

Link and Match Problem of Vocational School Students on Unemployment Issues: A Comparative Study on Indonesia and Türkiye*

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Abstract: Indonesia faces significant challenges with unemployment due to its vast land area and large population, posing a threat to economic stability. Addressing the "Link and Match" problem, this research employs a qualitative approach to analyze unemployment among Indonesian vocational school graduates and includes a comparative study of Türkiye's educational system. The methodology utilized is a descriptive case study. Primary data were gathered through semi-structured interviews with 25 alumni from various generations across five Indonesian provinces. The findings reveal that graduates encounter significant skill mismatches and that the current educational infrastructure is insufficient to meet industrial needs. The study concludes that while vocational education is pivotal for reducing unemployment, its effectiveness is hindered by a disconnect between curriculum and labor market demands, a challenge also observed in the Turkish context. Consequently, the research recommends designing curricula that align with market demands, enforcing regulations for collaboration between educational institutions and businesses, and fostering an entrepreneurial mindset among youth to mitigate future unemployment.

Keywords: Unemployment, Vocational High School, Skill Mismatch, Indonesian Labor Market

Jel Codes: J08, J24, J61

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Meslek Lisesi Öğrencilerinin İşsizlik Sorunlarında Bağlantı ve Uyum Problemi: Endonezya ve Türkiye Üzerine Karşılaştırmalı Bir Çalışma

Öz: Endonezya, geniş coğrafyası ve büyük nüfusu nedeniyle ciddi işsizlik sorunlarıyla karşı karşıyadır ve bu durum ülkenin ekonomik refahını tehdit etmektedir. Bu çalışma, "Bağlantı ve Uyum" (Link and Match) problemi çerçevesinde Endonezyalı meslek lisesi mezunları arasındaki işsizlik sorununu analiz etmeyi ve Türkiye'nin mesleki eğitim sistemi ile karşılaştırmalı bir değerlendirme sunmayı amaçlamaktadır. Nitel araştırma yönteminin benimsendiği çalışmada, tanımlayıcı vaka analizi deseni kullanılmıştır. Veriler, beş farklı eyaletten amaçlı örnekleme ile seçilen 25 mezunla yapılan yarı yapılandırılmış mülakatlar yoluyla toplanmıştır. Araştırma bulguları, mezunların iş gücü piyasasında hem beceri uyumsuzlukları (skills mismatch) yaşadığını hem de okullardaki altyapı eksikliklerinin istihdam edilebilirliği olumsuz etkilediğini göstermektedir. Çalışmanın sonucu, mesleki eğitimin işsizliği azaltmada kritik bir rol oynamasına rağmen, mevcut müfredatın endüstriyel taleplerin gerisinde kaldığını ve Türkiye örneğinde olduğu gibi yapısal reformlara ihtiyaç duyulduğunu ortaya koymaktadır. Bu doğrultuda geliştirilen öneriler; müfredatın piyasa talepleriyle hizalanmasını, eğitim kurumları ve işletmeler arasındaki iş birliğinin yasal düzenlemelerle zorunlu kılınmasını ve öğrencilere girişimcilik odaklı bir zihniyet kazandırılmasını içermektedir.

Anahtar Kelimeler: İşsizlik, Meslek Liseleri, Yetenek Uyuşmazlığı, Endonezya İşgücü Piyasası

Jel Kodları: J08, J24, J61

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1. Introduction

Indonesia, a nation rich in natural resources and home to Southeast Asia's largest economy (The World Bank, 2022), continues to grapple with significant social disparities. Among these, unemployment stands out as a persistent issue. As noted in numerous studies, unemployment is a prevalent challenge in developing nations Bhagwat (1973). Despite being the fourth most populous country globally and holding a dominant position in Southeast Asia's economy, Indonesia faces annual struggles with unemployment. The country's vast geographical scope—spanning 38 provinces and 16,771 islands—poses unique challenges. While intense job competition exists in urban centers, suburban and rural areas suffer from limited career opportunities, primarily confined to traditional agriculture.

