

# Career Adaptability for Sustainable Workforce Development: A Systematic Review in Vocational Education

Zianatul Makwa., Ketut Ima Ismara., Putu Sudira., Totok Heru Tri Maryadi

Technology Vocational and Education, Yogyakarta State University, Indonesia

DOI: <https://dx.doi.org/10.47772/IJRISS.2025.903SEDU0231>

Received: 14 April 2025; Accepted: 18 April 2025; Published: 24 May 2025

## ABSTRACT

Vocational students' careers are a progressively relevant issue and are extensively explored by researchers from numerous countries. In the context of global transformation, rapid job growth and career adaptability are required to overcome the challenges of unemployment. Vocational education fundamentally aims to prepare individuals to be competent in specific jobs and economically successful. Nevertheless, its effectiveness in encouraging students' career development needs to be explored further to determine its overall impact. This review was conducted systematically using the Systematic Literature Review (SLR) method with the PRISMA guide and synthesized 15 Scopus-indexed journals to analyze career adaptability in the context of sustainable workforce development in vocational education. This study identified five main findings: (1) the concept of career adaptability, (2) career adaptability in TVET, (3) the importance of career adaptability for workers, (4) career adaptability for students, and (5) the sustainable workforce framework. The findings of the study indicate that career adaptability can not only foster students' readiness to work but also contribute to increasing overall economic competitiveness. Career adaptability is essential for sustainable employment, as it enhances job satisfaction and resilience, influenced by professional identity, self-efficacy, and effective educational interventions like work-based learning programs. The policy implications of these findings emphasize the significance of multidisciplinary collaboration between educational institutions, government, and industry to strengthen the relevance of vocational education to the changing dynamics of the labor market. This study provides valuable insights for stakeholders and practitioners in designing strategies to improve students' career adaptability so that graduates can succeed in a competitive workforce and contribute to sustainable economic development.

**Keywords:** career adaptability, career development, sustainable employment, vocational education

## INTRODUCTION

The global labor market is going through a swift transformation (Ye et al., 2023; Zhang et al., 2019), driven by technological advances (Ersoy, 2010; Luo et al., 2011; Wafi et al., 2022, 2023), economic shifts (Ferreira, 2014; Luo et al., 2011; Wafi et al., 2023), and evolving skill demands (Gerçek, 2024; Ghosh et al., 2022; Ibrahim, 2023; Supriatna et al., 2023; Wafi et al., 2023; L. Wang et al., 2022; Wulandari, 2024). This dynamic environment requires a workforce equipped with the ability to adapt and thrive in the face of uncertainty (Chan et al., 2020; Savicas & Porfeli, 2013; Volmer et al., 2023). Adaptability in career development relates to the readiness of individual resources to cope with changing work conditions and career transitions (Hirschi, 2012; Hlad'o et al., 2019; Savicas & Erik J. Porfeli, 2013; Rudolph et al., 2017; Wehmeyer et al., 2019; Zainun et al., 2020). In the past five years, several critical competencies have emerged to navigate this evolving landscape. These transformational changes encourage individuals to be able to adapt to various situations during their career transitions.

On the other side, according to Marchia's theory (Cristy & Kurniawati, 2023; King, 2014, 2023), adolescent identity search is influenced by two dimensions: exploration (searching for individual career choices) and commitment. The stage of identity achievement will be accomplished by adolescents who explore themselves and commit to building that identity (Ibrahim, 2023; Laura A. King, 2014, 2023; Ndlovu & Ferreira, 2019; Qin & Tang, 2023). Regarding individual career adaptability, it can be influenced by the role of teachers and

parents (Cristy & Kurniawati, 2023; Kenny et al., 2022; Lazarová et al., 2019). Although teacher and parental support is deemed essential, a comprehensive understanding of career adaptability and its role in promoting sustainable workforce development in the context of vocational education remains limited.

Super and Knasel's (1981) career construction theory further concludes that career development in adults is a multifaceted process influenced by various factors and requires an understanding of how individuals manage their careers throughout life. This encourages the development of career adaptation topics that are more focused on adults. This career development theory is developed and grouped into three dimensions: planned attitudes, self-exploration and environment, and adaptive decisions (Savickas, 1997). In addition, career adaptability is an individual's capacity to adapt to the world of work based on four dimensions of 4C: career concern, career control, curiosity, and confidence (Cristy & Kurniawati, 2023; Savickas, 2005). This ability is closely related to work readiness and sustainable workforce development in vocational education.

Previous studies have scrutinized a lot about career adaptability, which is influenced by various factors (Almeida & Teixeira, 2018; Hirschi, 2009, 2012; Mahfud et al., 2022; Volmer et al., 2023; Wang et al., 2022; Wang et al., 2023). Internal factors that influence career adaptability are such as self-efficacy, soft skills, and resilience in preparing themselves for work (Chuang et al., 2022; Gerçek, 2024; Su & Weng, 2024; Volmer et al., 2023; Wang et al., 2023). In comparison, external contributing factors encompass internship experience (Sa-Nguanmanasak & Khampirat, 2019; Zainun et al., 2020), the role of teachers/mentors (Kvasková et al., 2023; Lazarová et al., 2019; Mahfud et al., 2022), and support from vocational institutions (Mahfud et al., 2022) that actively encourage students to have flexibility in their career choices. A study revealed that TVET graduates with high adaptability skills were better able to adjust to industry changes and had better job prospects compared to TVET graduates who did not have strong adaptability skills (Hlad'o et al., 2022; Kirchknopf, 2020; Mark Savickas, 1997; Ran et al., 2023; Silva & Gamboa, 2014; Wang et al., 2023). Hence, it is crucial for educational institutions, industry, and policymakers to understand how the components can contribute to sustainable career adaptability (Sa-Nguanmanasak & Khampirat, 2019).

Furthermore, the ability to adapt to a career can impact one's work readiness and help develop a sustainable workforce (Yusop et al., 2023; Neuhouser et al., 2023; Silva & Gamboa, 2014). A highly flexible workforce can more easily adapt to structural changes in various industrial sectors as the demand for more flexible and adaptive skills increases. Recent studies have exhibited that the implementation of work-based education and the relevance of the curriculum to the world of work can significantly improve career adaptability, thereby impacting labor productivity and economic growth (Franz, 1983; Wafi et al., 2023). However, various studies that have discussed career adaptability in the context of vocational education still have gaps and lack an understanding of how various internal and external factors interact with each other to shape what is referred to as career adaptability.

Therefore, this study employed the Systematic Literature Review (SLR) stage with the PRISMA method. By examining the evidence base, this study analyzes several studies that discuss how vocational education can develop career adaptability for a sustainable workforce. Based on these problems, this study aims to analyze (1) the concept of career adaptability, (2) career adaptability in TVET, (3) the importance of career adaptability for workers, (4) career adaptability for students, and (5) its impact on the sustainable workforce. This study is expected to provide valuable insights for the development of the TVET curriculum, industrial strategy, and effective workforce policies. This is intended to prepare graduates with the skills required to face the challenges and dynamic changes in the world of work.

## LITERATURE REVIEW

### Career Adaptability Concept

The capacity of an individual to face challenges, transitions, and changes in their work environment flexibly and proactively is referred to as career adaptability (Savickas, 2005). This concept originates from the Career Construction Theory (CCT), where career adaptability is considered a psychosocial resource that helps individuals overcome difficulties in their careers and shape their own professional identities (Kirchknopf, 2020; Mark Savickas, 2005; Qin & Tang, 2023). Other studies have demonstrated that the ability to adapt to a

career exerts a significant influence on job satisfaction, employability, and readiness for career transitions in vocational education (Gerçek, 2024; McIlveen et al., 2013). Also, the ability to adapt to a career is associated with career optimism and can help someone determine better career choices (Bunea & Guinea, 2023; Hasret & Baltacı, 2021; Li et al., 2021; Rudolph et al., 2017; Sa-Nguanmanasak & Khampirat, 2019; Wang et al., 2023).

