

Employability Skills and Career Adaptability of Technical Students: A Systematic Literature Review for Engineering and Technical Education

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Abstract—The increasingly dynamic and technology-driven labor market requires technical students to develop not only disciplinary knowledge and technical competencies but also employability skills that support career adaptability. This study systematically reviews the relationship between employability skills and students' career adaptability and identifies the competencies most frequently associated with adaptive career development. A Systematic Literature Review (SLR) using the PRISMA framework was conducted to synthesize empirical evidence from the literature. The findings indicate that employability skills are positively associated with career adaptability and contribute to work readiness, job-search self-efficacy, employment opportunities, job quality, and career resilience. Self-efficacy, communication, teamwork, problem-solving, goal orientation, optimism, emotional intelligence, and social support emerge as important factors supporting adaptive career development. From the viewpoint of engineering and technical education, the findings show the importance of incorporating employability-focused learning, experiential learning, and career development activities in technical curricula. The purpose of such integration is to enhance students' readiness for technological change, transitions in the workplace, and evolving professional demands.

Keywords—career adaptability, employability skills, engineering education, technical education, technical students, work readiness.

I. INTRODUCTION

Digital technology, automation, artificial intelligence, big data, and globally interwoven work systems are changing the skills demanded of young people for access to modern workplaces at a much faster pace. In addition to academic qualifications and technical skills, adaptability, communication, problem-solving, teamwork, and continuous learning are some of the qualities which are sought after by employers (Atitsogbe et al., 2019). The expected requirements are particularly applicable in engineering and technical education, since technical students are expected to enter into environments where new technology is constantly emerging, technological and engineering problems are complicated, and technology is always changing, and they need to be prepared to face the changing requirements of technology and industry (Anwar & Minghat, 2024).

The importance of work readiness and career adaptability as outcomes of technical education has increased, as preparation for professional work increasingly requires combining technical competence with a broader readiness for changing workplace requirements (Khakimova, 2025). Students need to be prepared not only to perform discipline-specific tasks but also to respond effectively to changing technologies, organizational structures, and labor market conditions. Career adaptability is very important in the education-to-work transition process, as it helps students manage uncertainty, career choices, and changing professional expectations (Santoso et al., 2024). Thus, the improvement of adaptability in the areas of engineering and technical education can be an addition to the preparation of technical competence.

An important set of competencies supporting this transition is employability skills. These are not only technical and discipline-specific skills but also include communication, teamwork, leadership, critical thinking, creativity, problem-solving, time management, emotional intelligence, adaptability, and lifelong learning (Koe, 2022). These competencies are especially important in technical education where graduates commonly work in multidisciplinary, collaborative, and technology-intensive work environments. Engineering and technology education must therefore go beyond the mere impartation of technical knowledge and also embrace the development of transferable competencies that are crucial to professional practice.

Career adaptability is the readiness and the psychological resources of a person to cope with the tasks of career development, occupational transitions, changes in professional roles, and unexpected career situations. It is often characterized by worry, control, curiosity, and confidence that assist people in career planning, decision-making, exploring opportunities, and overcoming professional challenges (Ichwan et al., 2025). Hence, technical students with higher career adaptability are likely to be better prepared to respond to technological disruption, changing industrial demands, and uncertain career pathways.

Career adaptability and employability skills are closely related. Employability skills refer to the practical and people skills needed to perform at work. Career adaptability is the ability of individuals to use the skills flexibly in changing

career situations (Sidiropoulou-Dimakakou et al., 2015). Students with good employability skills may be less adaptable and struggle to adapt to organizational or technological change, whereas students with good adaptability may lack the requisite employability skills and struggle to secure or maintain professional employment (Omar et al., 2023).

Previous research generally finds a positive relationship between employability skills and career adaptability, but the results are mixed across educational, cultural, and labour market contexts. There is a range of different research methods, tools used for measurement, socio-economic conditions, and education systems, indicating the need for a more systematic synthesis of the existing evidence. A systematic literature review can identify consistent patterns and differences, as well as research gaps, and help provide a stronger basis for curriculum and career-development strategies (Zixuan et al., 2025).

This study systematically investigates the relationship between employability skills and students' career adaptability, and the employability competencies most frequently associated with adaptive career development. The results are expected to support the improvement of technical curricula, experiential learning, career preparation, and student development programs that aim to prepare graduates for the ever more dynamic professional environments from an engineering and technical education perspective.

The review is guided by the following research questions:

- (i) RQ1: What is the relationship and influence of employability skills on students' career adaptability based on the empirical findings in the literature?
- (ii) RQ2: What employability skills are related to students' career adaptability?

II. LITERATURE REVIEW

A. Employability Skills

Employability skills are a combination of skills, knowledge, attitudes, and personal attributes that enable people to gain employment, perform well at work, remain employed, and progress in their careers. These competencies not only involve technical or discipline-specific skills, but also transferable skills including communication, teamwork, leadership, critical thinking, creativity, problem-solving, time management, emotional intelligence, adaptability, and lifelong learning (Koe, 2022).