Recent data indicates that by the end of last year, unemployment in Indonesia was projected to exceed 8 million people, marking a slight decrease from 3.8% in the previous year to 3.5% in 2022 (BPS, 2024) However, vocational school (SMK) graduates accounted for the highest unemployment rate over the past eight years (2015–2022), with a rate of 9.4% in 2022. While this represents a decline from the previous average of 10–13%, it remains disproportionately high compared to graduates from other educational backgrounds. This discrepancy is particularly concerning because vocational high schools are intended to produce graduates equipped to meet the demands of the industrial sector.

The core problem addressed in this study lies in the persistence of "skills mismatch," a phenomenon where the skills possessed by the workforce do not align with the requirements of the labor market. This mismatch encompasses both vertical mismatch (over-education or under-education) and horizontal mismatch (field of study differs from job requirements), both of which significantly impede economic efficiency. In the context of Indonesia, this issue is exacerbated by structural rigidities and a "Link and Match" policy that has not yet fully bridged the gap between educational outputs and industrial needs. Consequently, high unemployment among youth is not merely a result of a lack of jobs, but a structural failure to align vocational competencies with dynamic market demands.

This study seeks to examine the underlying causes of the high unemployment rate among vocational school graduates and propose potential solutions, focusing primarily on the issue of skills mismatch. A notable challenge is that the evolving needs of industries often outpace developments in the education sector. For instance, a 2015 survey conducted by the Demographic Institute of the University of Indonesia revealed significant mismatches: 53.33% of workers experienced a salary disparity relative to their education level, and 60.52% lacked the skills required by their industries Nonsi Tentua & Winarko (2020). These findings highlight that over half of Indonesia's workforce is employed in roles that do not align with their formal education and training.

Addressing the skills mismatch is crucial not only to mitigate individual and business-level impacts but also to ensure sustainable economic growth. Efforts to resolve this issue must involve significant improvements in education and workforce training systems. Historical context adds further depth to the problem; research suggests that Indonesia's high unemployment rates are partly rooted in the economic crises of the 1990s Saliman (2005).

This paper is also a comparative study in terms of a certification training system from the government in Türkiye which is expected to produce a draft regulation that can be implemented in Indonesia. The unemployment rate in Türkiye is indeed higher than in Indonesia based on the World Bank data. However, the comparative study in this research aims to find out the government's educational training system, which is free and easy to access in Türkiye, whether it can be implemented in Indonesia or not.

The subsequent sections of this study are structured as follows: Section 2 provides a summary and review of the relevant literature, drawing on seminal works that underpin the research framework. Section 3 meticulously details the research questions and methodology, including data sources, paths for the interviews and data analysis. Section

4 presents the results and providing a comprehensive discussion of their implications, the comparison with Turkish Vocational Education systems. Finally, Section 5 presents the conclusions of the study, summarising the main findings and outlining avenues for future research.

2. Literature Review

This section presents a synthesis of the literature and findings of our research on Indonesia's labor markets and vocational education systems, as well as those of Türkiye. The issue of unemployment has been widely studied across various contexts, revealing a range of factors and challenges that shape labor market dynamics. To understand the context of this study, it is essential to first define the "Link and Match" problem. The concept refers to the alignment between the output of educational institutions and the requirements of the industrial world. When this alignment fails, it results in skills mismatch, which the International Labour Organization (ILO) defines as a discrepancy between the skills sought by employers and the skills possessed by individuals. This phenomenon is a primary driver of structural unemployment, particularly in developing economies where educational curricula often lag behind rapid industrial changes.

Regarding the Indonesian context, Early research by Bhagwat (1973) highlights three core aspects of unemployment: rapid population growth outpacing job creation, income disparities between urban and rural areas, and low labor productivity. These insights underscore the necessity for comprehensive policies addressing these dimensions to mitigate unemployment effectively (Wardhana & Nugroho, 2006). Cornwall (1981) further emphasizes the role of job seekers' attitudes in influencing unemployment rates, shedding light on behavioral aspects of the problem.

In Indonesia, Pardjono (1989) identifies the imbalance between economic growth and education as a classic unemployment challenge. In addition to this study, many research suggests that targeted vocational training, through courses and job training institutions, can rapidly reduce unemployment by aligning with industry needs (Alkatheri et al., 2019; Azman et al., 2020). This aligns with Ayomi's (2013) findings, which emphasize skill mismatches as a critical factor and advocate for technology-driven solutions in the agricultural sector to alleviate poverty and unemployment.