According to Savickas (2005), in vocational education, four main dimensions are the benchmarks for individual career adaptability. The first dimension is concern (concern for future career), where individuals can plan and prepare for their future careers (Savickas, 2005; McIlveen et al., 2013). The second dimension of career adaptability is control (control over their career), where individuals have the ability to control their career decisions (Savickas, 2005; Rossier et al., 2012). The third dimension is curiosity (curiosity about job opportunities); here, individuals can explore the various career choices and opportunities available (Hirschi, 2012; Savickas, 2005). The fourth dimension of career adaptability is confidence (self-confidence) in facing challenges in achieving career goals in the future (Mahfud et al., 2022; Savickas, 2005). Literature studies on vocational education indicate that concern, self-control, curiosity, and strong confidence about one's career plans positively correlate with work readiness.

### **Career Adaptability in TVET**

TVET (Technology Vocational Education and Training) plays an important role in increasing career flexibility through industry-based learning and real work experience, such as through internship programs (Sa-Nguanmanasak & Khampirat, 2019; Wang et al., 2023; Zainun et al., 2020). The development of career adaptability in TVET is strengthened by several factors. The first factor is a vocational education curriculum that is tailored to the needs of the labor market (Ghosh et al., 2022; Mahfud et al., 2024; Neuhouser et al., 2023). The second is internship and work experience programs that provide individuals with direct experience working in a real work environment (Sa-Nguanmanasak & Khampirat, 2019; Wang et al., 2023; Xia & Wang, 2022; Zainun et al., 2020). Third, the support of mentors and teachers can increase students' self-confidence in strengthening their career adaptability (Kvasková et al., 2023; Lazarová et al., 2019; Mahfud et al., 2022). The high career adaptability possessed by vocational education graduates is considered to be able to improve adjustment to industry dynamics and has the potential to have good job opportunities (Simmons et al., 2021).

Aside from technical skills, vocational education students need to learn soft skills, such as teamwork, communication, and problem-solving (Ghosh et al., 2022). Some soft skills that exert a positive impact on career adaptability comprise emotional intelligence, resilience, and communication skills (Duarte et al., 2020; Sa-Nguanmanasak & Khampirat, 2019; Theron, 2017). Emotional intelligence plays a role in constructing professional relationships and solution-based steps to face work challenges (Duarte et al., 2020). Resilience skills can foster mental resilience when facing pressure in the world of work (Theron, 2017). Communication skills can help individuals during the process of finding and pursuing work (Sa-Nguanmanasak & Khampirat, 2019). In addition, social support and support from coworkers also play an important role in building career adaptability for vocational students, thereby fostering self-confidence and work readiness (Chuang et al., 2022; Gerçek, 2024; Simmons et al., 2021; Su & Weng, 2024).

### **Bridging the Gap: The Importance of Career Adaptability for Employed Individuals**

Career adaptability is becoming increasingly prominent for individuals who are already employed (Simmons et al., 2021; Volmer et al., 2023; Ye et al., 2023), especially in the face of rapid industrial change and technological developments (Rossier et al., 2012; Wafi et al., 2022). In a dynamic workplace, employees are expected not only to have relevant technical skills but also to have the ability to adapt quickly to changes in their work environment (Chan et al., 2020). Research shows that individuals with high levels of career adaptability tend to be better able to adapt to changes in organizational structures and evolving skill demands (Marcionetti et al., 2025). In line with other findings, it is emphasized that career adaptability contributes to job satisfaction and stress reduction (Gerçek, 2024; Marcionetti et al., 2025; Silva & Gamboa, 2014). This suggests that career adaptability serves not only as a tool to deal with challenges but also as a factor that improves the overall quality of work experience (Mahfud et al., 2022; Simmons et al., 2021).

Furthermore, a study by Gerçek (2024) underlines that career competence and self-perceived employability have a significant relationship with career adaptability, where employees who feel more competent in their skills tend to be more proactive in seeking career development opportunities within their organization (Fu et al., 2024; Hirschi, 2009). In addition, support from superiors and coworkers also plays a crucial role in building employee career adaptability because a supportive work environment can increase their self-confidence and readiness to face challenges (Mahfud et al., 2022; Simmons et al., 2021). Another study revealed that employees who have a high level of career adaptability are better able to explore career development opportunities within their organization (Wang et al., 2023). As a result, these employees can increase career mobility and job satisfaction. Thus, organizations need to invest in training and development programs that focus on improving career adaptability to ensure the long-term success of their employees (Kenny et al., 2022; Volmer et al., 2023).

### **Career Adaptability and Industry Demands: Preparing Students for a Dynamic Job Market**

In the context of vocational education, career adaptability is essential to prepare students to face the demands of a dynamic job market (Chan et al., 2020; Savicas & Porfeli, 2013; Volmer et al., 2023). Research demonstrates that effective vocational education should integrate industry-based learning (Putri et al., 2023; Ersoy, 2010; Billet, 2011; Wang et al., 2022; Xia & Wang, 2022) and real-world work experiences to enhance students' career adaptability skills (Mahfud et al., 2022; Billet, 2011; Billett, 2011; Wang et al., 2023; Xia & Wang, 2022). Internship and work experience programs provide students with opportunities to apply the skills they have learned in a real work environment (Sa-Nguanmanasak & Khampirat, 2019; Wang et al., 2023; Xia & Wang, 2022; Zainun et al., 2020). This can improve their readiness to enter the workforce (Ambiel et al., 2022; Chuang et al., 2022; Leavy et al., 2022; Neuhouser et al., 2023; Simmons et al., 2021). In addition, research by Fu et al. (2024) showed that appropriate career personality styles could predict students' career adaptability, indicating that vocational education should consider students' individual characteristics in designing the curriculum (Ersoy, 2010; Jiang et al., 2024; McIlveen et al., 2013; Yan et al., 2024).

Moreover, research by Chuang et al. (2022) highlighted that motivation and self-efficacy play a vital role in building career adaptability. Students' self-efficacy can foster a sense of greater confidence in their abilities (Chuang et al., 2022; Cook & Maree, 2016; Mack & Honig, 2023; Su & Weng, 2024; Volmer et al., 2023) and tend to be more proactive in seeking career opportunities (Chuang et al., 2022; Cook & Maree, 2016; Gerçek, 2024; Mahfud et al., 2020; Qiao & Huang, 2019). Thus, developing career adaptability skills in vocational education not only increases students' employment opportunities but also helps them to contribute effectively to an ever-changing work environment. This study suggests that educational institutions should collaborate with industry to ensure that curricula remain relevant to market needs so that graduates can easily adapt and succeed in their careers (Mahfud et al., 2022; Simmons et al., 2021). Therefore, vocational education needs to adopt a more holistic approach to skills development, including soft skills and technical skills, to prepare students for the challenges of a competitive job market.

