iMProvement
Jurnal Ilmiah Untuk Peningkatan Mutu Pendidikan
P-ISSN: 2355-5114|E-ISSN: 2597-8543
Vol. 13, No. 01 Juni 2026
https://journal.unj.ac.id/unj/index.php/improvement/index

Digital Skill Advantage as a Mediating Mechanism between Career Efficacy, Digital Mindset, and Career Readiness Among Generation Z Students

Cici Dea Permata Exsti[1], Bella Mei Mulya Wati[2], Aulia Hakim[3]
[123]Selamat Sri Kendal University, Indonesia

ABSTRACT
The primary objective of this study is to explore how career efficacy and digital mindset shape career readiness, with digital skill advantage serving as a mediating variable, among Generation Z students in Indonesia. A quantitative research design with a cross-sectional framework was employed in this study. Primary data were gathered via an online survey instrument distributed to 100 active undergraduate students in Central Java through purposive sampling procedures. The resulting data were then subjected to analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4 as the analytical tool. The results demonstrate that both career efficacy and digital mindset exert positive and statistically significant impacts on career readiness and digital skill advantage alike. Moreover, digital skill advantage plays a meaningful mediating role in the pathways linking career efficacy to career readiness and digital mindset to career readiness. These outcomes underscore the pivotal function of superior digital competencies in bolstering student career preparedness within the current digital landscape. This research advances Social Cognitive Career Theory (SCCT) by establishing digital skill advantage as a mediating construct that connects individual internal attributes to career readiness outcomes.

OPEN ACCESS

ARTICLE HISTORY
Received: 19-05-2026
Revised: 25-06-2026
Accepted: 30-06-2026

KEYWORDS
Career Efficacy, Career Readiness, Digital Mindset, Digital Skill Advantage.

Corresponding Author:

Cici Dea Permata Exsti
Selamat Sri Kendal University, Indonesia
Email: ciciexsti@gmail.com

Introduction

Moving from academic study into professional employment represents a pivotal juncture for students, characterized by intricate career decision-making and the necessity of adjusting to an ever-more unpredictable labor market. Throughout this period, career readiness emerges as a fundamental benchmark, capturing the degree to which individuals can successfully enter and sustain themselves within the workforce (Priddis et al., 2026). However, amidst the acceleration of digital transformation, a structural problem has emerged that is increasingly evident: the mismatch between graduate competencies

and industry needs. Several studies have shown that this gap is not only technical but also reflects the weak preparedness of graduates to meet the increasingly complex demands for advanced digital skills (Chemli et al., 2024; Tee et al., 2024).

The advent of digital transformation has fundamentally redefined workforce competencies, moving beyond simple knowledge acquisition toward adaptive capacities, ongoing learning, and the incorporation of digital proficiencies into professional settings (OECD, 2019; van Laar et al., 2020). Although today's student population is frequently regarded as digitally native, this presumption does not necessarily correspond to genuine career preparedness. Contemporary scholarship reveals that mere familiarity with technological tools does not inherently produce the domain-specific digital competencies demanded by industry needs (Mkhize & Reddy, 2025; Tee et al., 2024). This gap points to what can be described as a perceived readiness illusion, whereby students feel personally prepared yet lack the objectively measurable competitive capabilities required in the labor market.

Drawing on Social Cognitive Career Theory (SCCT), career readiness is shaped through the interplay among cognitive elements, behavioral tendencies, and learning accomplishments. A central construct within this theoretical framework is self-efficacy, which the present study operationalizes as career efficacy — referring to a person's conviction in their capacity to attain professional objectives. Those who score highly on career efficacy typically display more focused goal-setting, engage more deeply in career exploration, and exhibit greater perseverance when confronted with setbacks (Kelly, 2009; Lent & Hackett, 1987). Nevertheless, confidence in one's abilities is insufficient to ensure career readiness unless it is paired with the acquisition of pertinent competencies (Borg et al., 2023; Kvasková et al., 2023).

With advancing technological innovation, digital mindset has grown into an increasingly significant determinant of how individuals navigate shifts in professional environments. A digital mindset encapsulates a person's cognitive orientation toward embracing technology, engaging in adaptive learning, and perceiving transformation as a source of possibility (Forsythe & Rafoth, 2022; Goldmann et al., 2025). Within the SCCT framework, this mindset plays a role in shaping learning and exploration behaviors that lead to skill development. However, prior scholarly works continue to yield mixed findings when attempting to establish a straightforward connection between mindset and career outcomes, suggesting the presence of explanatory mechanisms that have yet to be fully articulated (CS Li et al., 2022; Uwakwe et al., 2023; Xin et al., 2023a).

A significant conceptual limitation is evident here. The predominant approach in existing research has been to examine self-efficacy, mindset, and career readiness as directly linked variables, overlooking the intermediate transformational processes that mediate these relationships. Such an approach may oversimplify the actual dynamics, since SCCT frames career outcomes as products of learning processes that yield particular competencies. Failing to account for these intervening mechanisms reduces the

explanatory depth of the cognitive factor–career readiness relationship and increases the risk of contradictory empirical findings (Dwifani & Fajar Hendarman, 2023; Ganefri et al., 2024).