The role of vocational education has also been extensively examined in Türkiye (Özdemir & Beltekin, 2019; Özer, 2020; Somuncu, 2022). Studies by Yıldırım and Şimşek (1997) and Şimşek and Yıldırım (2000) discuss challenges faced by vocational schools, such as outdated curricula, centralized systems, and bureaucratic obstacles that hinder industry collaboration. Similar themes are echoed by Adiguzel and Cardak (2009), who highlight gaps in computer technology education and inadequate practical training, which restrict students' readiness for the workforce.

Gender disparities in vocational education outcomes are particularly notable. Tansel (1998) reports that male vocational graduates in Türkiye generally earn more and experience lower unemployment rates compared to their female counterparts. Further, Alnaçık et al. (2019) reveal that gender biases in curriculum and societal norms significantly influence vocational education choices and employment transitions.

Skill mismatches are another recurring theme in the literature. Mahuteau et al. (2014) identify vertical and horizontal mismatches as significant barriers to equitable wage distribution and job satisfaction. Similarly, Prayudhani (2020) reports qualification mismatches in Indonesia, with workers often over- or under-utilized in their roles, highlighting the importance of aligning education systems with labor market demands.

Policy-oriented studies provide actionable recommendations to bridge these gaps. Ozer (2019; 2020; 2021) advocates for synchronized efforts between vocational education and labor markets, emphasizing the necessity of institutional reforms to improve graduate employability. Dahil et al. (2015) suggest regular teacher training and industry partnerships to address evolving workforce requirements. Meanwhile, Ewaldo et al.

(2023) highlight the importance of government interventions, such as financial assistance and job training programs, in combating unemployment during economic downturns.

In summary, the reviewed literature underscores the multifaceted nature of unemployment, shaped by economic, educational, and societal factors. Both Indonesia and Türkiye face unique challenges in aligning vocational education systems with labor market needs. While progress has been made, further efforts are required to address systemic issues such as skill mismatches, gender disparities, and institutional barriers to create sustainable employment opportunities.

3. Methodology

3.1. Research Approach

This research employs a qualitative methodology that combines descriptive and comparative approaches within a case study framework. The descriptive method aims to provide detailed and accurate data, ensuring the reliability of the findings (Cresswell, 2013). By emphasizing a qualitative method that will concentrate on primary data is interviews. The secondary data are from prior academics' research and publications, as well as reports from local and international authorities, the Indonesian Statistics Agency (BPS), the Turkish Statistics Agency, the World Bank, the International Monetary Fund, Government Reports and many more have also been taken.

The comparative approach, on the other hand, facilitates cross-contextual analysis by examining the same case under varying conditions across different countries. This study specifically investigates the factors contributing to unemployment among vocational high school (SMK) graduates in Indonesia. It delves into their decision-making processes and the challenges they face in the job market. Primary data is gathered through semi-structured interviews and document analysis, offering nuanced insights into the issue.

3.2. Data Types and Sources

According to the official Indonesian National School Data (DAPODIK), there are a total of 14,441 vocational high schools (SMKs), both public and private, in Indonesia (BPS, 2024). For this study, primary data was collected through interviews with 25 participants from five Aviation Vocational Schools across the country: SMKN 29 Jakarta, SMKN 12 Bandung (State Aviation School Bandung), SPAN (SMK Penerbangan Angkasa Nasional - National Space Aviation Vocational School) Medan, Dharma Wirawan Juanda Aviation Vocational School, and Banjarbaru Aviation Vocational School. The sampling technique employed was purposive sampling, selected to ensure that participants possessed specific characteristics relevant to the research questions—namely, being vocational graduates from aviation disciplines (Creswell & Creswell, 2022). The sampling technique was designed to ensure the validity of the research findings and to provide comprehensive insights into the current labor market landscape. Secondary data was also utilized, including information from the Indonesian Statistics Agency, academic literature, scientific journals, and previous studies related to this topic. The study focuses on vocational high school graduates specializing in aircraft mechanics or electricity who graduated between 2012 and 2023, representing various regions across Indonesia. The study involved a specific work group consisting of 25 alumni. The participant demographics were structured to represent diverse experiences: 60% were male and 40% female; ages ranged from 19 to 29 years old. Geographically, the participants represented five provinces: Jakarta, West Java, North Sumatra, East Java, and South Kalimantan. All participants graduated between 2012 and 2023, ensuring a mix of entry-level and experienced perspectives in the labor market.