### **Sustainable Workforce Development Concept**

In vocational education, sustainable workforce development focuses on developing long-term skills that are relevant to the changing dynamics of the industry (Mahfud et al., 2022; Neuhouser et al., 2023). Sustainable workforce development adheres to several key principles, including skill flexibility (Franz, 1983; Weber & Guggemos, 2018), lifelong learning (Li et al., 2021; Wafi et al., 2022), and technology integration (Rossier et al., 2012; Wafi et al., 2022). Vocational education must teach cross-industry skills, such as project management and digital literacy, to build flexibility in skills (Weber & Guggemos, 2018). In addition, vocational students need to have a mindset that when working, they must become workers who have a desire for lifelong learning so that their skills remain relevant according to the needs of the labor market (Li et al., 2021; Wafi et al., 2022). Moreover, vocational training should integrate technology that students can utilize to acquire skills that align with technological transformation in the world of work (Ambiel et al., 2022; Hlad'ó et al., 2019; Leavy et al., 2022; Rossier et al., 2012).

Several studies have shown that career adaptability significantly affects workforce sustainability in various industrial sectors (Putri et al., 2023; Hlad'ó et al., 2019; Mahfud et al., 2022; Peng et al., 2024; Wang et al.,



2022). Career adaptability can enable individuals to adjust to changes and challenges that arise in the work environment. Individuals with high career adaptability tend to be better able to face changes and challenges in the workplace (Duarte et al., 2020; Li et al., 2021; Simmons et al., 2021). Thus, they can develop new skills, improve performance, and maintain relevance in their careers. Individuals with high career adaptability can also adapt more quickly to changes in the industry and new technologies (Rossier et al., 2012; Wafi et al., 2022), so they remain competitive and relevant in the ever-evolving job market (McIlveen et al., 2013). In addition, higher levels of job satisfaction in individuals with good career adaptability contribute to reduced turnover rates in companies since they feel more engaged and motivated in their work (Simmons et al., 2021). Related to other potentials, individuals with high career adaptability exhibit greater flexibility in moving between jobs or industries (Franz, 1983; Leavy et al., 2022), which in turn increases labor mobility and allows them to explore wider career opportunities (Karam & Afiouni, 2021; Li et al., 2021; Ran et al., 2023; Rudolph et al., 2017; Xia & Wang, 2022).

## Research Question

The importance of research question (RQ) in Systematic Literature Review (SLR) research functions as a guideline for the methodology process, determining the scope, objectives, and relevance of the research focus so that the compiled review is aligned and in accordance with the chosen topic. RQ also helps researchers find relevant studies and minimize bias in organizing and synthesizing the information collected. Adopting the PICO framework (Gusenbauer & Gauster, 2025; Methley et al., 2014) at the RQ stage is a crucial step of SLR to investigate and evaluate studies in the field of vocational education. The PICO stage emphasizes three components populations, intention, and context. (1) Populations (P) refers to individuals, groups, or research subjects, such as certain age groups, health categories, education levels, or other specified categories. (2) Intention (I) highlights the main topic of interest, such as a particular phenomenon, intervention, or issue being studied. (3) Context (Co) alludes to the context and establishes the framework, conditions, or background, including location, social framework, or other relevant situational factors. The RQs in the study are as follows:

1. How does career adaptability affect job satisfaction and the well-being of vocational students?
2. What are the factors that influence the career adaptability of vocational students and their contribution to employment sustainability?
3. How do work-based learning programs affect students' skills and career readiness in a changing labor market?

## MATERIALS AND METHODS

The findings on career adaptability in TVET were evaluated and analyzed through a systematic literature review (SLR) approach, followed by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The SLR approach was chosen as it allows for an in-depth analysis of previous studies and provides a more systematic understanding of the factors related to the concept of career adaptability, career adaptability in TVET, the importance of career adaptability for workers, career adaptability for students, and the sustainable workforce framework. This study collected data from various leading academic databases, such as Scopus, Web of Science (WoS), IEEE Xplore, SpringerLink, and ScienceDirect, to ensure the diversity and quality of the information obtained. From a rigorous selection process, a total of 15 articles relevant to the theme of career adaptability in the context of vocational education were selected for in-depth analysis. These data sources were selected based on their high credibility and strong reputation in the fields of vocational education, career psychology, and sustainable workforce development (Gough et al., 2017).

### Identification

The first step was carried out by searching for articles using specific keywords in the Scopus, Web of Science (WoS), IEEE Xplore, SpringerLink, and ScienceDirect databases, including: "Career adaptability AND vocational education," "Career construction theory AND TVET," "Soft skills AND employability in vocational

training," and "Sustainable workforce development AND TVET," which resulted in an initial 256 articles. In the screening stage, articles detected as duplicates or irrelevant to the research topic, such as those discussing career adaptability in the context of non-vocational education, were eliminated, leaving 146 articles for further analysis.

## Screening and Eligibility

The article selection stage began with determining the topic and clear limitations for the sources to be used, followed by searching for journal articles in predetermined databases. From the search, 15 articles were obtained that met the initial criteria. They were relevant to several studies that discussed how vocational education can develop career adaptability and its impact on a sustainable workforce, as well as the determinants and outcomes of career adaptability. In this systematic review, the researchers analyzed each article in detail using a table, which includes the author's name, research subject, methodology, concepts used, and research results of each article.

Table 1. Selection criteria to collect relevant articles

Criterion	Inclusion	Exception
Language	English	Non-English
Time Range	1998-2025	<1998
Subject Area	Vocational Education	Studies outside the domain of vocational education (e.g. social sciences such as economics, psychology or management studies)
Types of Literature	Journal (Article)	Non-article formats such as book chapters, indexed conference papers
Open Access	All	None

## Data Abstraction and Analysis

To analyze the content of 15 selected articles, this study used the thematic analysis method with several main categories: internal factors of career adaptability, such as self-efficacy, personality, and learning experience (Chuang et al., 2022; Gerçek, 2024; Hirschi, 2009; Su & Weng, 2024; Volmer et al., 2023; Z. Wang et al., 2023), and external contributing factors, such as the role of mentors, work environment, and vocational education policies (McIlveen et al., 2013; Sa-Nguanmanasak & Khampirat, 2019; Zainun et al., 2020), as well as the impact of career adaptability, the relationship between adaptability and work readiness, employability, and job satisfaction (Hlad'ó et al., 2022; Neuhouser et al., 2023). Content analysis techniques were also employed to group findings based on the Career Construction Theory model (Chuang et al., 2022; Hasret & Baltacı, 2021; Karam & Afiouni, 2021; Savicas & Erik J. Porfeli, 2013; Mark L. Savickas & Erik J. Porfeli, 2011; McIlveen et al., 2013; Rudolph et al., 2017). To ensure the quality of the studies used in this SLR, aspects assessed in this appraisal included relevance to the research objectives, credibility of data sources (reputable peer-reviewed journals), and clear and transparent research methodology.