Within the contemporary digital landscape, this bridging mechanism is best captured through the notion of digital skill advantage defined as an individual's distinctive proficiency in deploying digital skills in strategic, adaptive, and productive ways. In contrast to basic digital literacy, digital skill advantage accentuates the differentiation and incremental value that confer a competitive position in the labor market. This distinction matters because technological access and exposure alone do not guarantee the ability to translate such resources into economically productive competencies (Riyanto & Astuti, 2023).

Digital skill advantagecan thus be conceptualized as a pivotal bridging mechanism between an individual's internal psychological attributes and realized career outcomes. Students possessing strong career efficacy and a well-developed digital mindset may still fall short of optimal career readiness if they cannot cultivate industry-relevant superior digital skills. This viewpoint implies that career readiness hinges not solely on personal beliefs, but equally on demonstrable workplace capabilities (Justyna Berniak-Woźny et al., 2023; Kee et al., 2023; Kholifah et al., 2025a).

Despite its theoretical significance, the mediating function of digital skill advantage in career readiness research has received comparatively limited empirical attention. Previous studies have demonstrated that career efficacy, digital mindset, and digital competencies are important predictors of employability and career-related outcomes (Adegbite, 2024a; Caroline et al., 2025; Ma et al., 2024) . However, these studies primarily focused on direct relationships among psychological and competency-related variables, providing limited explanation of the underlying mechanism through which individual cognitive resources are translated into career readiness. In particular, insufficient attention has been devoted to understanding why a positive digital mindset does not automatically result in career readiness and how such cognitive dispositions must first be transformed into strategically valuable digital competencies. Consequently, the process through which career efficacy and digital mindset are converted into tangible competitive advantages remains underexplored. Furthermore, most prior studies continue to conceptualize digital skills in broad terms, emphasizing digital literacy or general technological competence without distinguishing between basic digital capabilities and digital skill advantages that create differentiation and value in the labor market.

This study contributes to the literature in three ways. First, it extends the Social Cognitive Career Theory (SCCT) framework by positioning digital skill advantage as a competency-based mediating mechanism linking cognitive factors to career readiness. Second, it distinguishes digital skill advantage from general digital literacy by emphasizing the strategic, adaptive, and value-creating dimensions of digital competencies that generate competitive advantage in the labor market. Third, it provides empirical evidence

regarding how career efficacy and digital mindset are translated into career readiness through the development of superior digital competencies among Generation Z students in the context of digital transformation.

Based on the above description, this study aims to analyze the influence of career efficacy and digital mindset on career readiness by positioning digital skill advantage as a mediating variable within the SCCT framework. This research is expected to provide theoretical contributions by enriching understanding of the mechanisms of career readiness formation, as well as providing practical implications for educational institutions in designing digital skills development strategies that are more targeted and relevant to the needs of the workplace.

Literature Review

Social Cognitive Career Theory (SCCT)

The theoretical foundation of this research is the Social Cognitive Career Theory (SCCT), originally formulated by Lent et al. (1994),to account for the processes through which individuals construct career preferences, build competencies, and attain career-related goals. SCCT holds that career development unfolds as an outcome of the dynamic interactions among cognitive variables such as self-efficacy, accumulated learning experiences, and contextual environmental forces (Adebusuyi et al., 2022).

Within this conceptual framework, career efficacy assumes a central role by shaping individuals' perceptions of their own capacities, their goal-setting behavior, and their tenacity when encountering difficulties. Persons with elevated career efficacy tend to invest more effort and engage more proactively in cultivating pertinent competencies. SCCT further underscores that cognitive variables do not always exert a direct effect on career results; rather, their influence is frequently channeled through processes of learning and skill accumulation (Ireland & Lent, 2018; Lent & Brown, 2019).

This approach is relevant in the context of this research because it is able to explain how students' internal factors can be translated into career readiness through competency development, especially in the dynamic digital era.

In the present study, career efficacy and digital mindset are conceptualized as cognitive resources that motivate students to engage in learning activities and competency development. Consistent with SCCT, these cognitive factors are expected to influence career outcomes not only directly but also indirectly through the acquisition of relevant competencies. Accordingly, digital skill advantage is positioned as a competency-based performance outcome that reflects students' ability to strategically utilize digital technologies through digital communication, content creation, problem-solving, and data management competencies. As such, digital skill advantage functions as a mediating mechanism through which career efficacy and digital mindset are translated into higher levels of career readiness. This perspective extends the SCCT framework by incorporating

digital competencies as a strategic resource that bridges psychological factors and career-related outcomes in increasingly digitalized work environments.