Employability skills are especially vital in engineering and technical education as technical students are anticipated to operate in environments of rapid technological change, multidisciplinary collaboration, digital transformation, and changing professional demands. So, technical competence may not be sufficient to ensure work readiness. Besides, technical students also need to be able to communicate effectively, work in teams, solve problems they have never solved before, adapt to evolving technologies, and continuously update their knowledge and skills, especially in response to the needs of Industry 4.0 (Anwar & Minghat, 2024).

Therefore, higher education institutions have a great role to play in integrating employability and professional readiness development into technical curricula, learning activities, internships, project-based learning, extra-curricular activities, and career development programs (Khakimova, 2025). This incorporation can help technical students relate disciplinary knowledge to workplace expectations and better prepare them to transition into technology-intensive professional environments.

Soft skills are a crucial part of employability. Communication, teamwork, leadership, and problem-solving can help students to face complex professional situations and to adapt to collaborative work environments. Soft skills are highly correlated with work readiness and career adaptability, and teamwork is a strong predictor of several aspects of career adaptability (Gunawan et al., 2026; De Guzman and Choi, 2013).

Employability is also related to goal orientation and optimism. Goal orientation assists individuals in setting career goals and staying focused on long-term professional goals. Optimism facilitates positive expectations when confronted with uncertainty and career obstacles. These factors have also been linked to higher career adaptability and higher preparedness to deal with career transitions (Ebenehi et al., 2016; Karacan-Ozdemir and Guneri, 2017).

B. Career Adaptability and Its Relationship with Employability Skills

Career adaptability is the psychological readiness and resources of an individual to cope with career development tasks, employment transitions, changing professional roles, and unexpected situations during the course of a career. The concept becomes significant in modern technological offices where frequent changes in roles and career paths in the age of technological innovation, organizational transformation, and shifting competency needs for Industry 4.0 can affect professional jobs and career opportunities rapidly (Shahroni et al., 2022).

Career adaptability and employability skills could be viewed as synonymous constructs. Employability skills are the technical, interpersonal, and transferable skills necessary to work successfully. Career adaptability is the flexibility in the use of these competencies in varying situations. This is particularly relevant given engineering and technical education, where the technical student is expected to be well prepared for current but also for future technologies, new industry practices, and changing industry expectations.

The relationship between employability skills and career adaptability has been found to be positive in several studies. Employability skills have been significantly associated with career adaptability, with teamwork being noted as a particularly important factor (De Guzman and Choi, 2013). Interpersonal and transferable skills have also been linked to increased employment prospects, implying that technical and professional preparedness depends on a mix of disciplinary competence and adaptable interpersonal skills (Teijeiro et al., 2013).

Social and psychological factors also influence career adaptability. Family, peers, lecturers, mentors and

institutions' career-related support can boost confidence and help students to respond positively to educational and career-related challenges; mentoring has similarly been discussed as a strategy for strengthening resilience-related capacities (Daud, 2026). In contrast, career adaptability can also be cultivated via educational interventions, training, and work-related experiences, implying that it should not only be considered as a personal characteristic that stays constant (Ichwan et al., 2025; Koen et al., 2012).

To summarize, employability skills and career adaptability are two interrelated dimensions of professional preparation. Employability skills are the technical, interpersonal, cognitive, and self-development competencies required for work, and career adaptability provides the psychological resources to apply those competencies in times of change, uncertainty, and career transitions. Hence, self-efficacy, communication, teamwork, problem-solving, goal orientation, optimism, emotional intelligence, and social support all contribute to students' adaptive readiness.

In terms of engineering and technical education, student development should extend beyond academic achievement and technical competence. Experiential learning, internships, career development programs, mentoring, collaborative projects, and lifelong learning activities can support the development of employability and adaptive capacity of technical students to support their readiness to enter, sustain, and progress in dynamic professional environments.

III. METHODOLOGY

The approach of searching and selecting articles in this research also needs to be systematic, transparent, and reproducible with other researchers; as a basis for this research, the Systematic Literature Review (SLR) method is used, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method. PRISMA framework enables a structured and documented process that minimizes bias in literature selection, hence increasing confidence in the results. The method was used because it offers a detailed and sequential selection of literature, covering the identification, screening, assessing eligibility, and final selection stages. This approach will enable us to report the number of articles. Specifically, articles were found, screened, and ultimately selected through these steps. This study aims to analyze the impact of employability skills on career adaptability in university students according to scientific journal articles (published in scientific journals with a high impact factor) (Apriliawati, 2020).

The article search process was carried out through a number of trusted academic databases, including Google Scholar, ScienceDirect, and SpringerLink, in order to have a broader range of relevant and credible sources. The search was conducted based on specific keywords relating to 'employability skills', 'career adaptability', and 'university students' or 'mahasiswa'. For this study, we depicted the main variables of the study properly. The following inclusion criteria were implemented to provide relevance and quality of articles selected:

- (i) the articles should be empirical research studies,
- (ii) research should clearly focus on the link between employability skills and career adaptability,
- (iii) the research subjects should be university students,
- (iv) articles should be available in full text in Indonesian or English.