Table 2. Screening list of 15 eligible articles that were reviewed in detail

Author	Title	Journal	Research Subject	Methodology	Concept Theory
Hirschi (2012)	Career preparation in the transition from school to vocational education and training	Orientation Scolaire et Professionnelle	Individuals VET in Switzerland	Empirical study	Career adaptability by Savickas (2005)

<b>McIlveen et al. (2013)</b>	Beyond conscientiousness: Career optimism and satisfaction with academic major	Journal of Vocational Behavior	University students (N=529)	SEM Analysis	Career Construction Theory by Savickas (2005)
<b>Neuhouser et al. (2023)</b>	Remembering New Vocationalism: Reinforcing the Future of Workforce and Professional Development in the Community College	Community College Journal of Research and Practice	Community colleges and vocational education	Theoretical approach	Career Construction Theory by Savickas (2005)
<b>Orji &amp; Herachwati (2024)</b>	Career transition and mentorship nexus: unmasking the mediating role of career adaptability	Higher Education, Skills and Work-based Learning	480 trainee-program	Cross-sectional	Savicas & Porfeli (2013)
<b>Su &amp; Weng (2024)</b>	The influence of self-efficacy on social adaptability among college students: The mediating role of psychological resilience	Edelweiss Applied Science and Technology	Students N=490 in China	Questionnaire	Self-Efficacy by Bandura (1977)
<b>Kenny et al. (2022)</b>	Applying the Psychology of Working Theory for Understanding Adaptive Career Progress of Youth	Journal of Career Assessment	Adolescent high school students (N=364)	SEM Analysis	Psychology of Working Theory by Blustein et al. (2016)
<b>Chuang et al. (2022)</b>	The influence of motivation, self-efficacy, and fear of failure on the career adaptability of vocational school students: Moderated by meaning in life	Frontiers in Psychology	Vocational school students in Taiwan (N=2,377)	SEM Analysis	CTT Savickas (2005) Self-Determination Theory (Blustein et al., 2016; Ryan & Deci, n.d.)
<b>(Fu et al., 2024)</b>	Beyond person-environment congruence: Career adaptability, career personality styles, and thinking styles	Acta Psychologica	Pre-service kindergarten teachers in China (N=811)	Questionnaire	Career adaptability by Savickas (2005)
<b>Yan et al. (2024)</b>	Shaping future workers in China's secondary vocational schools a person-centered study on professional identity and career adaptability	Current Psychology	Secondary vocational school students in China (N=630)	Latent profile analysis	Career adaptability by Savickas (2005)
<b>Gerçek (2024)</b>	Serial multiple mediation of career adaptability and self-perceived employability in the relationship between career competencies and job search self-efficacy	Higher Education, Skills and Work-Based Learning	Management and organization students in vocational schools (N=302)	SEM Analysis	Career Adaptability and Self-Perceived Employability by Savicas & Porfeli (2013)
<b>Mahfud et al. (2022)</b>	The Influence of Teaching Quality, Social Support, and Career Self-Efficacy on the Career Adaptability Skills: Evidence from a Polytechnic in Indonesia	Integration of Education	Polytechnic students in Indonesia (N=265)	SEM analysis	Career Adaptability and Self-Efficacy (Albert Bandura, 1977; Mark Savickas, 1997)
<b>Mahfud et al. (2024)</b>	The Role of Work-Based Learning in Enhancing Career Adaptability: An Empirical Study from Vocational Students in Indonesian and Malaysian Universities	Integration of Education	Vocational students in Indonesia and Malaysia (N=476)	SEM analysis	Career Adaptability and Self-Efficacy (Albert Bandura, 1977; Mark Savickas, 1997)

<b>de Abreu et al. (2024)</b>	Vocational identity as a mediator in the relationship between mindfulness and career adaptability among graduates in the early career stage	British Journal of Guidance and Counselling	Fresh Graduate in South Africa (N=200)	SEM analysis	Career Adaptability by Savickas (2005)
<b>Tejedor et al. (2025)</b>	Career Adaptability and Career Construction as Mediating Variables Between Hardiness and Vocational Identity	International Journal for Research in Vocational Education and Training	Spanish and Brazilian students (N=1,023)	SEM and confirmatory factor analysis (CFA)	Career Construction Theory (CCT) by Savickas (2005)
<b>Marcionetti et al. (2025)</b>	Influence of Career Adaptability and Job Control on Decent Work and Occupational Stress in a Sample of Apprentices	Journal of Career Development	VET trainees in Switzerland (N=530)	Structural equation modeling (SEM)	Career Adaptability and Job Control by Savickas (2005)

## Quality Assessment

Numerical analysis to assess the reliability and accuracy of research screening results by adopting the Question of Answer (Abouzahra et al., 2020) contains six questions for this SLR. The assessment criteria include: a score of 1 for yes (Y) when all criteria are met, a score of 0.5 for partial (P) when there are gaps in the criteria, and a score of 0 for no (N) when no criteria are met.

1. QA1. Has it outlined all its objectives?
2. QA2. Does it effectively communicate significance and practical value?
3. QA3. Is the articulation of the research methodology clear?
4. QA4. Are the definitions and concepts of the approach easy to understand?
5. QA5. Is this research relevant compared to similar research?
6. QA6. Are the limitations of this research clear?

A review of the scores of each of these criteria is accumulated into a combined score. The results of the study are evaluated by experts with the provision that the minimum total score is three or greater. So that articles that do not meet the criteria are eliminated for further analysis.

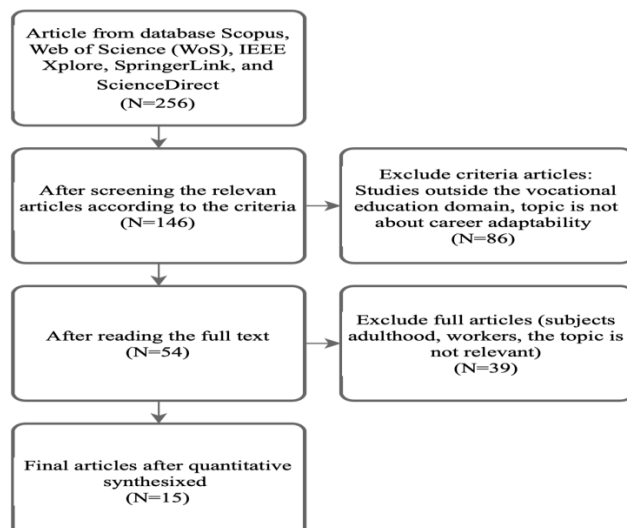


Figure 1. Flow diagram of the research using PRISMA



## RESULTS AND FINDING

The selected articles according to Table 2 are explained in detail the criteria for the evaluation scoring results to determine the quality of the study and review the overall assessment. Studies of academic publications related to career adaptability such as the concept of career adaptability, career adaptability in TVET, the importance of career adaptability for workers, career adaptability for students, and sustainable workforce framework are underlined and scrutinized to the existing constraints. Through Table 3, the results of the selected articles that have been evaluated are shown.

Table 3. Quality scoring of selected articles for career adaptability review

<b>Title (Primary Study)</b>	<b>QA1</b>	<b>QA2</b>	<b>QA3</b>	<b>QA4</b>	<b>QA5</b>	<b>QA6</b>	<b>Total</b>	<b>Percentage (%)</b>
1. Career preparation in the transition from school to vocational education and training	1	1	1	1	1	0,5	5,5	91,67%
2. Beyond conscientiousness: Career optimism and satisfaction with academic major	1	0,5	1	1	1	0,5	5,0	83,33%
3. Remembering New Vocationalism: Reinforcing the Future of Workforce and Professional Development in the Community College	0,5	1	1	1	0,5	0	4,5	75,00%
4. Career transition and mentorship nexus: unmasking the mediating role of career adaptability	1	1	1	1	0,5	1	5,5	91,67%
5. The influence of self-efficacy on social adaptability among college students: The mediating role of psychological resilience	1	1	1	1	1	1	6,0	100%
6. Applying the Psychology of Working Theory for Understanding Adaptive Career Progress of Youth	1	0,5	1	1	1	0,5	5,0	83,33%
7. The influence of motivation, self-efficacy, and fear of failure on the career adaptability of vocational school students: Moderated by meaning in life	1	1	1	1	1	0,5	5,5	91,67%
8. Beyond person-environment congruence: Career adaptability, career personality styles, and thinking styles	1	1	0,5	1	1	0,5	5,0	83.33%
9. Shaping future workers in China's secondary vocational schools a person-centered study on professional identity and career adaptability	1	1	1	1	1	1	6	100%