Career Efficacy

Career efficacyconstitutes a specialized dimension of self-efficacy, defined as an individual's confidence in their capacity to plan and accomplish career-related objectives (Lent & Hackett, 1987). In the SCCT perspective, these beliefs serve as key drivers that influence individual career exploration behavior, decision-making, and persistence.

Prior scholarship consistently demonstrates that individuals with stronger career efficacy display superior levels of career readiness. Such individuals show greater initiative in gathering relevant information, building necessary competencies, and confronting the demands inherent in the school-to-work transition (Sinring & Umar, 2023; Yusoff et al., 2024). Career efficacy is related to higher levels of career adaptability, which allows individuals to adjust to changes in the work environment.

Much of the existing scholarship treats career efficacy as a straightforward direct antecedent of career-related outcomes (Salim et al., 2023; Sharma & Akram, 2023). This approach does not fully explain how these beliefs translate into actual skills needed in the workplace. Within the SCCT framework, this indicates the need to consider the role of mediating variables that explain this process.

Digital Mindset

Rapid advances in digital technology have fundamentally transformed the modes through which individuals acquire knowledge, carry out professional tasks, and engage with others, thereby generating a growing imperative for a well-developed digital mindset (Valta et al., 2024a). Digital mindset denotes a cognitive orientation characterized by receptiveness to technology, preparedness for adaptation, and a sustained commitment to learning within environments marked by perpetual change (Costa et al., 2024).

Those who hold a constructive digital mindset tend to perceive technology as a vehicle for advancement rather than a barrier to be overcome. They demonstrate greater agility when confronting change, integrate emerging technologies more readily, and invest more consistently in upgrading their digital skill sets. In contrast, individuals characterized by a less favorable digital mindset are prone to resistance when faced with technological transitions (Adamska et al., 2025).

Conceptual clarity requires distinguishing digital mindset from related constructs such as digital literacy and digital readiness. Digital literacy is primarily concerned with the technical proficiency involved in operating technological tools, whereas digital readiness captures the attitudinal and behavioral preparedness to embrace technology. Digital mindset, by contrast, centers on the cognitive layer specifically, an individual's belief structures and directional orientation toward technology which serves as the

foundational substrate from which digital competencies are grown (Höyng & Lau, 2023a; Tinmaz et al., 2022).

Despite an expanding body of literature affirming the value of a digital mindset, empirical investigations that directly connect this construct to career readiness outcomes remain comparatively scarce, particularly those embedded within a coherent integrated theoretical model (Alabdali et al., 2024; Mirhabibi et al., 2025; Shen et al., 2025).

Digital Skill Advantage

In today's digitally driven environment, professional competencies extend well beyond purely technical dimensions to encompass higher-order capacities such as critical analysis, systematic problem resolution, and the flexibility to adapt to evolving technologies (Mazurchenko & Maršíková, 2019). For the purposes of this investigation, digital skill advantage is defined as an individual's exceptional capacity to command, deploy, and strategically leverage digital skills in ways that generate measurable added value and strengthen their competitive standing in the workforce. This construct transcends rudimentary digital literacy by highlighting the dimensions of differentiation, adaptive capability, and the purposeful application of digital competencies across professional settings (van Laar et al., 2020).

In this study, digital skill advantage is operationalized through four dimensions adapted from van Laar et al. (2020) and Vuorikari et al. (2022), namely digital communication, content creation, problem-solving, and data management. Digital communication reflects an individual's ability to communicate and collaborate effectively through digital platforms. Content creation refers to the capability to develop, modify, and manage digital content using digital technologies. Problem-solving represents the ability to identify, analyze, and resolve challenges through the effective utilization of digital tools. Data management reflects the competence to search, organize, evaluate, and utilize digital information efficiently. These dimensions collectively represent both technical and strategic digital competencies that enable individuals to gain a competitive advantage in an increasingly digitalized labor market.

Scholarly evidence consistently positions digital skills as a decisive variable in shaping an individual's employability and competitive position within the workforce. Persons who demonstrate robust digital skill sets tend to exhibit superior adaptability to shifting conditions, higher levels of professional productivity, and more favorable career prospects (Nyale et al., 2026; Stofkova et al., 2022).

Through the lens of Social Cognitive Career Theory (SCCT), career-related competencies emerge from the interaction between individual cognitive factors and learning experiences. Career efficacy reflects an individual's belief in their ability to successfully perform career-related tasks, while digital mindset represents openness and adaptability toward technological change. These cognitive resources encourage individuals to engage in continuous learning and skill development activities, which

subsequently contribute to the acquisition of superior digital competencies. Within the SCCT framework, digital skill advantage can therefore be conceptualized as a competency-based performance outcome that translates cognitive resources into career-related outcomes. In this study, digital skill advantage functions as a mediating mechanism through which career efficacy and digital mindset are transformed into enhanced career readiness. This conceptualization extends SCCT by incorporating digital competencies as a strategic resource required for career success in contemporary digital work environments.

