CHAPTER 1

INTRODUCTION

1.1 Background of the Project

As the world of work rapidly evolves with advancements in automation and technology, employers now require a higher level of intelligence to keep pace with these aggregate changes. This condition makes every worker, including those in frontline and essential roles have to contend with new digital demands across all industries to survive in a disruptive economy. (Bergson-Shilcock et al., 2023).

According to (Santosa et al., 2017), it is estimated that in 2030-2040, Indonesia will experience a demographic bonus, which refers to a country's advantage in population growth due to a high proportion of productive individuals aged 15-64. Individuals within that age range belong to the working-age demographic, including individuals aged 15 and over who are capable of producing goods and services, and also can engage in such activities if there is a labour demand. (Deza, 2020).

In Indonesia's employment sector, demographic bonuses can contribute to economic growth if it's effectively develop a skilled workforce as human capital, thereby enhancing labour productivity (Andriani, 2021). Meanwhile, according to the Badan Pusat Statistik (2024), there are 871.860 unemployed individuals with bachelor's degrees. The unemployment rate among graduates is attributed to several factors, including a mismatch between higher education

curricula and job market requirements, and high qualification standards set by employers (Azzahra et al., 2024). Unemployment occurs on the labour supply side as well as on the demand side.

According to (Gropello et al., 2011), mostly young workers experience a somewhat low sense of preparedness or qualification for their jobs or professional life in general. This figure illustrates that young workers experience a lower sense of preparedness or qualification for their jobs or professional life in general.

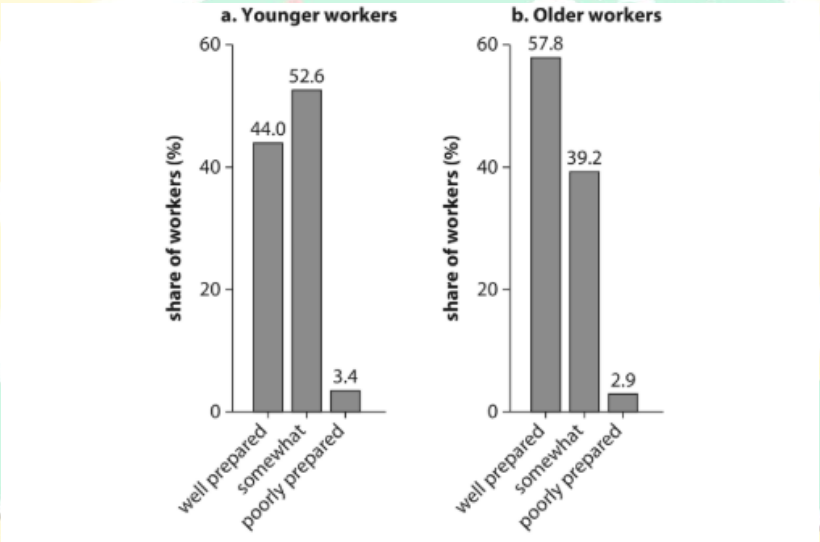

Figure 1. Workers' Perception of Educational Preparedness for Their Jobs

Sources: Indonesia Employer/Employee Survey of Skills/Labor Demand and Job Vacancies 2008, Employee Module.

According to (Yanindah, 2022), Indonesia's labour force is mostly focused on a limited range of occupations, with many workers having low levels of education and working in low-skilled jobs. Indonesia's Occupational Employment Outlook Report by (Granata et al., 2020) stated that 46% of

workers and 7% of all employees are engaged in occupations that require low educational qualifications, primarily in small low-value-added firms. Meanwhile, the fastest growing job roles by 2030 tend to be driven by technological developments, such as advancements in AI and robotics and increasing digital access (World Economic Forum, 2022). This figure highlights the rapid growth of occupations on emerging technologies and digital transformation.