3.3. Data Collection Techniques and Research Questions

Data for this study was collected through interviews and observations, providing rich and comprehensive material while requiring strong information-gathering skills. The research was conducted following ethical guidelines and received approval from the

Bandırma Onyedi Eylül University Ethics Committee of Social Sciences (Decision Number: [2024-3 11/03/2024, March,2024]). Semi-structured interviews, as described by Taherdoost (2022), were employed to gather data. These interviews were conducted online using platforms to accommodate participants across different time zones in Indonesia. Each session lasted approximately 45 to 60 minutes. The interview questions were developed based on a comprehensive review of the literature regarding unemployment and vocational education. The draft questions underwent a peer review process by two academic experts to ensure clarity and relevance before being finalized. The use of open-ended questions below allowed for specific analyses and enabled the clarification and elaboration of nuanced information.

- 1) Why did you choose a vocational school over a regular high school?
- 2) Could you tell me more about this field (aviation)?
- 3) Have you determined what industry you want to work in after graduation?
- 4) How do you plan to achieve your dream?
- 5) If you want to continue your studies at a higher level once you graduate, please give the reason.

The questions may be adjusted based on the responses provided by the interviewee to gather more detailed and specific information. Nevertheless, the discussion remains closely aligned with the context of the original questions.

3.4. Data Analysis, Validity and Reliability

We used qualitative data analysis, a research strategy involving content, narrative, and discourse analysis, is crucial for academics to understand the social value of material, make informed decisions, and achieve accurate conclusions, making it a valuable tool for their profession (Creswell & Poth, 2024). We also utilized the Delve tool to organize interview data, reducing complexity. To simplify the analysis, coded each interview result, assigning labels or codes based on common themes. The coding process involved two stages: open coding to identify initial concepts, followed by axial coding to group these concepts into the themes of "Skill Mismatch," "Institutional Challenges," and "Career Perception." Thematic analysis of the students feedback focused on the experiences, skills development, career challenges, and labor market expectations by utilizing the case study design methodology made descriptive in terms of phenomenological research frameworks (Creswell & Poth, 2024). Using the advantages of Delve tool as QDA software enriched this study's invivo coding options while observations for interviews were quantified.

To ensure validity and reliability (trustworthiness), this study employed triangulation by corroborating interview findings with secondary data from BPS and government reports. Additionally, member checking was performed by summarizing key points to participants at the end of interviews to confirm accuracy. Detailed descriptions of the research context were provided to enhance transferability. The analyses achieved an average coding agreement of 80.66%, aligning with the thresholds established by Miles and Huberman for the themes (Matthew & Huberman, 1994). In line with Corbin and Strauss (2008), the recurrence of participants' explanations throughout the dataset supported the suitability of employing thematic analysis.

4. Data and Discussion

4.1. Research Findings

The choice of school is crucial for future life and career choices. In Indonesia, vocational schools are often underestimated due to their popularity among the lower middle class, lower fees, and easy entrance selection. Despite psychological tests, the stigma of vocational schools being lower class than general senior high schools persists. Interviews with 25 graduates reveal various reasons for choosing vocational schools.

Interviewees choose vocational schools for various reasons, including practical opportunities, family economic support, aviation dreams, and having input from close friends or family. Vocational school attendance in aviation is influenced by field-based learning, higher wages, the cost is low and scholarships are available. Also, Becoming an aviation professional offers free travel and overall, these factors contribute to higher interest in vocational schools.

Over half of the informants were familiar with aviation before deciding to study at an Aviation Vocational School, with some learning it independently or from relatives. Knowledge varies, with some only knowing the profession they dream of, while others have extensive knowledge. Up to 44% have little knowledge, often choosing to study at an Aviation Vocational School due to family influence. Different cities have different perceptions of education quality, with mature institutions providing more academic and non-academic information. SMKN 29 Jakarta's oldest curriculum is used as a model for other schools. Limited teaching resources in areas outside Java can cause errors. In addition, private schools struggle to provide practical facilities, leading to discrepancies in student knowledge. Some institutions provide guidance to students navigating graduation steps, offering private courses and psychological support. They collaborate with companies to create career paths for students. School image and individual behavioural education are also crucial here. Airlines often test students directly, favouring male students due to their field-oriented work and higher energy requirements. Male students are often preferred by companies for work opportunities.