Career Readiness

Career readiness captures the extent to which an individual is genuinely equipped to enter professional employment, encompassing dimensions of knowledge, practical skill proficiency, and psychological preparedness (Raut et al., 2024). In the higher education context, career readiness functions as a critical performance indicator for evaluating students' capacity to navigate the transition into the world of work successfully.

Career readiness is shaped not only by scholastic performance but equally by an individual's capacity to synthesize diverse competencies, digital skills prominently among them (Adegbite, 2024*a*; Rahmat et al., 2022). In the digital era, demands for career readiness are increasingly complex, requiring individuals to possess a combination of self-confidence, an adaptive mindset, and relevant skills. Within the SCCT framework, career readiness can be understood as the result of the interaction between cognitive factors (career efficacy and digital mindset) and the skill development process (digital skill advantage).

Hypothesis development and research model

This study aims to analyze the factors influencing students' career readiness in facing the world of work in the digital era. Based on a literature review, this study uses the Social Cognitive Career Theory (SCCT) framework as a conceptual basis. SCCT explains that cognitive factors such as self-efficacy and individual orientation toward the environment will influence career outcomes through the learning process and skills development (Lent & Brown, 2006, 2019). In this model, career efficacy and digital mindset are positioned as internal factors that influence career readiness, both directly and through digital skill advantage as a mediating variable.

Career Efficacy and Career Readiness

Career efficacyrepresents an individual's deeply held conviction regarding their capacity to plan and accomplish career objectives. Within the SCCT framework, self-efficacy plays a foundational role in directing career exploration behaviors, sustaining perseverance through challenges, and cultivating the personal readiness required for successful workforce entry (Jemini Gashi et al., 2023; Sheu, 2023; Xin et al., 2023b).

A substantial body of prior research demonstrates a consistent positive association between career efficacy and both career readiness and employability. Individuals characterized by higher self-efficacy engage more proactively in career planning, exploratory activities, and preparatory efforts for workforce entry, which in turn equips them to navigate career transitions and occupational demands with greater effectiveness (Zhou et al., 2023). Beyond this, self-efficacy has been demonstrated to reinforce career-seeking behaviors, career adaptability, and perceptions of one's employability all of which are pivotal dimensions in constructing career readiness among tertiary-level students and graduates (Gerçek, 2024). More recent investigations further affirm that career self-efficacy contributes constructively to employability and to individuals' subjective sense of career success, given that those with robust efficacy beliefs are better positioned to build relevant competencies and manage the complexities of career demands within rapidly shifting professional contexts (Tung & Huong, 2023). Nevertheless, the magnitude of self-efficacy's influence on career readiness is subject to variation, contingent on the nature of learning experiences encountered, the career barriers faced, and the broader contextual conditions that govern employability development (Rodrigues et al., 2024). Based on this description, the following hypothesis is proposed:

H1: Career Efficacy positively influence Career Readiness.

Digital Mindset and Career Readiness

Digital mindset characterizes the cognitive orientation of individuals who embrace technology and are receptive to digital transformation. Those possessing a constructive digital mindset demonstrate heightened adaptability and are better equipped to meet the requirements of a technologically driven work environment.

Prior empirical investigations have established that a digital mindset exerts substantial influence over career readiness formation and employability within the digital age. Individuals equipped with a strong digital mindset exhibit markedly superior adaptability to technological shifts and develop more robust work-relevant competencies aligned with digital labor market requirements (Imjai, Promma, et al., 2025). A digital mindset further nurtures digital readiness by predisposing individuals to respond constructively to the imperatives of digital transformation and the expanding technological demands of contemporary workplaces (Höyng & Lau, 2023). Moreover, individuals who score higher on digital mindset measures demonstrate a greater capacity to manage technology-induced stress and maintain effective performance within digitally intensive work settings (Valta et al., 2024). Recent scholarly contributions further indicate that technology-oriented cognitive orientations including those directed toward artificial intelligence exert a positive effect on career readiness by fostering the development of adaptive learning habits and relevant workplace competencies among Generation Z cohorts (Imjai, Promma, et al., 2025).

H2: Digital Mindset positively influence Career Readiness

Career Efficacy and Digital Skill Advantage

Existing research has established that self-efficacy serves as a meaningful driver in the cultivation of digital competencies and technology-related proficiencies. Those who register higher career efficacy scores tend to approach both academic and occupational technology use with greater confidence and more deliberate strategic intent (Malodia et al., 2023). Self-efficacy further motivates individuals to proactively build the competencies required by modern work settings and the evolving demands of digital transformation processes (Zhan et al., 2024a). Additionally, technological self-efficacy has been identified as a significant predictor of an individual's proficiency in executing digital tasks and their capacity to function adaptively within technology-centered work environments (Conte et al., 2023; Shaikh et al., 2023). Within academic contexts, students who hold stronger self-efficacy beliefs demonstrate a greater propensity to participate in digitally oriented learning activities, which in turn strengthens both their digital competence and their broader professional preparedness (Shaikh et al., 2023).