In the selection process, those articles that did not meet these criteria (conceptual papers, incomplete publications, or studies with different populations) were excluded. This strict selection procedure ensures that the review includes only the most pertinent and best studies. The selection process of the overall articles is shown in the following PRISMA flow diagram.

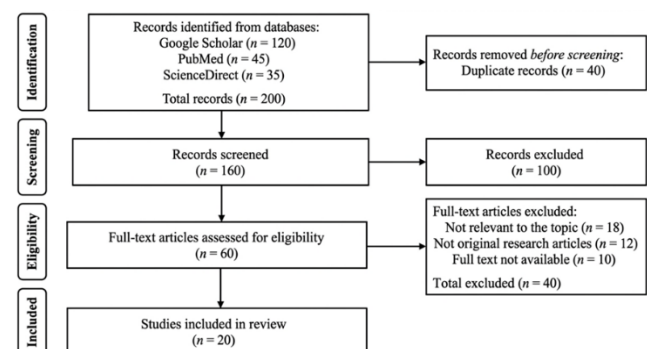


Fig. 1. PRISMA Flow Diagram.

Each stage is relevant to guarantee that the articles selected are really relevant and meet the criteria established. This must be in line with the research objectives. The stages of the process are described below:

(i) Identification Stage

In the identification phase, we performed a literature search in several academic databases, namely Google Scholar, ScienceDirect, and SpringerLink. From the search results by using the predefined keywords, there were 200 articles that were related to the research topic. After this, a duplicate removal process was performed to avoid data redundancy. From this, 40 duplicate articles were identified and removed, leaving 160 articles to move on to the screening stage.

(ii) Screening Stage

At the screening phase, 160 articles that passed the identification process were further studied using titles and abstracts. This process was designed to assess the initial relevance of the articles to the research subject, which was the link between employability skills and career adaptability in university students. In the screening process, 100 articles were excluded due to irrelevance to the research topic, and 60 articles were found eligible to move to the next stage.

(iii) Eligibility Stage

The eligibility stage involved a full-text review of the 60 articles that passed the screening stage. The articles were then subjectively reviewed according to the specified inclusion criteria (such as research design, relevance of variables, and study participants, as well as full-text access). 40 articles were excluded since they did not meet the criteria. The reasons were that they were not related to the topic, had no empirical research design, or the full-text document was

not available. These articles were therefore excluded from the selection process.

(iv) Included Stage

The last phase is the inclusion phase, and in this phase are included the studies that meet all the research criteria in full. Twenty articles that met the eligibility criteria for final review were identified in the selection process. The included studies were then synthesized according to their relevance to the two research questions. Some studies contributed evidence to more than one aspect of the analysis.

IV. RESULTS AND DISCUSSION

A. RQ1. What is the relationship and influence of employability skills on students' career adaptability based on empirical findings in the literature?

In this section, the results of analyses of the relationship and influence of employability skills on students' career adaptability studies are discussed. For RQ1, the synthesis included empirical studies that directly examined the association between employability-related competencies and career adaptability. Table I summarizes 10 major studies on this relationship. The discussion in this paper is on the role of employability skills in students' career adaptability. Employability skills such as interpersonal skills, adaptability, self-efficacy, communication skills, problem-solving abilities, and emotional intelligence are discussed. The findings of the reviewed studies suggest that students with stronger employability skills are more confident, flexible, resilient, and better equipped to deal with career uncertainty, organizational changes, and professional challenges. Furthermore, this analysis emphasizes the significance of career adaptability as an important factor that promotes work readiness, successful school-to-work transitions, job quality, career satisfaction, and individuals' capacity to effectively cope with career-related changes and challenges in the present highly dynamic, competitive, and constantly changing labor market environment.

TABLE I
RQ1.

No	Author (Year)	Focus / Variables	Main Findings
1	de Guzman & Choi (2013)	Employability skills, career adaptability	Employability skills significantly relate to career adaptability; teamwork is the strongest predictor.
2	Guan et al. (2013)	Career adaptability, job search self-efficacy, employment	Adaptability increases self-efficacy and employment; self-efficacy mediates the relationship.
3	Koen et al. (2012)	Adaptability training, work transition	Training improves adaptability and job quality; adaptability can be developed.
4	Guan et al. (2014)	Future work self, adaptability, employment	Adaptability mediates and strengthens the effect of future work self on employment outcomes.

5	Rudolph et al. (2017)	Adaptability, career outcomes	Adaptability predicts employability, performance, and well-being.
6	McArdle et al. (2007)	Employability, adaptability	Employability (including adaptability) increases re-employment chances.
7	Taber & Blankemeyer (2015)	Adaptability, proactive behavior	Adaptability mediates proactive career behaviors (planning, networking).
8	Teijeiro et al. (2013)	Competencies, employability	Interpersonal and transferable skills improve employment opportunities.
9	Parmentier et al. (2019)	Emotional intelligence, adaptability	Emotional intelligence increases career adaptability.

In a fast-changing age, students possessing good employability skills are generally more able to adapt to new working environments, respond well to demands at work, and deal with career-related challenges. The results underscore the importance of gaining work experience and skills that are relevant to the labour market as an essential precondition for building work-related adaptive capacity and continued career progress in the increasingly competitive work world. The increasingly diverse nature of the job market demands that a graduate be academically qualified, but also possess flexible skills to benefit from technological advances and organizational change.