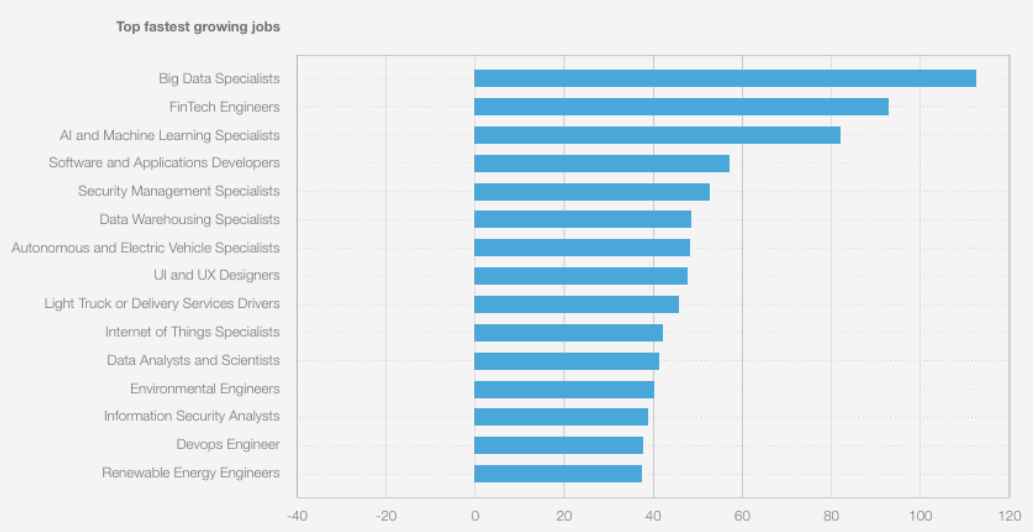

Figure 2. Fastest-growing jobs, 2025-2030

Sources: Future of Jobs Report 2025

Digital technology is reshaping labour markets, impacting job seekers and hirers alike to continually keep track of trends in job markets to understand emerging opportunities and requirements for digital skills. The Asia Pacific Digital Skills Study: The Economic Benefits of a Tech-Savvy Workforce by Amazon Web Services (Gallup, 2022) reveals that 84% of employers in

Indonesia seek candidates with digital skills, yet 86% struggle to find the needed talent.

Universities as academic institutions play a crucial role in producing graduates with competitive advantages. However, the education system often prioritises theory over practical skills, leaving students unprepared for the workforce (Ahli, 2018). It is shown by (Xu & Miller, 2022) that 65% of employers prioritise skills and capabilities over formal education when making hiring decisions. Moreover, skill mismatch is obvious by the fact that many graduates struggle to meet job requirements due to a lack of practical work experience. Research conducted by the Ministry of Education and Culture in 2021 found that 40% of employers believe new graduates lack of important competencies to perform effectively in their roles. Besides, new graduates often do not have the required competencies adequately (Deffinika et al., 2022).

A significant disengagement occurs between the content of higher education programs and the expectation of the labour market, as employers increasingly prioritise candidates to develop diverse skill sets for a qualification (Sarin, 2019). Also, based on a questionnaire conducted in this study shows results from 98 university students, the primary reason for developing skills is career preparation, selected by 60 respondents (61%). Meanwhile, 22 respondents (22%) indicated personal interest as their main motivation, and 16 respondents (16%) stated that academic requirements were the primary reason for developing their skills. To prepare students with high

competitiveness is to have academic skills, the ability to master technical skills, and balanced employability skills (Bennet, 2006). According to (Benjamin et al., 2013), a combination of both soft and hard skills or competencies is necessary for workers, defined as employability skills. Individual with extensive education and training, high skills, ability to work in teams, the ability of information and communication technology (ICT), ability to solve problems, and communication skills will be easily employed (Fajaryati et al., 2020). Besides, based on a survey conducted as a part of this study showed the urgency of skill development among students, revealing that basic computer skills, communication, and problem-solving are the most critical for career readiness. This emphasises the importance of digital proficiency, interpersonal communication, and analytical thinking in bridging the gap between academic learning and professional success. Additionally, this combination of skills enables them to adapt to changes in the world of work (Brewer, 2013).

Project-based learning is a teaching method where teachers guide students through a problem-solving process, including identifying a problem, developing a plan, testing the plan against reality, and reflecting on the plan while designing and completing a project (Wurdinger et al., 2007). This approach is more effective than traditional module-based methods because it enhances student's technical and diverse skills (Dong et al., 2013). Based on a previous study of the *Journal of Technical Education and Training* found that PBL significantly improved students' employability skills, including

communication, teamwork, problem-solving, and self-management (Taufiqur Rahman et al., 2023). Also, findings from the survey conducted in this study show the effectiveness of Project-Based Learning (PBL) in skill development. Based on 99 respondents, 49.5% (45 respondents) found that PBL is effective, while 29.7% (27 respondents) considered it highly effective in improving their skills. These results highlight that the effective approach to bridging the gap between theoretical knowledge and practical application is Project-Based Learning (PBL), which enhances essential competencies for the workplace, and aligns with the research in improving employability skills such as basic computer skills, communication, teamwork, and problem-solving.

With the rapid technological advancements, many companies have adapted their hiring practices by recognising digital certification and training courses as acceptable alternatives to a traditional college degree (Gallup, 2022). This shift indicates the growing importance of practical skills in the workforce. Integrating Project-Based Learning (PBL) into academic curricula is vital for bridging the gap between theoretical knowledge and practical skills, ensuring that graduates acquire employability skills.