H3: Career efficacy positively influence digital skill advantage.

Digital Mindset and Digital Skill Advantage

A digital mindset encompasses the cognitive orientation, belief structures, and receptivity toward technological evolution and digital transformation that an individual exhibits. While digital literacy is principally concerned with technical skill application, a digital mindset foregrounds how individuals conceive of technology as a catalyst for learning, creative innovation, and ongoing personal growth. Those characterized by a robust digital mindset tend to interpret technological change favorably, display higher levels of adaptability, and show a pronounced commitment to the continual acquisition of new digital competencies. Viewed through the Social Cognitive Career Theory (SCCT) lens, this particular mindset configuration has the capacity to mold learning behaviors and shape the pathways through which individuals acquire the competencies necessary to meet future career demands within an increasingly digitalized occupational landscape.

Prior research has consistently highlighted the pivotal role of digital mindset in cultivating digital competencies and achieving digital skill excellence. Individuals who exhibit a strong digital mindset tend to demonstrate superior adaptability to technological changes and are more proficient at developing the specific digital competencies that industry contexts require (Imjai, Chansamran, et al., 2025a). Furthermore, an adaptive and agile cognitive orientation has been empirically linked to enhanced capacity for developing strategically oriented digital competencies and sophisticated problem-solving abilities within technology-intensive environments (Imjai et al., 2024). Digital mindset additionally functions as a cognitive infrastructure that enables individuals to harness digital technologies effectively and to pursue consistent enhancement of their digital

capabilities throughout the unfolding process of digital transformation (Caputa et al., 2025). In the context of higher education, students who exhibit a more pronounced digitally oriented mindset tend to engage more deeply with technology-based learning and cultivate competitive digital competencies that underpin both future employability prospects and digital entrepreneurial ambitions (Ganefri et al., 2025).

H4: Digital Mindset positively influence Digital Skill Advantage

Digital Skill Advantage and Career Readiness

The significance of digital skills mastery as a foundational determinant of career readiness in the digital age is gaining increasing scholarly recognition. Individuals who command superior digital competencies characteristically exhibit greater levels of adaptability, stronger employability profiles, and more confident preparedness for the transition into professional employment. Recent empirical work has confirmed that digital intelligence and digitally oriented employability competencies make substantial contributions to students' overall job readiness and their responsiveness to the technology-driven demands of modern industries (Kholifah et al., 2025). Contemporary digital competencies spanning digital communication, collaborative work capabilities, and systematic problem-solving have been shown to exert a favorable influence on career readiness among university students confronting the challenges posed by Industry 4.0 requirements (Yeoh et al., 2025). Digital competencies additionally serve to enhance graduates' overall employability standing and facilitate a smoother and more effective passage from tertiary education into active participation in the workforce (Adegbite, 2024). Based on the description, the following hypothesis is proposed:

H5: Digital skill advantage has a positive effect on career readiness.

The Mediating Role of Digital Skill Advantage

As understood through Social Cognitive Career Theory (SCCT), career outcomes emerge not solely as direct products of individual cognitive factors, but also through the mediating influence of learning processes and the competency development they engender relative to workplace requirements. SCCT makes explicit that an individual's efficacy beliefs and cognitive orientation toward change condition their learning engagement, exploratory behaviors, and skill-building activities, all of which converge to determine the ultimate state of career readiness achieved. Within the context of contemporary digital transformation, this developmental process manifests through the cultivation of digital skill advantage an individual's distinctive superiority in mastering, applying, and strategically deploying digital skills in adaptive and productive ways that differentiate them within the competitive landscape.

Career efficacy functions as a vital catalyst that propels individuals toward more active engagement in developing competencies suited to digitally transformed workplaces. Those with elevated career efficacy demonstrate greater confidence in

confronting professional challenges, more proactive learning of emerging technologies, and an enhanced capacity to construct the digital competencies that underpin their career readiness. Prior investigations have confirmed that self-efficacy facilitates improvements in employability outcomes through its role in stimulating the individual development of digital skills and broader competency portfolios (Imjai, Chansamran, et al., 2025b). Digital competency has additionally been identified as a pivotal bridging mechanism connecting the accumulated learning experience of graduates with their attained levels of work readiness (Hu et al., 2025). Additional scholarly work explains that digitally oriented employability skills exert a substantial influence on workforce readiness, with this effect being particularly pronounced in the face of the escalating technology-centric demands of the Industry 4.0 paradigm (Husin et al., 2023). More recent research further reveals that digital competence itself evolves through adaptive learning pathways and through the cultivation of individual willingness and preparedness to engage with technological change (Scheel et al., 2022). Collectively, these findings imply that career efficacy's influence on career readiness operates not only through direct pathways but also indirectly through its contribution to an individual's capacity to cultivate digital skill advantage.