In recent years, empirical evidence supports a relationship between employability skills and career adaptability. In a study of 353 TVET students in Taiyuan, China, a positive relationship was identified between employability skills and career adaptability. Students with better employability skills are more prepared to respond to changing employment demands and to maintain their career development (Zixuan et al., 2025). This finding supports the results of previous studies reviewed in this literature review that consistently indicate that employability skills provide an important foundation for the development of students' adaptive capacity in dynamic labour market conditions.

Similar evidence was reported by researchers who investigated the effect of employability skills on career adaptability among alumni of the Indonesian International Student Mobility Awards (IISMA) in Universitas Padjadjaran. The results showed that employability skills had a significant influence on career adaptability, accounting for 67.7% of the variance, and the remaining 32.3% was due to other factors. This finding further supports the argument that employability skills are not only instrumental competencies for getting employment but also constitute an important resource to adapt to real work environments. This is especially important for higher education as it indicates that the chance to enhance students' employability skills, including experiential learning and exposure to different environments, can potentially translate into better career adaptability (Setiawan et al., 2025).

Several of the studies that were included in the analysis of this study also report that career adaptability is a psychological factor between personal resources and more tangible career outcomes. Elements of adaptability (concern and control) have been found to affect job search self-

efficacy, which affects employment status and career success. Based on this result, students with a clear career vision and who can regulate their career choices exhibit a higher level of confidence, high motivation, and more proactive career behavior in job-seeking (Guan et al., 2013; 2014). In this respect, career adaptability serves as a catalyst that strengthens the positive effect of employability skills and internal motivation on career success. Finally, flexible persons are more resilient to setbacks in the job search process, as they can maintain optimism and adapt their strategies as the situation changes. They are also more persistent and more willing to consider other career options if they run into obstacles trying to achieve their professional goals. This indicates the necessity of psychological adaptability to help students keep their career path despite uncertain labor market conditions.

The results of the meta-analysis provide further support for the idea that career adaptability is a core construct of contemporary theories of career adaptation. The study shows that adaptability is significantly associated with various indicators of career success such as employability, job satisfaction, job performance, organizational commitment, and subjective well-being (Rudolph et al., 2017). Therefore, career adaptability is not only a capacity to deal with career transitions or occupational uncertainty, but a psychosocial resource with a wide effect on the professional quality of life of individuals. The more adaptable you are, the more productive, engaged, and psychologically fulfilled you will be at work. Consequently, adaptive individuals are more successful in gaining employment, more capable of attaining long-term career satisfaction, preserving positive relationships with others in the workplace, and sustaining higher levels of professional performance in fast-paced work environments. Moreover, flexibility and adaptability of employees are also a good way to deal with stress, work pressure, and professional uncertainty, so that they can be emotionally stable and motivated throughout their careers. Therefore, career adaptability can be regarded as one of the important factors that can contribute to professional success and well-being in the workplace.

Regarding the field of employability, the research focuses on skills that can be transferred, not technical skills. Others report that technical or instrumental competencies are not the most important factors in job openings. Instead, systemic competencies (such as flexibility, responsibility, initiative, and interpersonal communication skills) have a greater influence on that (Teijeiro et al., 2013). This finding is corroborated by those who found that the factor with the highest relationship with all dimensions of career adaptability is teamwork skills (De Guzman and Choi, 2013). Soft skills are gaining increasing significance in today's labour market, because employers seek to hire graduates who are able to work in a team, communicate in a professional manner, and adjust to changes within the company. Therefore, building students' soft skills in higher education is a strategic factor to help students' employability in the working world nationally and internationally. In addition, the ever-changing nature of technology and the multicultural workplace environments require ever greater

levels of interpersonal and collaborative abilities. Individuals who can work effectively and professionally with other individuals and groups are better equipped to address changes in the world of work and organizational dynamics.

There is a positive relationship between career adaptability and structured and sustainable training interventions. The dimensions of concern, control, and curiosity, and job quality benefited significantly after six months of the intervention for those who completed career training programs (Koen et al., 2012). According to career adaptability is not an inherent ability but it is a skill which can be acquired during suitable learning processes in education and experience. Results highlight the importance of establishing a structured approach to career development initiatives in educational institutions, particularly those that encourage students to think introspectively, plan, explore, and proactively engage with employment opportunities. Therefore, universities and higher education institutions must play a big role in educating adaptable graduates to be able to react efficiently to future working life challenges. Confidence and adaptability can hence be developed practically by having students join various career development programmes, such as internships and/or mentoring, or experience workshops or activities.

Besides work-related competencies and practical experiences, emotional factors have also been identified as important factors influencing career adaptability. Using a two-wave longitudinal study design, emotional intelligence is a causal predictor of changes in career adaptability (Parmentier et al., 2019). As a rule, people who are good at emotional management are better able to cope with stress, uncertainty, and pressure in the course of career development processes. They are also better able to sustain good social relationships, resolve conflicts constructively, and remain psychologically stable when facing demanding situations in their professional lives. The results support the notion that career readiness is not only related to technical and cognitive skills but also to individuals' skills in managing emotions and social interactions effectively.