Research by (Xu & Miller, 2022) found that 80% of the participants are interested in participating in professional skill development programs (the survey was conducted in April 2023, involving a sample of 1,014 participants between the ages of 17 and 55 who represented various cities). These findings show the opportunity to create a platform that focuses on developing employability skills by implementing project-based learning.

Based on the problem, the proposed project “Watacrate” is a skill training platform with a project-based learning approach. In addition to its digital platform features, Watacrate will conduct a pilot testing program that implements the Creative Problem Solving (CPS) method. The method encourages the student to come up with creative solutions, collaborate effectively, and critically evaluate their learning objectives. Creative Problem Solving (CPS) enhances Project-Based Learning and strengthens the fundamentals of employability skills. This hybrid model combines theoretical insight with real-world execution, ensuring a more holistic approach to skills training. Besides, this platform aims to enhance students' skills to acquire employability skills to remain competitive in today’s dynamic and unpredictable job market.

The development process of Watacrate as a digital platform will use lean startup method, as the process is effective with an iterative cycle, including identifying customers' needs and conducting testing using Minimum Viable Product (MVP) to reduce resource waste. The prototype is used to test the market and gather feedback on its usability, functionality, and appeal to determine whether the platform needs to be refined or the product improved.

1.2 Problem Statement

Based on the background of the problem, the project problem statement is how to develop a skill training platform that integrates Project-Based Learning (PBL) with Creative Problem Solving (CPS) framework supported by a pilot program and MVP-based testing using lean startup method as an innovative

solution to help students develop employability skills including problem-solving, teamwork, communication, and basic computer skills before entering the workforce.

1.3 Project Goals

The purpose of the project is to create a skill training platform that applies Project-Based Learning (PBL) enhanced with Creative Problem Solving (CPS) using lean startup method, including MVP testing through a pilot program and website prototyping as an innovative solution to help students develop employability skills before entering the workforce.

1.4 Project Benefits

1.4.1 Theoretical Benefits

Theoretically, the project provides an understanding of integrating the Project-Based Learning (PBL) approach that enhances Creative Problem Solving (CPS) with lean startup methodology as a framework to bridge the gap between academic theory and practical workforce needs. It also provides valuable insights into balancing hard and soft skills to align educational outcomes with industry demands by developing employability skills.

1.4.2 Practical Benefits

Practically, the project offers a solution through a digital skill training platform and a pilot program that equips students with employability skills

while addressing skill mismatch through lean startup methodology with adaptive development.

1.5 Scope

1.5.1 Theoretical Scope

This project is limited by theories and concepts related to project-based learning, creative problem solving and lean startup methodology.

1.5.2 Contextual Scope

The project of Watacrate as a platform is contextually related to the development process of a product that aims to shorten product cycles using *Lean Startup Method* through primary data and various other resources. The visual of the platform is shown as *User Interface* of Watacrate.

1.6 Limitations of the Study

This study has several limitations. It focuses on the development processes of *Minimum Viable Product* (MVP), shown as *User Interface* (UI). Additionally, the analysis of employability skills is limited due to time constraints in the product development processes. The study only involves Watacrate's website users from the undergraduate perspective, excluding potential stakeholders such as high school and vocational school students.

This exclusion is intentional, as the primary objective is to examine how a skill training platform and a pilot program with a project-based learning approach that enhances Creative Problem Solving (CPS) using the lean startup

method helps students to improve their employability skills before entering the workforce. The limited scope of skills variables analysed and the exclusion of other stakeholders present opportunities for future research to gain a more comprehensive understanding of user needs and expectations.

1.7 Contextual Scope

CHAPTER I Introduction

This chapter explains the project's background, problem statement, project goals, project benefits, scope and limitations of the study.

CHAPTER II Literature Review

This chapter presents concepts and theories as the foundation for designing a student skill training platform with a project-based learning approach using lean startup method.

CHAPTER III Methodology

This chapter covers project design, project objective, data collection method, type of data, data instrument, target and data analysis method.

CHAPTER IV Result and Discussion

This chapter provides the process of Watacrate platform development with a project-based learning approach using lean startup method, analysing the user interface as the MVP to determine whether the tested Minimum Viable Product (MVP) is validated and accepted by consumers or potential consumers, and then decide whether to “Persevere” or “Pivot.

CHAPTER V Conclusion

This chapter presents the conclusions, recommendations, limitations and improvement agenda based on the studies conducted in the design of Watacrate platform.