Concurrently, digital mindset plays an equally important role in shaping individual learning orientations and fostering digital competency development. A digital mindset encapsulates an individual's dispositional orientation, cognitive stance, and psychological preparedness in confronting technological change and digital transformation. Individuals who possess a strong digital mindset exhibit greater openness to technology-enhanced learning, heightened adaptability to environmental change, and stronger intrinsic motivation to develop their digital skill repertoires. Prior scholarship has established that a digital mindset contributes to the cultivation of employment-relevant digital competencies through mechanisms of digital adaptability and engagement with technological learning experiences (Hazni & Nurhaida, 2024). Moreover, empirical work has demonstrated that an agile cognitive orientation and adaptive disposition toward technology meaningfully improve individuals' strategic digital competence and their problem-solving proficiency within technology-intensive professional environments (Adhiatma et al., 2023). Additional research highlights that digitally oriented thinking serves as an essential foundation for cultivating digital skills and maintaining individual competitive positioning throughout the era of digital transformation (Schiuma et al., 2022). Correspondingly, studies have found that twenty-first century digital skill sets exert a meaningful influence on students' career readiness, particularly as they confront the multifaceted demands of Industry 4.0 work environments (Yeoh et al., 2025). This body of evidence suggests that digital mindset's pathway to career readiness is most likely channeled through the development of concrete digital skill advantages that constitute industry-relevant tangible competencies.

Based on these theoretical arguments and empirical evidence, the following hypothesis is proposed:

H6: Digital skill advantage mediates the influence of career efficacy on career readiness.

H7: Digital skill advantage mediates the influence of digital mindset on career readiness.

Methods

This study used a quantitative approach with a cross-sectional design. The main objective of this study was to examine and analyze the factors influencing students' career readiness in facing the world of work in the digital era. This study involved four main variables: career efficacy and digital mindset as independent variables, career readiness as the dependent variable, and digital skill advantage as the mediating variable. This research model was developed based on the Social Cognitive Career Theory (SCCT) framework, which explains that individual cognitive factors influence career outcomes through the process of skill development.

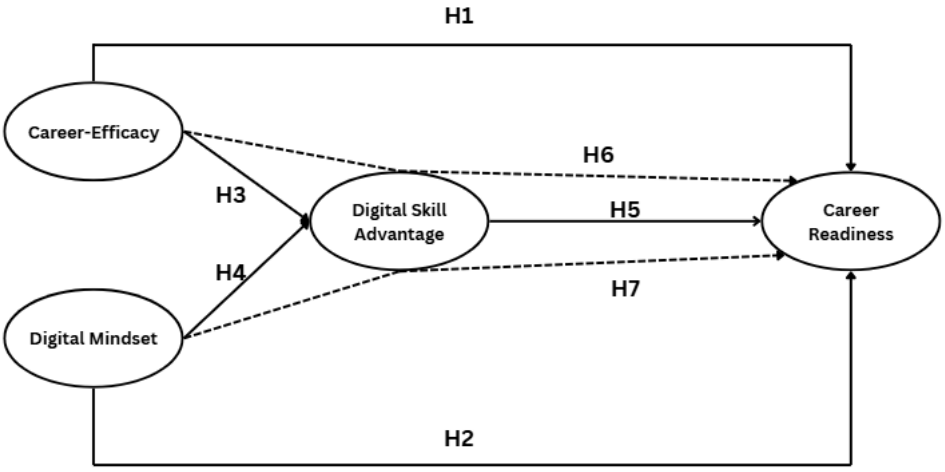

Figure 1. Research Model

Sampling and data collection

This study uses a quantitative approach with an explanatory research design to examine the relationships between variables in explaining students' career readiness in the digital era. This research is based on the Social Cognitive Career Theory (SCCT) framework, which emphasizes the role of individual cognitive factors in shaping career readiness through skill development. In this model, career efficacy and digital mindset are positioned as independent variables, digital skill advantage as a mediating variable, and career readiness as the dependent variable.

The study population consisted of students in Central Java and the Special Region of Yogyakarta, totaling 907,084 students based on data from the Central Statistics Agency (BPS) in 2023. A purposive sampling technique was employed to select respondents who met specific research requirements. The inclusion criteria were: (1) belonging to Generation Z (born between 1997 and 2012), (2) being actively enrolled in a Diploma (D3)

or Bachelor's (S1) program, (3) currently studying in semesters 3–9, and (4) voluntarily agreeing to participate and completing the questionnaire. The exclusion criteria included students who were on academic leave, no longer actively enrolled, or who submitted incomplete questionnaire responses. Although purposive sampling enabled the selection of respondents who met the study objectives, this non-probability sampling technique may limit sample representativeness because not all members of the population had an equal opportunity to participate. Therefore, the findings should be interpreted cautiously when generalizing to the broader population of Indonesian students.