10.Serial multiple mediation of career adaptability and self-perceived employability in the relationship between career competencies and job search self-efficacy	1	1	1	1	1	0,5	5,5	91,67%
11.The Influence of Teaching Quality, Social Support, and Career Self-Efficacy on the Career Adaptability Skills: Evidence from a Polytechnic in Indonesia	1	1	1	0,5	1	0,5	5,0	83,33%
12.The Role of Work-Based Learning in Enhancing Career Adaptability: An Empirical Study from Vocational Students in Indonesian and Malaysian Universities	0,5	1	1	1	0,5	5	5,0	83,33%
13.Vocational identity as a mediator in the relationship between mindfulness and career adaptability among graduates in the early career stage	1	0,5	1	1	1	0,5	5,0	83,33%
14.Career Adaptability and Career Construction as Mediating Variables Between Hardiness and Vocational Identity	0,5	1	1	1	1	1	5,5	91,67%
15.Influence of Career Adaptability and Job Control on Decent Work and Occupational Stress in a Sample of Apprentices	1	1	1	1	1	0,5	5,5	91,67%

The results of the scoring evaluation indicate that not all articles achieve a perfect score, despite being methodologically sound. Practical relevance and limitations are often the aspects that receive less critical exploration. For instance, articles like Neuhouser et al. (2023) demonstrate how a theoretical approach can be undermined by a lack of a robust writing structure. In the expert review stage, each subtheme is examined to determine whether it is clear, relevant, and aligned with the topic being discussed. If there are differences in opinion or inconsistencies in the arrangement of themes, these are discussed among the authors until a consensus is reached. Additionally, the experts provide feedback and comments, which are then considered by the authors. This feedback is used to refine the subthemes to make them clearer and more precise.

### Adaptability Career for Sustainability Employment

Career adaptability is a vital skill for facing the dynamics of the ever-changing world of work, especially in the context of sustainable work. The results of the research synthesis uncover that individuals who have a high level of career adaptability tend to have a more positive perception of their work, which contributes to job satisfaction and stress reduction. Marcionetti et al. (2025) found that career adaptability was positively related to the perception of decent work among interns, indicating that more adaptable individuals tend to see their work as more satisfying and sustainable. This corroborates with the findings of Savickas (2005), who emphasized the importance of career adaptability in helping individuals navigate changes in the work environment. Research by Chuang et al. (2022) also emphasized that career adaptability is influenced by motivation and self-efficacy, which contribute to an individual's readiness to adapt to changing job demands.

Furthermore, Yan et al. (2024) demonstrated that a strong professional identity among vocational school students is positively related to career adaptability. A clear professional identity helps individuals formulate career goals and develop strategies to achieve them, which in turn enhances their ability to adapt to changes in the work environment. A study by Tejedor et al. (2025) also highlighted that the consolidation of vocational identity is particularly important at the university stage, where individuals decide their first steps regarding their professional future. Thus, the development of professional identity and career adaptability skills are key to creating a workforce that is ready to face future challenges and contributes to job sustainability in an era of constant change.

### **Determinants Factor Career Adaptability for Sustainability Employment**

The factors influencing career adaptability are highly diverse and include internal and external aspects (Cristy & Kurniawati, 2023). Research indicates that teaching quality, social support, and career self-efficacy are key determinants of career adaptability. Mahfud et al. (2022) also found that although teaching quality and social support did not have a direct effect on career adaptability skills, career self-efficacy was shown to be a significant mediator in the relationship. This suggests that developing self-efficacy can improve students' ability to adapt to job demands. A study by Bandura (1977) reinforces these findings by showing that self-efficacy plays an important role in influencing individual behavior and decisions in a career context.

Additionally, Tejedor et al. (2025) disclosed that individual resilience plays an essential role in shaping vocational identity and career adaptability, which in turn affects job sustainability. This resilience encompasses an individual's ability to remain positive and goal-focused despite difficulties. A study by Chuang et al. (2022) underlined that psychological resilience can help individuals cope with stress and challenges in their careers. Research by Gerçek (2024) also highlighted the importance of professional identity as a factor influencing career adaptability profiles among vocational school students. Thus, the development of professional identity and self-efficacy is key to improving career adaptability, which ultimately contributes to future job sustainability.

### **Intervention Activity Career Adaptability for Sustainability Employment**

Interventions designed to enhance career adaptability are essential in the context of vocational education. Several studies recommend the development of work-based learning (WBL) programs and relevant curricula to enhance students' career adaptability skills. Mahfud et al. (2022) emphasized the need for a vocational teaching model that integrates work-based learning, university support, and self-efficacy development to enhance career adaptability. These programs not only provide students with practical experience but also help them build professional networks that can support their future career development. Research by Blustein et al. (2016) showed that social support and real-world work experience can enhance students' career readiness.

Moreover, Chuang et al. (2022) recommended that education about the meaning of life can be used as a strategy to reduce fear of failure and increase self-efficacy, which in turn can improve students' career adaptability. This study suggests that interventions that focus on developing career adaptability skills can help students prepare for challenges in the changing job market. Marcionetti et al. (2025) also highlighted the significance of creating a supportive work environment, including physical and psychological safety, to help interns manage stress and increase positive perceptions of their work environment. Therefore, comprehensive and integrated interventions can significantly improve students' and graduates' career adaptability, preparing them for success in a competitive workforce.

## **DISCUSSION AND CONCLUSION**

### **Interpretation of Results**

The results of the study specify that both internal and external factors play a prominent role in building career adaptability among students and graduates. Internal factors such as self-efficacy, vocational identity, and psychological resilience have been shown to contribute significantly to an individual's ability to adapt to the demands of the changing world of work (de Abreu et al., 2024; Su & Weng, 2024). Even further, external

factors—social support, teaching quality, and curriculum relevance—also play a crucial role in facilitating the development of career adaptability skills (Mahfud et al., 2022; McIlveen et al., 2013). Research by Chuang et al. (2022) highlights that motivation and meaning in life can moderate the relationship between self-efficacy and fear of failure, denoting that a supportive educational environment can improve students' readiness to face career challenges. Hence, vocational education must adapt to changes in the world of work by integrating a more holistic approach to skills development, including soft skills and technical skills.

### Implications for Vocational Education

The implications for vocational education are significant, specifically in the context of curriculum reform to balance technical and soft skills. A study by Mahfud et al. (2024) demonstrates that work-based learning (WBL) and university support have a significant direct influence on the career adaptability of vocational students. Therefore, educational institutions must strengthen industry-based learning models that combine theory and practice and provide students with hands-on experience to enhance their skills (Neuhouser et al., 2023). In addition, increasing partnerships between industry and vocational education (TVET) institutions is essential to ensure that the curriculum remains relevant to the needs of the labor market (Marcionetti et al., 2025). Policy support for continuing training programs is also needed to help graduates adapt to rapid changes in the world of work (Chuang et al., 2022; Gerçek, 2024; Hlad'o et al., 2019, 2022; Wafi et al., 2022; Xia & Wang, 2022).

### Limitations and Recommendations

Although this study provides valuable insights into the factors related to the concept of career adaptability, career adaptability in TVET, the importance of career adaptability for workers, career adaptability for students, and the sustainable workforce framework, several limitations need to be noted. First, most studies focus on a specific context, such as vocational education in a particular country, so the results may not be fully generalizable to other contexts (Fu et al., 2024; Hirschi, 2012). Thus, further research is required to explore the factors influencing career adaptability in different industry-specific and cultural contexts. Further research can also consider additional variables, such as the influence of technology and social changes that may affect labor market dynamics. Accordingly, more comprehensive and diverse research can provide a deeper understanding of how individuals can develop career adaptability skills necessary to succeed in the changing world of work.