After completing three years of education, which included professional fieldwork practice, the interviewees provided various criticisms and suggestions aimed at improving job opportunities, both on an individual and institutional level. The feedback directed toward educational institutions was particularly diverse, as outlined below:

- 1) The balance between theoretical and practical learning remains suboptimal;
- 2) Schools prioritize student numbers over educational quality;
- 3) Overcrowded classrooms hinder effective learning;
- 4) The vocational school curriculum falls short when compared to that of general high schools (SMA);
- 5) Some teachers lack adequate mastery of the subjects they teach;
- 6) The job market is unable to accommodate all graduates annually;
- 7) Vocational school graduates face discrimination based on gender and age;
- 8) There is unequal treatment between high-achieving students and those with lower performance;
- 9) Formal career guidance programs are insufficient or absent
- 10) Gaining additional experience and licenses incurs significant costs.

We also inquired about the advice or lessons the informants gained during and after their time at vocational school, particularly regarding their experiences in securing employment after graduation. Below is the feedback provided by interviewees from diverse professional backgrounds:

- 1) Practice hours and the diversity of training should better align with workplace demands;
- 2) Collaboration between educational institutions and companies should continue to strengthen and expand each year;
- 3) Both the number and competency of teaching staff need to be improved;
- 4) Extending education duration could help streamline the process of meeting licensing requirements;
- 5) Developing non-academic skills (soft skills) is essential to provide students with additional value
- 6) Implementing formal programs for mental health support and career education is crucial.

4.2. Discussion

4.2.1. Is Skill Mismatch the Biggest Factor Contributing to the Unemployment Rate of Vocational School Graduates?

Unemployment in vocational schools, particularly those not on Java, is primarily structural due to the public's early education in new sectors and a focus on jobs like civil servants, doctors, nurses, and police, particularly in the aviation industry, where licensing is required for many positions they think it would be hard to get a job. Vocational schools require a three-year education, making it impossible for graduates to work with a license. However, companies prefer workers with a license to minimise training costs. Another result shows that students often choose to work in another aviation industry instead of continuing their studies to obtain a license or change majors for higher education. Vocational schools frequently fill lower-middle-class individuals who want to contribute to the family economy after graduation. Students without education opportunities often seek jobs in aviation or other sectors, in many cases, jobs which require experience.

The pandemic has caused economic difficulties worldwide, including Indonesia, leading to cyclical unemployment. Graduates often pursue higher education in or outside aviation major. The education culture has changed, with many choosing to continue education for better career prospects and salaries than vocational school graduates. Interviewees often choose to work in any sector as long as it's profitable, even if it doesn't align with their desires or major. Luckily, this reduces frictional unemployment, but there are some aviation students with interests in another field force themselves to continue their education in the same sector to avoid disappointing their families.

Skills mismatch is primarily caused by technology, globalization, and less collaboration, along with information imbalance in educational institutions, particularly outside Java. 24% of respondents choose careers in other fields due to unsuitability, job vacancies, or gender discrimination. This interview revealed that horizontal mismatches are more common than vertical ones. Participant 18, a Japanese language teacher, chose a flexible job after working in the aviation industry for two years. She sought additional government-provided training at Job Training Centers (BLK) in Indonesia, which is free and available throughout the country. This institutional training is very helpful for the unemployed or individuals with middle-low income yet the question raised "Why is additional training needed when you have already received training at the vocational school level?"

The next skill mismatch is Skill Obsolescence, challenging to find in this field due to frequent updates and familiarity with technological changes. Results vary based on the school city and interviewees' graduation periods. Interviewees in East Java, Sidoarjo city, reported that school facilities are adequate and Navy support enhances student quality. So, in this study, schools on the island of Java have greater facilities and access to information than schools outside of Java, particularly in Kalimantan. Additionally, skill mismatch is not due to factors like lack of adaptability or career choice outside aviation due to job vacancies or lack of passion. A Z-generation resource person from South Kalimantan, Banjarbaru City, reveals their school is new but limited in human resources, facilities, and teaching materials. This results in lower self-confidence and unemployment among graduates, hindering the goal of vocational schools to prepare individuals mentally and physically for the workforce.