The reviewed studies also highlighted the role of self-efficacy as another important issue in strengthening the link between employability skills and career adaptability. Self-efficacy is a person's confidence in his or her ability to successfully complete tasks and overcome challenges related to career development and employment. Students who have good employability skills are more likely to have higher self-confidence because they are more able to respond to the needs of the workplace and the expectations of their employers. This self-assurance translates into a willingness to seek out career possibilities, network, and take action to seek out jobs. In addition, individuals who have high levels of self-efficacy are more likely to persevere when encountering obstacles or setbacks when making a career change. They have a more positive outlook on their future employment options and are more inclined to go out of their way to advance their skills. So self-efficacy is a key psychological asset for helping students to convert their

employability skills into adaptive work behaviors and positive work results.

The literature explored also highlights the importance of attitudes towards lifelong learning for maintaining a career in a highly dynamic job market. With the advent of technology and digitalization, knowledge and technical skills may turn out to be outdated, and individuals need to continue to upgrade and enhance their skills throughout their careers. Students who are strongly oriented toward lifelong learning are likely to be more open to learning new knowledge, new technologies, and new workplace trends. This desire to learn constantly promotes adaptability and thus prepares people to meet management adjustments and evolving requirements of their work tasks. Furthermore, lifelong learning attitudes help the learners understand the meaning of lifelong learning as a process, not as a destination. This will help them to identify opportunities to improve themselves. Thus, their employability and career sustainability will be enhanced as well.

Despite the findings of a positive link between employability skills and career adaptability, there are certain gaps in the existing literature. One drawback is that the bulk of studies were carried out in a few countries (China, Portugal, and Australia), with other developing countries having significantly fewer studies. Cultural values, the education system, economic context, and characteristics of the labor market may have a significant impact on the correlation between employability skills and career adaptability. Previous findings must be tested in additional, more diverse, and representative social settings. The majority of the studies reviewed also use quantitative methods based on one of two study designs: cross-sectional survey or limited longitudinal design. These are effective in finding correlations between different variables during statistical analysis, but they fail to capture, to some extent, the subjective experiences, perceptions, and social realities of the student as they learn employability skills and adjust. So, there is still great potential for the use of qualitative and mixed methods, which are very promising in order to gain deeper insights into the psychological and social side of career development.

There is a lack of studies that are predominantly focused on the causal impact of employability skills on career adaptability. Previous research has mostly investigated career adaptability as a mediating variable or as an overall outcome without detailing the dimensions of employability skills that play an important role in the process of developing adaptability. This is a great opportunity for future research to identify more depth in the specific skills that relate to each career adaptability dimension (concern, control, curiosity, and confidence). Experimental and longitudinal research designs should also be used to provide more compelling evidence for causal relationships and for long-term developmental processes. These research studies would be a valuable addition to the advancement of better education and career preparation program resources that would increase students' employability and adaptability in the same package. The role of external factors like family support, socioeconomic background, quality of institutions, or labour

market factors in students' adaptability and readiness for professional life also needs to be investigated in further research.

The speed of digital technology and the development of remote and hybrid work systems also create new challenges and opportunities in terms of employability and adaptability. Employers demand greater digital competence, virtual communication, and competencies for working in virtual environments in today's workplace. So, employability skills for the digital world are not just interpersonal skills but also technology and digital adaptability. Students who are able to make good use of digital resources and get used to virtual work systems are more competitive in the global labor market. This condition requires embedding the use of computer competency in the curricula of Higher Education institutions and career preparation programs. In addition to imparting theoretical knowledge, universities also should train students who possess technical knowledge of digital skills, which will make them more competent and better able to work in the digital world.

As a whole, the ten studies come together to suggest a unified and reinforcing process of developing employability skills and career adaptability. Employability skills are the skills that are needed to do well in the workplace, and career adaptability is the psychological resources that are needed to deal with uncertainty, transitions, and continuous changes in contemporary career pathways. These two constructs, when combined, are essential to improve students' readiness for work and their employability in the present times of a volatile and competitive global environment. Higher education institutions, in this context, need to develop curricula, career development training, and programs that support learner skills not only in learning and acquiring technical skills but in developing their adaptive capacities, emotional intelligence, interpersonal skills, and attitudes for lifelong learning. The incorporation of these components in education will enable universities to educate pupils with resilient, competitive and successful behaviour in the future labour market. Figure 1 shows the distribution of the key themes most frequently investigated in the studies on the relationship between employability skills and students' career adaptability. The data in the graph are taken from the thematic synthesis of the studies included in the review. The graph aims to visually present the dominant trends of research, especially on the impact of employability skills on work readiness, proactive career behaviour, psychological preparedness, and the development of adaptive competencies that support students' career success in a highly dynamic and competitive work environment. The visualisation facilitates readers' understanding of the major themes and enhances their appreciation of the ways previous studies have highlighted the interrelatedness of employability skills and career adaptability in predicting students' professional development outcomes. Employability skills and career adaptability are regularly emerging as complementary components that can impact students' preparedness to meet future employability demands and opportunities in the ever-evolving global employment landscape.