### REFERENCES

1. Albert Bandura. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191–215.
2. Aliya Putri, A. N., Maulanda, F. D., Zulfiyandi, Andrian, D., & Hakim, Z. (2023). Comparative Analysis of Big Data Utilization at Vocational and Productivity Training Centers (BBPVP) and the Domestic Job Market. *Proceedings of 2023 IEEE International Conference on Data and Software Engineering, ICoDSE 2023*, 31–36. <https://doi.org/10.1109/ICoDSE59534.2023.10291509>
3. Almeida, B. R., & Teixeira, M. O. (2018). Well-being and career adaptability in adaptation to college. *Revista Brasileira de Orientacao Profissional*, 19(1), 19–30. <https://doi.org/10.26707/1984-7270/2019v19n1p19>
4. Ambiel, R. A. M., Martins, G. H., & Salvador, A. P. (2022). Differences in career adaptability according to education and employment status. *Interacao Em Psicologia*, 26(2), 190–198. <https://doi.org/10.5380/riep.v26i2.77840>
5. Anas Abouzahra, Ayoub Sabraoui, & Karim Afdel. (2020). Model composition in Model Driven Engineering: A systematic literature review. *Information and Software Technology*, 125.
6. Bunea, Ș., & Guinea, F.-A. (2023). Stakeholders' Perceptions of the Vocational Competences Acquired by Students Enrolled in Accounting Master's Programmes in Romania. *Sustainability (Switzerland)*, 15(9). <https://doi.org/10.3390/su15097406>
7. Chan, K.-Y., Ho, M.-H. R., & Ramaya, R. (2020). A "T-shaped" metaphor for holistic development: Entrepreneurial, professional and leadership (EPL) efficacies predict self-perceived employability. In *Entrepreneurship-Professionalism-Leadership: A Multidimensional Framework for Human Capital and Career Development in the 21st Century*. [https://doi.org/10.1007/978-981-15-3121-7\\_7](https://doi.org/10.1007/978-981-15-3121-7_7)



8. Chuang, Y.-T., Huang, T.-H., Lin, S.-Y., & Chen, B.-C. (2022). The influence of motivation, self-efficacy, and fear of failure on the career adaptability of vocational school students: Moderated by meaning in life. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.958334>
9. Cook, A., & Maree, J. G. (2016). Efficacy of using career and self-construction to help learners manage career-related transitions. *South African Journal of Education*, 36(1). <https://doi.org/10.15700/saje.v36n1a1225>
10. Cristy, A., & Kurniawati, F. (2023). A Systematic Literature Review on Career Adaptability among Adolescents. *Journal of Innovation in Educational and Cultural Research*, 4(3), 410–420. <https://doi.org/10.46843/jiecr.v4i3.711>
11. David L. Blustein, Chad Olle, Alice Connors-Kellgren, & A. J. Diamonti. (2016). Decent Work: A Psychological Perspective. *Organizational Psychology*, 7. <https://doi.org/doi.org/10.3389/fpsyg.2016.00407>
12. de Abreu, N., Kleynhans, R., & Nel, P. (2024). Vocational identity as a mediator in the relationship between mindfulness and career adaptability among graduates in the early career stage. *British Journal of Guidance and Counselling*, 52(3), 431–441. <https://doi.org/10.1080/03069885.2022.2106549>
13. Duarte, F., Paixão, M. P., & da Silva, J. T. (2020). Differences in career adaptability at two stages of secondary education. *Revista de Estudos e Investigacion En Psicologia y Educacion*, 7(2), 115–126. <https://doi.org/10.17979/reipe.2020.7.2.6420>
14. Ersoy, S. (2010). Investigation of new education methods using applied mechatronics. In *Science Education in a Rapidly Changing World*.
15. Ferreira, N. (2014). Career meta-competencies in the retention of employees. In *Psycho-Social Career Meta-Capacities: Dynamics of Contemporary Career Development*. [https://doi.org/10.1007/978-3-319-00645-1\\_10](https://doi.org/10.1007/978-3-319-00645-1_10)
16. Franz, J. B. (1983). Cognitive development and career retraining in older adults. *Educational Gerontology*, 9(5–6), 443–462. <https://doi.org/10.1080/0380127830090509>
17. Fu, M., Bo, W. V., Lin, X., & Zhang, J. (2024). Beyond person-environment congruence: Career adaptability, career personality styles, and thinking styles. *Acta Psychologica*, 247. <https://doi.org/10.1016/j.actpsy.2024.104308>
18. Gerçek, M. (2024). Serial multiple mediation of career adaptability and self-perceived employability in the relationship between career competencies and job search self-efficacy. *Higher Education, Skills and Work-Based Learning*, 14(2), 461–478. <https://doi.org/10.1108/HESWBL-02-2023-0036>
19. Ghosh, P., Goel, G., & Bhongade, A. (2022). Skilling the Indian youth: a State-level analysis. *Benchmarking*, 29(10), 3379–3395. <https://doi.org/10.1108/BIJ-06-2021-0315>
20. Gough, Oliver, & Thomas. (2017). *Introducing systematic reviews*. In *An Introduction to Systematic Reviews* (pp. 1–16). Sage Publications.
21. Gusenbauer, M., & Gauster, S. P. (2025). How to search for literature in systematic reviews and meta-analyses: A comprehensive step-by-step guide. *Technological Forecasting and Social Change*, 212. <https://doi.org/10.1016/j.techfore.2024.123833>
22. Hasret, Y., & Baltacı, H. Ş. (2021). Predictors of Major Satisfaction Among Education Students | Eğitim Fakültesi Öğrencilerinde Bölüm Memnuniyetinin Yordayıcıları. *Turkish Psychological Counseling and Guidance Journal*, 11(63), 471–486. <https://doi.org/10.17066/TPDRD.1050745>
23. Hirschi, A. (2009). Career adaptability development in adolescence: Multiple predictors and effect on sense of power and life satisfaction. *Journal of Vocational Behavior*, 74(2), 145–155. <https://doi.org/10.1016/j.jvb.2009.01.002>
24. Hirschi, A. (2012). Career preparation in the transition from school to vocational education and training. *Orientation Scolaire et Professionnelle*, 41(2). <https://doi.org/10.4000/osp.3790>
25. Hlad'ó, P., Juhaňák, L., Hloušková, L., & Lazarová, B. (2022). Exploring the Roles of Career Adaptability, Self-Esteem, and Work Values in Life Satisfaction Among Emerging Adults During their Career Transition. *Emerging Adulthood*, 10(1), 135–148. <https://doi.org/10.1177/21676968211012586>
26. Hlad'ó, P., Lazarová, B., & Hloušková, L. (2019). Career adaptability of vocational education and training graduates in the period of prospective school-to-work transition. *Studia Paedagogica*, 24(2), 59–83. <https://doi.org/10.5817/SP2019-2-3>