Last, at the vocational school in Medan, North Sumatra, students are satisfied with the quality of education despite the limited facilities they have. The participants said that in terms of internships, they can choose to work at an airline or aviation company based on their economic conditions and every semester there is an opportunity for students could receive scholarships for academic excellence. Unlike that, State vocational schools in Jakarta and Bandung offer adequate curricula and facilities, resulting in better or proper graduates than those from other cities. However, skill mismatch exists in the workforce, and collaboration between institutions and educational curricula are external factors

aimed at reducing unemployment. To minimize this, it is crucial to start early in career choice to minimize potential skill mismatches.

4.2.2. Have The Government's Programs to Overcome The Problem of Skill Mismatch Been Maximally Implemented?

Indonesia, with a population of over 270 million, to maximize the opportunity to be productive, the government is encouraging the growth of Micro, Small, and Medium Enterprises (MSMEs) and Independent Workers in the non-formal sector due to job vacancies and the shift from traditional to digital careers, including remote work and flexible working hours. Indonesia is addressing skills mismatch by improving education and training curricula to encourage MSMEs. However, this leads to disagreement among the community, as curriculum changes can cause unpredictability, it is also hard for the teaching staffs. The teaching team is crucial for student progress and skill mastery, so government must give more attention to them. However, the complexity of teaching tasks often neglects their primary purpose. Educational institutions often focus on graduating students rather than quality, resulting in a focus on quantity over quality. Teachers are also responsible for administrative activities and it makes them hard to focus on their main job. More and more an entrepreneur in the MSME sector suggests offering comprehensive courses to ensure students have additional skills upon graduation, this subject must be the real one not only just the entry level. The quality of education in Indonesia is influenced by various factors, including skill mismatch, which can increase unemployment. The government's efforts to reduce unemployment are visible but complex, and corruption is a significant challenge, hindering effective government performance across the country.

4.2.3. Who Is Responsible for The Increase In Unemployment Rates for Vocational School Graduates?

Indonesia's 2013 regulation outlines unemployment as a national issue, requiring holistic cooperation from all levels. The government has been updating vocational schools' curricula, making them more up-to-date, especially in their employment areas, in line with this research's literature review. Directory General of Vocational Education in Indonesia outlines five aspects for vocational education: compulsory subjects, industrial work practice, project-based learning, entrepreneurship development, student choice, and a community service program every semester. The Indonesian government provides Job Training Centers (BLK) to improve skills in various regions. To optimize BLK, collaboration with third parties or the private sector is necessary. BLK offers training in various fields, with competency testing verified by the Professional Certificate Institute. There are 206 government institutions, 2319 private institutions, and 23 partner institutions in Indonesia. The interviewees emphasize the importance of schools collaborating with government agencies and private companies to distribute the workforce, focusing on schools with a good image and longer operating lifespan. Continuous efforts can reduce unemployment, as education and industry shift, and newly graduated or employed individuals can prevent structural unemployment.

4.2.4. What Steps Have Been and Will Be Taken to Reduce Structural Unemployment?

Unemployment rates in developed countries like Luxembourg and Ireland have averaged 5% in the last four years which means that every country experiences an unemployment problem. Yet the factors are different, with automation impacting developed countries, while developing countries still focus on individual productivity, particularly in the informal sector. In developed countries, cyclical unemployment is often observed due to the availability of robust social security systems and a highly competitive labor market, which allows individuals the flexibility to pursue their desired jobs. In contrast, developing countries face challenges such as limited formal sector employment opportunities and insufficient social security measures. Addressing this issue requires

government intervention through the implementation of comprehensive policies. However, these efforts are often constrained by budgetary limitations, institutional capacity, and uneven economic and educational development, which further exacerbate the complexities of unemployment.