The sample size was determined based on recommendations for Partial Least Squares Structural Equation Modeling (PLS-SEM). According to Hair et al. (2019), PLS-SEM is suitable for prediction-oriented studies and can provide stable parameter estimates with relatively moderate sample sizes. In addition, Kock and Hadaya (2018) suggested that a sample size of approximately 100 respondents is generally adequate for PLS-based SEM models with moderate complexity. The adequacy of the sample size was further assessed using the 10-times rule, which recommends that the minimum sample size should be at least ten times the maximum number of structural paths directed toward any endogenous construct in the model. In this study, the largest number of structural paths directed to an endogenous construct was three paths leading to Career Readiness (Career Efficacy, Digital Mindset, and Digital Skill Advantage), resulting in a minimum recommended sample size of 30 respondents (10 × 3). Therefore, the final sample of 100 respondents exceeded the minimum requirement by more than three times and was considered adequate for testing the proposed structural model. Furthermore, PLS-SEM is particularly appropriate for exploratory and prediction-oriented studies because it can generate robust parameter estimates even with relatively small sample sizes, provided that the model complexity remains moderate and the measurement model demonstrates satisfactory validity and reliability (Hair et al., 2022). Because all variables were measured using a single self-report questionnaire administered at one point in time, the study was potentially susceptible to common method bias (CMB). Therefore, the full collinearity variance inflation factor (VIF) approach proposed by Kock (2015) was employed to assess whether CMB posed a threat to the validity of the findings. Data were collected through an online questionnaire using a 6-point Likert scale. The research instrument was developed from previous literature and underwent expert judgment and pilot testing to ensure item validity and clarity. The data obtained were then analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). SmartPLS 4 software was used to estimate both the measurement model and the structural model to examine the direct and indirect relationships between variables in the research model. The data obtained are presented in Table 1.

Table 1. Demographic characteristics

Respondent Demographics	Information	Sample (n)	Percentage (%)
Gender	Man	44	44%
	Woman	56	56%
Respondent Age	18–20 years	38	38%
	21–23 years	52	52%
	>23 years	10	10%

Semester	Semester 4	23	23%
	Semester 6	32	32%
	Semester 8	45	45%

As presented in Table 1, female respondents accounted for 56% of the sample, while male respondents represented 44%. The majority of respondents were aged between 21 and 23 years (52%), followed by those aged 18–20 years (38%) and above 23 years (10%). In terms of academic standing, most respondents were enrolled in Semester 8 (45%), followed by Semester 6 (32%) and Semester 4 (23%). The predominance of students in the later stages of their academic programs suggests that the sample is highly relevant to the study context, as these students are approaching the transition from higher education to employment and are therefore actively preparing for future career opportunities.

Operation definition of variables

In this study, career efficacy and digital mindset were used as independent variables influencing career readiness, with digital skill advantage as a mediating variable. All variables were measured using indicators adapted from previous research relevant to the context of student career readiness in the digital era. Operational definitions of each variable are presented in Table 2.

Table 2. Operational definition of construct variables

Variables	Operational Definition	Indicator	References
Career Efficacy	Career efficacy is an individual's belief in their ability to effectively plan, manage, and achieve career goals. From the SCCT perspective, career efficacy reflects an individual's level of confidence in facing career challenges, making career decisions, and adapting to the demands of the workplace.	1. Confidence in achieving career goals 2. Confidence in facing career challenges 3. Ability to make career decisions 4. Confidence in developing one's own abilities	(Jemini Gashi et al., 2023; Yusoff et al., 2024)
Digital Mindset	Digital mindset refers to a set of cognitive beliefs and mental frameworks shaped by experience in digital environments, which individuals recognize and apply to achieve success in an increasingly digital world.	1. Belief in the adaptability of technology 2. Leveraging the latest technology 3. Awareness of digital trends 4. Growth Mindset	(Solberg et al., 2020)

		5. Proactive in developing digital	
Digital Skill Advantage	Student perceptions of the competitive advantage gained through the mastery and strategic utilization of Information and Communication Technology (ICT) competencies. This construct reflects an individual's ability to effectively communicate, create digital content, solve problems, and manage digital information in ways that enhance adaptability, productivity, and competitiveness in academic and future professional environments.	1. Digital communication 2. Content creation 3. Problem solving 4. Data management	(van Laar et al., 2020; Vuorikari et al., 2022)
Career Readiness	Student perceptions about individual ability to manage yourself through work experience and learning, which includes knowledge, skills, and required work attitude to achieve career advancement.	1. Readiness to obtain and retain employment 2. Personal skills and teamwork 3. Resilience and positive attitude 4. Digital skills mastery	(Raut et al., 2024)

Data analysis

The analysis in this study uses the Partial Least Squares Structural Equation Modeling (PLS-SEM) method because this method is considered suitable for explanatory research that aims to explain the relationship between variables while developing a theoretical model based on Social Cognitive Career Theory (SCCT) (Skinner & Dancis, 2026). In addition to analyzing the influence of career efficacy and digital mindset on career readiness, this study also tested the mediating role of digital skill advantage, so PLS-SEM was chosen because it is able to analyze direct and indirect relationships simultaneously in a complex model (Hair et al., 2019; Hair Jr, 2020). This method is also considered more flexible for research with relatively moderate sample sizes and does not require multivariate normal distribution of data (Kock & Hadaya, 2018).