Fig. 2. Research Themes.

The dominant theme was that there is an improvement in employability and work readiness when one is adaptable, and this was mentioned in five articles. The discovery suggests career adaptability is very crucial in improving students' work readiness and preparation to be successful in getting employed. Students with higher career adaptability have more preparedness to deal with career changes, can adapt better to the demands of the workplace, and are more confident in adapting to the work environment from school. Additionally, career adaptability may facilitate the response style of individuals to career uncertainty, improve the quality of employment transitions achieved, and expand individuals' ability to manage future career transitions. Career adaptability is not only a psychological skill but also a key strategic variable contributing to students' careers broadly.

The employability skills positively contribute to the career adaptability of students. The results of this study align with previous research. Work-related skills (communication, teamwork, problem solving, critical thinking, and interpersonal skills) are important components in the development of individuals' career adaptability readiness. Furthermore, there were a few articles found that spoke about self-efficacy as a mediator or predictor and about adaptability being enhanced by soft skills and interpersonal skills; three articles discussed each of the following. High levels of self-confidence in skills, social skills, and working with others contribute to students' career transitions and workplace readiness. Students who have high self-efficacy are more likely to be positive, participate in skills acquisition, and are more likely to deal with pressure and challenges in career development. In the meantime, students develop soft skills, communication, interpersonal, and other skills that they need to build strong professional relationships, collaborate with others, and enhance future job opportunities.

B. RQ2. Which of the students' career adaptability is related to their employability skills?

In the synthesis for RQ2, employability-related skills and career adaptability factors were explored. Studies that directly addressed these factors are presented in Table II.

TABLE II
RQ2.

No	Author (Year)	Focus / Variables	Main Findings
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1	Putri et al. (2024)	Career adaptability, work readiness	Career adaptability is positively and significantly related to work readiness ($r = 0.726$).
2	Ichwan et al. (2025)	Career adaptability, parental support, work readiness	Career adaptability has a significant positive effect on work readiness (partial & simultaneous).
3	Rahma et al. (2023)	Career adaptability, employability	Career adaptability is positively and significantly related to employability ($r = 0.663$).
4	Gunawan et al. (2026)	Soft skills, career adaptability, work readiness	Both variables positively affect work readiness; soft skills are the strongest predictor.
5	Jessica & Kembaren (2024)	Self-efficacy, career adaptability	Self-efficacy is positively and significantly related to career adaptability ($\rho = 0.636$).
6	Ebenehi et al. (2016)	Self-efficacy, goal orientation, social support, adaptability	These variables significantly predict career adaptability.
7	Karacan-Ozdemir & Guneri (2017)	Self-efficacy, optimism, social support, adaptability	All variables significantly influence career adaptability.
8	Lianti & Sahin (2025)	Career development programs, adaptability	Career programs improve adaptability through personal and social factors.
9	Ismail (2017)	Employability capacities, adaptability	Employability capacities strongly contribute to career adaptability.

Other evidence from the literature is presented narratively. The conversation includes different abilities and factors that support students' work readiness skills to manage change, transition, and career challenges. There have been numerous studies. Employability skills do not only encompass technical skills, but also soft skills, self-efficacy, goal orientation, optimism, resilience, social support, and work readiness that are also important in the promotion of career adaptability of students. Psychological aspects and social environment are important in influencing the students' readiness to adapt in the world of work. Different skills and personal resources that are relevant to employment are linked to career adaptability (Table II). The identified most prominent employability skills, based on the reviewed studies, could be grouped into the following main categories: personal attributes, social competences, cognitive skills, and personal development skills. All of these skills have an impact on the readiness of students to undertake career changes, job insecurity, and the evolving needs of the labor market. Employability skills are not solely technical skills but also psychological and interpersonal skills that are required to adjust within a working environment. In the current dynamic and competitive labor market, where students are required to continuously grow, build capabilities, and demonstrate flexibility as well as resilience, academic knowledge is not the only thing expected. As a result, the focus on the development of employability skills has become one of the most critical parts that need to be developed in order to prepare students to have a successful

and sustainable career for the long term, and also to remain relevant throughout their career. This underscores the importance of creating learning spaces which foster substantive as well as non-substantive skill development in a balanced and sustainable way within the school setting.

A major factor found consistently across the board and throughout the literature that seems to contribute to career adaptability is self-efficacy. The value of the correlation coefficient is $\rho = 0.636$ between career adaptability and self-efficacy. Career adaptability has a significant positive correlation with self-efficacy. This is also corroborated by others. Students' and young adults' self-efficacy is one of the key factors determining career adaptability. Self-efficacy refers to individuals' belief in their own abilities to perform tasks, overcome obstacles, and achieve desired goals (Jessica and Kembaren, 2024). Students with high self-efficacy are generally more confident in making career decisions, exploring career opportunities, and dealing with uncertainties during career transitions. They also tend to demonstrate stronger motivation, persistence, and resilience when facing setbacks or failures in the job search process, making self-efficacy a crucial psychological foundation for adaptive career behaviour (Ebenehi et al., 2016; Karacan-Ozdemir and Guneri, 2017).