Structural unemployment can be overcome independently, improving personal quality. Indonesia's government has attempted educational reform and free certified training, but many struggle with finding work due to a lack of innovation and individual risk-taking. We interviewed 25 interviewees, with only one in the entrepreneurship world. Most chose formal fields with retirement insurance, but not all were prepared for the risks involved in business. The culture of creating opportunities has not been evenly developed in educational institutions, with graduates focusing on job skills without planning. Anxiety about starting a business is exacerbated by easy access to cash and bureaucracy. The unemployment rate, particularly among vocational school graduates, needs to be addressed in a sustainable, inclusive manner. The perception that vocational schools are not the main choice can reduce investment and negatively impact the work industry. The government should facilitate coaching and improve infrastructure while maximizing the learning process for skilled graduates.

4.3. Comparison with Türkiye's System

To provide a structured comparison, this section analyzes the differences and similarities between the two systems based on school typology, curriculum alignment, and challenges. The Ottoman Empire, a powerful 15th and 16th-century Islamic empire, ruled over Southeastern Europe and the Middle East. Its education system focused on imperial administration and religious values, with limited opportunities for other skills in craftsmen and traders. After becoming a republic, The Republic of Türkiye implemented a modern education system, standardized and centralized, with preschool, basic, and secondary education for ages 3-5 and 15-17 respectively. In Indonesia, compulsory education includes 12 years, starting from elementary school, followed by junior high school, and high school or vocational school later graduates can work or attend college.

Vocational high schools in Türkiye and Indonesia aim to prepare students for the world of work. Both countries have a dual education system, focusing on practical training and real work experience. Majors include Engineering, Health, and business, with the curriculum focusing on practical skills rather than theory. To prepare graduates for the industrial world, collaboration and curriculum adjustments are crucial. In Türkiye, there are six types of vocational high schools with programs for disabled or special needs students. The Republic of Türkiye has over 4000 vocational schools, with over two million students studying in these schools. The main programs include Vocational Training Center (VTC), Vocational Distance Education High School, Special Education Vocational High School for special needs, Special Education Vocational School, and Special Education Practice School. In 2023, the Ministry of National Education established the first vocational high school in Ankara, specializing in space and aviation technology with the abundance of great facilities (Ministry of National Education Republic of Türkiye, 2023). This contrasts with Indonesia, where aviation schools are often general vocational schools with specific majors rather than specialized institutions.

While Indonesian vocational high schools are differentiated by competencies and allocate a percentage for theoretical and practical learning, there is no special vocational high school. Educators deliver established curriculums, ensuring students master the necessary skills. Education systems try to adapt to labour market needs and students must compete with individuals from developing as same as developed countries, ensuring equal opportunities and advancements. More and more in Türkiye, The challenges faced by them, specially in vocational high schools, particularly in preparing graduates for the workforce, are similar. Yet, Türkiye's graduates contribute less to the unemployment rate, but high school graduates contribute the most, which is different from the unemployment problem in Indonesia. In many places all over the world, the curriculum of the schools

must adapt to changing job market demands, so graduates can easily find a job concerning skills. Disparities in infrastructure and professional human resources also impact the quality of vocational schools, affecting their popularity among students and investors. Both countries struggle with the "Link and Match" problem. In Türkiye, studies indicate that despite reforms, there is often a disconnect between the skills taught and industry needs, similar to the situation in Indonesia (Özsoy, 2015). However, Türkiye has aggressively pursued the "1,000 Schools in Vocational Education and Training" project to narrow achievement gaps and improve infrastructure, a model that Indonesia could emulate to address disparities outside (Özer, 2021). These conditions related with skill mismatch imply that Vocational education should prioritize the development of job-specific skills, yet the labor market fails to produce an incentive structure that is consistent with this focus (Özer & Suna, 2020).

Overall, the quality and regeneration of the teaching team in Türkiye is a significant concern due to inadequate training, low wages, high workload, and lack of administrative support (same as in Indonesia). Regeneration is necessary to address inconsistency and continuity in the teaching process, and to adapt to changing work industry trends, both the curriculum and the teaching team. The challenges surrounding vocational high schools stem from the need for active collaboration among all stakeholders and the continual adoption of an innovative mindset. Moreover, investment should not focus solely on infrastructure; equal attention must be given to the needs of teachers and students. Ensuring the presence of high-quality educators remains a critical factor in producing graduates capable of thriving in the competitive job market.

