enable students to evaluate their competencies in various areas. These tools consist of interactive quizzes and self-assessments that help students gauge their strengths and identify areas for improvement. By providing this feature, the app empowers students to take a proactive approach to their personal and professional development.

Moreover, the proposed system offers career development resources, including articles, webinars, and workshops on essential topics like resume writing, interview techniques, and job search strategies. This is particularly beneficial for students as they prepare to enter the workforce, as it equips them with the knowledge and tools they need to succeed in their job search. Additionally, the app facilitates job matching and networking opportunities, connecting students with potential employers and industry professionals. This feature fosters valuable relationships and can help students find internships, job opportunities, and mentors, further enhancing their career prospects.

The system's design also emphasizes data-driven decision-making. With the integration of analytics, the app will provide valuable insights into students' skills, achievements, and professional development. This will allow faculty members, career advisors, and administrators to offer targeted support, track student progress, and make informed decisions regarding program improvements and career services. The app's database will securely store all user profiles and assessment results, ensuring that student data is protected while remaining accessible to authorized users.

By providing students with a platform to document, manage, and showcase their skills and achievements, the Student Talent Profiling App aims to enhance the employability of graduates and improve industry engagement. It empowers students to take control of their career development, offering a comprehensive solution that supports both academic success and professional growth. The integration of external platforms, career development resources, and networking opportunities creates a

holistic approach to student career readiness, equipping them with the tools and resources needed to thrive in their future careers.

2.4.5 Comparison with the Existing Systems

The proposed Student Talent Profiling App combines the strengths of these existing systems and introduces additional functionalities that are tailored to the needs of students at FSKTM, UTHM. These include personalized profile creation, career development resources, skill assessments, and job matching opportunities. The app not only integrates with external platforms like LinkedIn and Credly but also provides an intuitive interface and secure database for storing student data. It also incorporates features for students to showcase their achievements and track their progress, ultimately enhancing their employability and professional development.

By integrating various credentialing and career readiness features into one centralized platform, the Student Talent Profiling App offers a more comprehensive solution for students, addressing the gaps that exist in the current systems. The app aims to streamline the management of student profiles, enhance their visibility, and provide them with the resources and opportunities they need to succeed in the job market.

Table 2: System's Comparison

Features/System	Credly	LinkedIn	CertifyMe	Student Talent Profiling App
Log In	√	√	√	√
Profile Management	√	X	√	√
Skill Assessment	X	X	X	√
Achievement Showcase	√	√	√	√
Job Matching		√		√

Integration with External Platforms	√	√	√	√
Career Development Resources	X	√	X	√
Networking Opportunities	X	√	X	√
Reporting and Analytics	√	X	X	√

The comparison table reveals several key differences and advantages of the proposed Student Talent Profiling App over existing systems like Credly, LinkedIn, and CertifyMe. While platforms like Credly and CertifyMe focus heavily on credentialing and certification, and LinkedIn emphasizes professional networking, the proposed system combines all these aspects and adds additional functionalities tailored to the needs of FSKTM students at UTHM.

The Student Talent Profiling App goes beyond simple credentialing by incorporating skill assessments, career development resources, and job matching, which are not available in the existing systems. Additionally, the integration of LinkedIn and Credly allows for seamless sharing of achievements while still maintaining a comprehensive approach to talent profiling that offers both personalized student profiles and networking opportunities with potential employers.

By providing a centralized, easy-to-use platform for students to manage their skills, achievements, and career readiness, the proposed system offers an all-in-one solution that bridges gaps in the current systems, providing students with the tools they need to enhance their professional development and employability.

2.5 Chapter Summary

In this chapter, we explored the functionalities of the existing systems—Credly, LinkedIn, and CertifyMe—and compared them with the proposed Student Talent Profiling App designed for FSKTM, UTHM. Each of these systems provides valuable features, including digital credentialing, professional networking, and skill recognition. Credly focuses on issuing and managing verified digital credentials, while LinkedIn is widely used for professional networking and showcasing certifications. CertifyMe offers customizable digital certificates and badges, making it an ideal platform for credential issuance.

The proposed Student Talent Profiling App combines the strengths of these systems, offering personalized student profiles, integration with external platforms like LinkedIn and Credly, skill assessments, and job matching features. It goes beyond credentialing by providing students with the tools they need to assess their skills, receive career development resources, and connect with potential employers and industry professionals.

By integrating features from the existing systems and adding new functionalities that are specifically tailored to the needs of students at FSKTM, UTHM, the proposed system aims to provide a comprehensive solution for managing and showcasing student achievements, fostering employability, and enhancing professional development.

This chapter laid the foundation for understanding how the Student Talent Profiling App will improve the current student talent management process, offering a holistic platform that empowers students to take control of their career readiness and connect with opportunities. The next chapter will discuss the methodology used to develop the system, detailing the process and technologies implemented to create the app.