27. Ibrahim, A. (2023). Selection of Total Quality Management Implementation Success Factors for Vocational Education Institutes Using Analytic Hierarchy Process. In *Lecture Notes in Mechanical Engineering*. [https://doi.org/10.1007/978-981-19-7709-1\\_60](https://doi.org/10.1007/978-981-19-7709-1_60)
28. Jiang, X., Yang, J., Wang, X., & Hou, Y. (2024). Career adaptability in higher vocational education: examining crossover effects from headteachers to students. *Career Development International*, 29(5), 544–557. <https://doi.org/10.1108/CDI-04-2023-0096>
29. Karam, C. M., & Afiouni, F. (2021). Career constructions and a feminist standpoint on the meaning of context. *Gender, Work and Organization*, 28(2), 672–700. <https://doi.org/10.1111/gwao.12607>
30. Kenny, M. E., Haase, R. F., Tsai, B. W., Medvide, M. B., & Davila, A. (2022). Applying the Psychology of Working Theory for Understanding Adaptive Career Progress of Youth. *Journal of Career Assessment*, 30(4), 635–657. <https://doi.org/10.1177/10690727211067699>
31. Kirchknopf, S. (2020). Career Adaptability and Vocational Identity of Commercial Apprentices in the German Dual System. *Vocations and Learning*, 13(3), 503–526. <https://doi.org/10.1007/s12186-020-09247-z>
32. Kvasková, L., Hlado, P., Juhaňák, L., & Macek, P. (2023). Self-esteem and career adaptability: Moderating roles of parental and peer support. *Career Development Quarterly*, 71(2), 84–96. <https://doi.org/10.1002/cdq.12319>
33. Laura A. King. (2014). *The Science of Psychology: an Appreciative View*. McGraw Hill.
34. Laura A. King. (2023). *The Science Of Psychology: an Appreciative View* (6th ed.). McGraw Hill Education.
35. Lazarová, B., Hlad'o, P., & Hloušková, L. (2019). Perception of teacher support by students in vocational education and its associations with career adaptability and other variables. *Psychology in Russia: State of the Art*, 12(4), 47–64. <https://doi.org/10.11621/pir.2019.0403>
36. Leavy, A., Gentaz, E., & Rossier, J. (2022). Les enjeux de l'orientation professionnelle des adolescentes en situation de handicap visuel en Suisse romande. *Orientation Scolaire et Professionnelle*, 51(2), 255–283.
37. Li, H., Yu, X., Mei, Y., Liu, X., Li, L., & Luo, N. (2021). The Effect of Grit on Career Adaptability of Chinese College Students Based on the Self-Regulatory Processes. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.795153>
38. Luo, G., Yun, J., & Tang, J. (2011). On self-adaptability of the higher vocational education. In *Communications in Computer and Information Science: Vol. 175 CCIS (Issue PART 1)*. [https://doi.org/10.1007/978-3-642-21783-8\\_55](https://doi.org/10.1007/978-3-642-21783-8_55)
39. M. Yusop, S. R., Rasul, M. S., Mohammad Yasin, R., & Hashim, H. U. (2023). Identifying and Validating Vocational Skills Domains and Indicators in Classroom Assessment Practices in TVET. *Sustainability (Switzerland)*, 15(6). <https://doi.org/10.3390/su15065195>
40. Mack, A., & Honig, B. (2023). Comparing Factors Influencing Entrepreneurial Self-Efficacy Between Vocational and Academic Post-secondary Students. *Entrepreneurship Education and Pedagogy*. <https://doi.org/10.1177/25151274231211555>
41. Mahfud, T., Masek, A., Suyitno, S., Ihsani, A. N. N., Fransisca, Y., Pranoto, P. W., Pranoto, A., Hadi, S., & Susanto, A. (2024). The Role of Work-Based Learning in Enhancing Career Adaptability: An Empirical Study from Vocational Students in Indonesian and Malaysian Universities. *Integration of Education*, 28(3), 436–453. <https://doi.org/10.15507/1991-9468.116.028.202403.436-453>
42. Mahfud, T., Mulyani, Y., Setyawati, R., & Kholifah, N. (2022). The Influence of Teaching Quality, Social Support, and Career Self-Efficacy on the Career Adaptability Skills: Evidence from a Polytechnic in Indonesia. *Integration of Education*, 26(1), 27–41. <https://doi.org/10.15507/1991-9468.106.026.202201.027-041>
43. Mahfud, T., Triyono, M. B., Sudira, P., & Mulyani, Y. (2020). The influence of social capital and entrepreneurial attitude orientation on entrepreneurial intentions: the mediating role of psychological capital. *European Research on Management and Business Economics*, 26(1), 33–39. <https://doi.org/10.1016/j.iedeen.2019.12.005>
44. Marcionetti, J., Zambelli, C., & Rossier, J. (2025). Influence of Career Adaptability and Job Control on Decent Work and Occupational Stress in a Sample of Apprentices. *Journal of Career Development*, 52(1), 95–111. <https://doi.org/10.1177/08948453241304328>

45. Mark L. Savickas, & Erik J. Porfeli. (2013). Career Adapt-Abilities Scale: Construction, reliability, and measurement equivalence across 13 countries. . *Journal of Vocational Behavior*, 80(3), 661–673.
46. Mark L. Savickas, & Erik J. Porfeli. (2011). Revision of the Career Maturity Inventory: The Adaptability Form. *Journal of Career Assessment*, 19(4), 355–374.
47. Mark Savickas. (1997). Career adaptability: An integrative construct for life-span, life-space theory. . *Career Development Quarterly*, 45(3), 247–259.
48. Mark Savickas. (2005). The Theory and Practice of Career Construction. he Theory and Practice of Career Construction. In S. D. Brown & R. W. Lent (Eds.), *Career development and counseling: Putting theory and research to work*. John Wiley & Sons Inc.
49. McIlveen, P., Beccaria, G., & Burton, L. J. (2013). Beyond conscientiousness: Career optimism and satisfaction with academic major. *Journal of Vocational Behavior*, 83(3), 229–236. <https://doi.org/10.1016/j.jvb.2013.05.005>
50. Merino-Tejedor, E., Serrano-Fernández, M.-J., Boada-Cuerva, M., & Sora, B. (2025). Career Adaptability and Career Construction as Mediating Variables Between Hardiness and Vocational Identity. *International Journal for Research in Vocational Education and Training*, 12(1), 127–150. <https://doi.org/10.13152/IJRVET.12.1.6>
51. Methley, A. M., Campbell, S., Chew-Graham, C., McNally, R., & Cheraghi-Sohi, S. (2014). PICO, PICOS and SPIDER: A comparison study of specificity and sensitivity in three search tools for qualitative systematic reviews. In *BMC Health Services Research* (Vol. 14, Issue 1). BioMed Central Ltd. <https://doi.org/10.1186/s12913-014-0579-0>
52. Ndlovu, V., & Ferreira, N. (2019). Students' psychological hardiness in relation to career adaptability. *Journal of Psychology in Africa*, 29(6), 598–604. <https://doi.org/10.1080/14330237.2019.1689468>
53. Neuhouser, J. D., Latz, A. O., & Mulvihill, T. M. (2023). Remembering New Vocationalism: Reinforcing the Future of Workforce and Professional Development in the Community College. *Community College Journal of Research and Practice*, 47(6), 401–412. <https://doi.org/10.1080/10668926.2022.2045646>
54. Orji, C. T., & Herachwati, N. (2024). Career transition and mentorship nexus: unmasking the mediating role of career adaptability. *Higher Education, Skills and Work-Based Learning*, 15(7), 82–95. <https://doi.org/10.1108/HESWBL-06-2024-0176>
55. Peng, F., Li, Y., & Xu, W. (2024). Internship and career adaptability: addressing occupational stigma and identity for hospitality management students. *Tourism Review*, 79(1), 9–23. <https://doi.org/10.1108/TR-12-2022-0631>
56. Qiao, X., & Huang, J. H. (2019). Effect of College Students' Entrepreneurial Self-Efficacy on Entrepreneurial Intention: Career Adaptability as a Mediating Variable. *International Journal of Educational Methodology*, 5(3), 305–313. <https://doi.org/10.12973/ijem.5.3.305>
57. Qin, H., & Tang, Y. (2023). Risk perceptions of COVID-19, vocational identity, and employment aspirations of Chinese aviation students: a structural equation modeling approach. *BMC Public Health*, 23(1). <https://doi.org/10.1186/s12889-023-17144-y>
58. Ran, J., Liu, H., Yuan, Y., Yu, X., & Dong, T. (2023). Linking Career Exploration, Self-Reflection, Career Calling, Career Adaptability and Subjective Well-Being: A Self-Regulation Theory Perspective. *Psychology Research and Behavior Management*, 16, 2805–2817. <https://doi.org/10.2147/PRBM.S420666>
59. Richard M. Ryan, & Edward L. Deci. (n.d.). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being . *American Psychologist* , 55(1), 68–78.
60. Rossier, J., Eggenberger, C. M., & Perdrix, S. (2012). The education of career counsellors in Switzerland. *Orientation Scolaire et Professionnelle*, 41(2). <https://doi.org/10.4000/osp.3765>
61. Rudolph, C. W., Lavigne, K. N., & Zacher, H. (2017). Career adaptability: A meta-analysis of relationships with measures of adaptivity, adapting responses, and adaptation results. *Journal of Vocational Behavior*, 98, 17–34. <https://doi.org/10.1016/j.jvb.2016.09.002>
62. Sa-Nguanmanasak, T., & Khampirat, B. (2019). Comparing employability skills of technical and vocational education students of Thailand and malaysia: A case study of international industrial work-integrated learning. *Journal of Technical Education and Training*, 11(3), 94–109. <https://doi.org/10.30880/jtet.2019.11.03.012>