5. Conclusion

The World Bank predicts that by the end of the year, Indonesia will face over 8 million unemployed individuals, primarily due to a mismatch between workforce skills and industry needs. This discrepancy negatively impacts both individuals and businesses. While Indonesia's economic growth benefits from its strategic location and large-scale transmigration programs, particularly on Java Island, the unemployment rate among vocational high school (SMK) graduates remains the highest at 9.42%. Despite the availability of job opportunities, the economic challenge of unemployment persists. Vocational schools, often perceived as catering to the lower-middle class due to their affordability and lenient admission processes, face a stigma of being inferior to general high schools. However, these schools provide practical skills and a faster path to employment, enabling students to contribute to their families' finances shortly after graduation.

According to the primary data, more than half of the respondents were already familiar with the aviation field before enrolling in Aviation Vocational Schools, gaining their knowledge independently or through family. While some had only a general idea of their future careers, others possessed detailed insights. Perceptions of educational quality also vary by region, with well-established institutions providing more comprehensive academic and non-academic guidance. Outside Java, limited resources, insufficient teaching staff, and inadequate facilities in private schools create knowledge gaps and present significant challenges for vocational education. Respondents suggested that schools should guide students through graduation pathways, offer private courses, and provide psychological support. Collaboration with companies to create clear career trajectories is also deemed essential, alongside improving school reputation and fostering positive student behaviors. Vocational schools in Indonesia face structural unemployment, especially outside Java, while the pandemic has exacerbated cyclical unemployment. Skill mismatches—horizontal and vertical—are prevalent, influenced by globalization, technology, and insufficient collaboration between education and industry. Horizontal mismatches are more common, with issues such as skill shortages, gaps, and obsolescence affecting employability. To address these challenges, the government is enhancing education and training curricula while encouraging the growth of MSMEs

(micro, small, and medium enterprises). Government regulations, such as Republic of Indonesia Regulation No. 33 of 2013 on expanding employment opportunities, designate unemployment as a shared responsibility of central and regional governments and communities [NO_PRINTED_FORM] (Peraturan Pemerintah Republik Indonesia Nomor 33 Tahun 2013 Tentang Perluasan Kesempatan Kerja, 2013). Job Training Centers (BLK) established across regions are pivotal in this effort. Additionally, Regulation No. 7 of 2012 from the Ministry of Manpower and Transmigration emphasizes the need for private sector collaboration to optimize BLK operations (Ministry of Manpower and Transmigration of The Republic of Indonesia (2012).

Structural unemployment requires individual and systemic solutions to improve skill alignment. The study found that cultural factors, such as limited innovation and risk aversion, hinder entrepreneurial ventures. Only one of the 25 interviewees pursued entrepreneurship, while the majority opted for formal employment, valuing job security and benefits. Entrepreneurship demands financial resources, resilience, and creativity, deterring many from taking the risks associated with business ventures. Reducing unemployment, particularly among vocational school graduates, requires inclusive, multidimensional, and sustainable approaches.

Comparisons with Türkiye reveal the historical importance of vocational schools in its development. Türkiye's dual education system, integrating paid work and practical training, enhances students' soft skills and motivation while aligning their career paths with their interests. However, rigid institutional systems and uneven teaching quality remain challenges. To address these, certification programs and professional development for educators are essential to align curricula with evolving labor market demands.

The study concludes that skill mismatches are not the sole factor contributing to the high unemployment rate among vocational school graduates in Indonesia. Other variables, including geographic location, economic conditions, school quality, and teacher competency, also play significant roles. Despite ongoing government efforts to implement reforms, the vast size of Indonesia, coupled with limited infrastructure, creates significant barriers to effective implementation. Resource disparities further exacerbate these challenges. A comprehensive strategy is essential to address unemployment. The government must prioritize creating an environment that fosters skill development and aligns education with labor market demands. Measures such as enhancing educational quality, encouraging entrepreneurship, and fostering collaboration between schools and businesses are vital. Schools should also improve infrastructure, reduce tuition fees, and provide targeted support to students and educators to ensure equitable access to resources and opportunities. Promoting positive habits, such as self-awareness, growth-oriented thinking, and proactive career planning, can enhance students' readiness for the workforce. These approaches not only reduce unemployment risks but also position individuals for long-term professional success. Expanding the scope of future research to include broader areas of competence and geographic diversity will yield more comprehensive and effective solutions to these challenges.

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