Apart from self-efficacy, soft skills such as communication skills, teamwork skills, leadership skills, and, especially, problem-solving skills play a very significant role in career adaptability. Soft skills are the most powerful predictor compared to other variables in enhancing work readiness, which is highly correlated with career adaptability (Gunawan et al., 2026). Communication skills enable people to communicate effectively in work environments, and teamwork skills enable people to work together in diverse work environments. Problem-solving skills also help people to analyse problems critically and develop effective solutions in uncertain conditions. These are skills that are increasingly sought in today's workplaces where technical expertise alone is not sufficient. Therefore, the development of soft skills in higher education becomes essential for students to be able to adapt socially, professionally, and cognitively in complex work environments.

Recent empirical evidence also supports the importance of multidimensional soft skills for developing career adaptability. This study was conducted on 300 aviation polytechnic cadets in Indonesia. The study examined the role of interpersonal, intrapersonal, and suprapersonal skills in career adaptability and employability skills. These results point to the need to foster interpersonal and personal capacities, in addition to technical skills, that allow students to be effective in professional working environments. The results are consistent with the present review that points to communication, teamwork, leadership, problem-solving, and other soft skills as relevant components associated with students' career adaptability.

Social, emotional and behavioural skills are closely related to career adaptability. They found positive associations of self-management, innovation and social engagement with career adaptability, including the

dimensions of concern, control, curiosity and confidence, in their study of 350 students (Pellegrino et al., 2025). The findings add to the knowledge of employability skills by illustrating that adaptive career development is influenced not only by traditional workplace skills, but also by students' ability to self-manage, socially engage, and respond constructively to future challenges. Hence, the development of emotional, social, and behavioural skills should be incorporated into the development of technical and interpersonal skills within higher education programs.

Another important aspect of employability skills that is related to career adaptability is goal orientation and optimism. Goal orientation has a great effect on career adaptability. Optimism improves the capacity of individuals to deal with career changes and uncertainty. Goal Orientation is the capacity of individuals to establish clear career goals and stay committed to long-term accomplishments. In contrast, optimism permits individuals to keep up positive anticipations despite adversities. Higher levels of goal orientation and optimism are linked to increased proactivity in career planning, greater resilience to setbacks, and more consistency in pursuing professional development among students. In today's labour market characterized by rapid changes, high competition, and frequent transitions, these psychological strengths are vital (Ebenehi et al., 2016; Karacan-Ozdemir and Guneri, 2017).

Social support also appears to be an important factor in the development of career adaptability. Parental career-related support is positively related to students' work readiness, which is closely related to career adaptability (Ichwan et al., 2025). Social support can be obtained from family, friends, lecturers, mentors, and institutional settings that provide guidance and encouragement. Such support boosts students' confidence, eases career anxiety, and increases their motivation to explore career options. Furthermore, those with strong social support are more likely to develop better ways to cope in the face of uncertainty or failure. Thus, career adaptability is not only influenced by internal competencies, but also by external environmental and relational factors.

More generally, employability capacities as a general construct, encompassing different work-related competencies, have been shown to make significant contributions to career adaptability. Employability capacities have the highest dominant contribution to the explanation of career adaptability in students compared to other variables. This is in line with the opinions of those who maintain that employability and career adaptability are closely linked in determining people's career readiness and professional success. Employability capacities are technical skills, interpersonal skills, cognitive competencies, adaptability, and lifelong learning attitudes. The integration of these elements makes it possible for individuals to respond effectively to changing job demands, technological advancements, and organizational transformation processes in the modern workplace (Ismail, 2017).

In addition, career development programs have been observed to be important in improving diverse dimensions of career adaptability and employability skills. Programs that

incorporate experiential learning, self-reflection activities, mentoring, and social support are effective in improving career adaptability by strengthening students' personal and social competencies. Experiential learning (e.g., internships, project-based learning) gives students first-hand experience of actual work and helps them develop confidence and practical skills. Self-reflection activities allow students to better understand their strengths, weaknesses, and career aspirations (Lianti and Sahin, 2025). These structured programs provide evidence that career adaptability can be systematically developed through intentional educational interventions rather than being an innate or fixed quality.

The most important employability skills related to career adaptability are self-efficacy, soft skills, goal orientation, optimism, social support, and other general employability skills. These skills are dynamically interrelated in the development of students' adaptive readiness for career challenges and transitions. The interplay of internal psychological mechanisms and external social influence provides an integrative framework to understand the evolution of career adaptability over time. Therefore, the development of employability skills must be integrated, linking cognitive, emotional, and social dimensions. Higher education institutions are integral to the effective realisation of this incorporation through curriculum design and learning activities.

Additionally, the synthesis of these findings suggests that employability skills and career adaptability should not be viewed as independent constructs but as interconnected components that mutually enhance each other. Strong employability skills often go hand-in-hand with strong adaptability. Students with strong adaptability often find themselves able to use their skills well in dynamic career situations. This reciprocal relationship indicates that career development is a continuous process, which involves both skills acquisition and psychological adjustment. Thus, educational strategies should aim at developing both technical competence and adaptive capacity simultaneously. This approach will enable students to better navigate complex career paths and attain sustainable professional growth.