63. Silva, C., & Gamboa, V. (2014). The impact of the internship on the career adaptability of vocational education students. *Revista Brasileira de Orientacao Profissional*, 15(2), 105–114.
64. Simmons, M. B., Nicholas, J., Chinnery, G., O'Sullivan, S., D'Alfonso, S., Bendall, S., Cagliarini, D., Hamilton, M., Gleeson, J., Killackey, E., Killackey, E., & Alvarez-Jimenez, M. (2021). The youth online training and employment system: Study protocol for a randomized controlled trial of an online vocational intervention for young people with mental ill health. *Early Intervention in Psychiatry*, 15(6), 1602–1611. <https://doi.org/10.1111/eip.13100>
65. Stephen Billet. (2011). *Vocational Education Purposes, Traditions and Prospects*. Springer Science+Business Media. <https://doi.org/10.1007/978-94-007-1954-5>
66. Stephen Billett. (2011). Standing of Vocational Education. In *Vocational Education Purposes, Traditions and Prospects* (p. 56). Springer Science+Business Media.
67. Su, X., & Weng, F. (2024). The influence of self-efficacy on social adaptability among college students: The mediating role of psychological resilience. *Edelweiss Applied Science and Technology*, 8(5), 873–882. <https://doi.org/10.55214/25768484.v8i5.1782>
68. Super, D. E., & Knasel, E. G. (1981). Career Development in Adulthood: Some Theoretical Problems. *British Journal of Guidance and Counseling*, 9, 194–201.
69. Supriatna, M., Fajriani, & Yulizar. (2023). Understanding transferable skills as a part of career adaptability. In *Progress in Education* (Vol. 74).
70. Theron, L. C. (2017). Facilitating adaptability and resilience: Career counselling in resource-poor communities in South Africa. In *Psychology of Career Adaptability, Employability and Resilience*. [https://doi.org/10.1007/978-3-319-66954-0\\_9](https://doi.org/10.1007/978-3-319-66954-0_9)
71. Volmer, J., Spurk, D., Orth, M., & Göritz, A. (2023). Reciprocal Effects of Career Adaptability and Occupational Self-Efficacy: A Three-Wave Longitudinal Study With Varying Time Lags. *Journal of Career Assessment*, 31(4), 665–685. <https://doi.org/10.1177/10690727221140050>
72. Wafi, A. A., Subri, U. S., Asshaari, I., Zulkifli, R. M., Mohamed, S., Hanapi, Z., Che' Rus, R., & Kamal, M. F. M. (2023). 'Turning Job Seekers to Job Creators': Talent Management Module Development for TVET Graduates. *Journal of Technical Education and Training*, 15(1), 102–115. <https://doi.org/10.30880/jtet.2023.15.01.010>
73. Wafi, A. A., Subri, U. S., Zulkifli, R. M., Mohamed, S., Hanapi, Z., Rus, R. C., & Kamal, M. F. M. (2022). "You are Hired": Technical and Vocational Education and Training Graduate Employability and Experts' Views. *Pertanika Journal of Social Sciences and Humanities*, 30(2), 859–878. <https://doi.org/10.47836/pjssh.30.2.23>
74. Wang, L., Ye, J.-H., Lee, Y.-S., & Miao, C.-J. (2022). Analysis of influencing factors of subjective career unsuccessfulness of vocational college graduates from the Department of Navigation in China. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.1015190>
75. Wang, Z., Fan, C., & Niu, J. (2023). Predicting effects of career adaptability and educational identity on the career decision-making of Chinese higher vocational students. *International Journal for Educational and Vocational Guidance*. <https://doi.org/10.1007/s10775-023-09591-1>
76. Weber, S., & Guggemos, J. (2018). Migrants, career willingness and ability. *Unterrichtswissenschaft*, 46(1), 21–42. <https://doi.org/10.1007/s42010-017-0007-3>
77. Wehmeyer, M. L., Nota, L., Soresi, S., Shogren, K. A., Morningstar, M. E., Ferrari, L., Sgaramella, T. M., & DiMaggio, I. (2019). A Crisis in Career Development: Life Designing and Implications for Transition. *Career Development and Transition for Exceptional Individuals*, 42(3), 179–187. <https://doi.org/10.1177/2165143417750092>
78. Wulandari, R. S. (2024). Empowering maritime education: the impact of internships on industry readiness. *E3S Web of Conferences*, 577. <https://doi.org/10.1051/e3sconf/202457702015>
79. Xia, Z., & Wang, H.-P. (2022). An empirical study on the development of socio-industrial adaptation of vocational education in China: A case of Southwest China. *Frontiers in Education*, 7. <https://doi.org/10.3389/feduc.2022.998732>
80. Yan, Z., Duan, B., Qu, Y., Long, K., Li, G., & Xu, S. (2024). Shaping future workers in China's secondary vocational schools — a person-centered study on professional identity and career adaptability. *Current Psychology*, 43(18), 16264–16277. <https://doi.org/10.1007/s12144-023-05576-z>
81. Ye, J.-H., Lee, Y.-S., Wang, L., Nong, W., & Ye, J.-N. (2023). Exploring the Interplay between Work Engagement, SelfPreparation, and Adaptability among Novice Teachers in Chinese Vocational



- 
- Colleges. *Journal of System and Management Sciences*, 13(5), 544–560.  
<https://doi.org/10.33168/JSMS.2023.0535>
82. Zainun, Z. B., Razalli, A. R., Kamis, A., & Hock, K. E. (2020). The implementation of industrial training for students with a disability: The role of adaptability in enhancing their workplace well-being. *International Journal of Innovation, Creativity and Change*, 12(7), 221–235.
83. Zhang, J., Chen, G., & Yuen, M. (2019). Validation of the Vocational Identity Status Assessment (VISA) Using Chinese Technical College Students. *Journal of Career Assessment*, 27(4), 675–692.  
<https://doi.org/10.1177/1069072718808798>