We found the relevance of designing integrated educational strategies in higher education institutions to foster the development of employability skills and career adaptability simultaneously. To equip students to tackle future challenges in the labour market, programs that combine experiential learning, mentoring, soft skill training and psychological development should be prioritised. By developing competencies both inside and outside the classroom, students will be better prepared to deal with uncertainty, navigate transitions and achieve long-term career success. Ultimately, the development of employability skills and career adaptability holistically is crucial to produce resilient, competitive, and thriving graduates in the increasingly complex and dynamic global workforce.

The synthesis of twenty empirical studies analysed in this Systematic Literature Review shows that employability skills are positively, significantly, and consistently related to

students' career adaptability across different educational and professional contexts. Employability skills are not only generally considered as practical skills that allow individuals to gain employment, but also as a vital psychological and behavioral base that prepares students to face the increasingly dynamic, uncertain, and competitive labor market. The results indicate that students with better employability skills are more likely to be confident, flexible, resilient, and ready to handle transitions in career and workplace challenges. Additionally, career adaptability is an important mechanism through which employability skills are related to broader career outcomes such as job search self-efficacy, employment opportunities, job quality, work performance, and psychological well-being. Individuals with high career adaptability are more likely to be able to cope with technological change, organisational demands, and shifting career paths. Furthermore, the review also highlights that career adaptability is not a static or innate characteristic, but a developmental capacity that can be enhanced through lifelong learning, practical experiences, internships, career guidance, and structured educational interventions provided by higher education institutions. Therefore, universities play an important role in preparing students to succeed in the modern workforce, not only academically but also psychologically and professionally.

The review points to some important dimensions of employability skills that play an important role in the development of career adaptability, such as self-efficacy, soft skills, goal orientation, optimism, and social support. Of these factors, self-efficacy is the most dominant and influential predictor because it improves individuals' belief in their own abilities to overcome career-related obstacles, make effective decisions, and successfully manage career transitions.

CONCLUSION

Employability skills consistently, statistically significantly, and positively correlate with students' career adaptability in various contexts of education and work. It is not only the skills that enable people to enter the workforce, but it is also seen as an important psychological and behavioural foundation that will help students cope with the challenging, volatile, and competitive employment market of the 21st century. Students with higher employability skills tend to be confident, flexible, resilient, and prepared for transition in/work transitions. Moreover, career adaptability, as another mechanism, is intimately linked to other career outcomes like job search self-efficacy, job opportunities, job quality, work performance, and psychological well-being. Career-adaptable individuals are more likely to have the ability to deal with technology, organizational requirements, and changing career trajectories. Career adaptability is a dynamic, constructible attitude that can be improved through ongoing learning in the workplace, work experience, internships, and structured learning experiences and career counseling available in higher education institutions. Thus, universities are playing a significant part in increasingly preparing their students for the modern world in both academic, psychological, and professional terms.

Additionally, the review highlights the relevance of some of the areas within the employability skills domain which are crucial for career adaptability (e.g., self-efficacy, soft skills, goal orientation, optimism and social support). Among these factors, self-efficacy is the most predominant and influential predictor, enhancing people's confidence in their ability to successfully address career challenges, make career decisions, and manage career transitions. High self-efficacy students tend to be persistent and confident in difficult career circumstances and are more likely to act proactively. Other skills are soft skills like communication, teamwork, interpersonal skills, leadership, adaptability, and problem-solving. Here are some other skills that develop students' abilities to carry out useful activities and to get on well with others in various workplace situations. Likewise, goal setting and a positive attitude are significant factors in maintaining a student's motivation to remain on track, to define their career objectives, and to perceive obstacles/challenges as a chance for development rather than a threat. Furthermore, family and peer support, as well as support from lecturers, mentors, and professional networks, can help enhance students' emotional and psychological capacity while they are adapting to their careers. These different aspects of employability skills do not work in isolation, but interact and complement each other to produce a full adaptive readiness that enables students to negotiate complex processes of career development. Therefore, it is essential to integrate employability skill development into the higher education curricula and the development programs of students to ensure students are adaptable, resilient and competitive in the ever-changing working world.

This review has important practical implications that are noted for institutions of higher education and those who are concerned with career development. In the design of curriculum, universities should take employability skills development in career adaptability-oriented learning as an object of consideration; in experiential learning, internship, mentoring, career counselling, and collaborative activities, universities should help students develop their employability skills. It is important to emphasize the importance of developing students' self-efficacy, communication, teamwork, problem-solving, emotional intelligence, and lifelong learning skills, as they are expected to handle career changes and the evolving needs of the workplace environment. Lecturers and practitioners who provide guidance on careers should provide opportunities for self-reflection, career exploration, professional networking, and experiences in real work settings. The need for better cooperation between academia and industry to ensure that employability preparation is aligned with evolving labour market demands is also suggested. Such activities can assist in responding to the need for employability at the time of graduation and also to develop, adapt, and sustain employability skills in an uncertain and highly dynamic world of work.

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