Data analysis was performed using SmartPLS software version 4. The analysis stages consisted of testing the outer model and inner model. The outer model was used to test the validity and reliability of the research constructs. Reliability testing was carried out using outer loading values, Cronbach's alpha, and composite reliability, while construct validity was tested using average variance extracted (AVE) and discriminant validity through the heterotrait-monotrait ratio (HTMT). After the measurement model met the validity and reliability criteria, the next stage was testing the inner model to analyze the relationships between constructs and test the research hypotheses.

Hypothesis testing was conducted using path coefficients, t-statistics, and p-values through a bootstrapping procedure. The relationship between variables was declared significant if it had a p-value <0.05 and t-statistics >1.96. Furthermore, this study also examined the mediating effect of digital skill advantage on the relationship between career efficacy and digital mindset on career readiness.

Result

The first stage of data analysis using SmartPLS is to evaluate the measurement model (outer model) through construct validity and reliability testing. Convergent validity is evaluated using outer loading values and Average Variance Extracted (AVE) Hair Jr. (2020) A good outer loading value should be above 0.70 and the AVE value should exceed 0.50. Based on the analysis results, all indicators in this study have outer loading values as shown in Table 3 ranging from 0.724 to 0.847, so all indicators are declared to meet the convergent validity criteria. In addition, all constructs also have AVE values above 0.50, namely career efficacy at 0.612, digital mindset at 0.615, digital skill advantage at 0.650, and career readiness at 0.672. These results indicate that each construct is able to explain more than 50% of the variance of its indicators.

Table 3. Evaluation of measurement model test results

Variables	Item	Outer Loading	Cronbach's a	Composite Reliability	Average Variance Extract (AVE)
Career Efficacy	CE.1	0.830	0.841	0.887	0.612
	CE.2	0.748			
	CE.3	0.840			
	CE.4	0.757			
	CE.5	0.730			

Digital Mindset	DM.1	0.816	0.844	0.888	0.615
	DM.2	0.785			
	DM.3	0.776			
	DM.4	0.724			
	DM.5	0.816			
Digital Skill Advantage	DSA.1	0.843	0.821	0.881	0.650
	DSA.2	0.785			
	DSA.3	0.811			
	DSA.4	0.786			
Career Readiness	CR.1	0.784	0.838	0.891	0.672
	CR.2	0.847			
	CR.3	0.834			
	CR.4	0.813			

Reliability testing was conducted using Cronbach's alpha and composite reliability values Hair Jr. (2020) stated that reliability values above 0.70 indicate good internal consistency. The results presented in Table 3 show that all constructs have Cronbach's alpha values ranging from 0.821 to 0.844 and composite reliability values ranging from 0.881 to 0.891. Therefore, all variables in this study are considered reliable and demonstrate adequate internal consistency.

Furthermore, discriminant validity was assessed using the Heterotrait-Monotrait Ratio (HTMT). According to Henseler et al. (2015), HTMT values below 0.90 indicate satisfactory discriminant validity among constructs. Based on the results presented in Table 4, all HTMT values between constructs were below the recommended threshold, indicating that each construct in this study empirically measures distinct concepts.

Table 4. Discriminant Validity

	Career Efficacy	**Career Readiness**	**Digital Mindset**	**Digital Skill Advantage**
Career Efficacy				
Career Readiness	0.622			
Digital Mindset	0.779	0.673		
Digital Skill Advantage	0.774	0.768	0.811	

To assess the potential presence of common method bias (CMB), full collinearity variance inflation factor (VIF) values were examined. According to Kock (2015), VIF values below 3.3 indicate that common method bias is unlikely to threaten the validity of the findings. As shown in Table 5, all VIF values ranged from 1.000 to 1.793, which are well below the recommended threshold. Therefore, common method bias is not considered a serious concern in this study.

Table 5. Full Collinearity Assessment

	VIF
Career Efficacy	1.793
Digital Mindset	1.793
Digital Skill Advantage	1.000

Before testing the research hypotheses, the explanatory and predictive capabilities of the structural model were evaluated using the coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2predict).

As presented in Table 6, the R^2 value for Career Readiness was 0.421 (Adjusted R^2 = 0.415), indicating that 42.1% of the variance in career readiness can be explained by career efficacy, digital mindset, and digital skill advantage. Meanwhile, Digital Skill Advantage achieved an R^2 value of 0.539 (Adjusted R^2 = 0.530), suggesting that career efficacy and digital mindset explain 53.9% of its variance. According to Hair et al. (2022), these values indicate moderate explanatory power.

Furthermore, the effect size analysis shown in Table 7 reveals that Career Efficacy exerted a medium effect on Digital Skill Advantage (f^2 = 0.154), while Digital Mindset demonstrated a medium effect on Digital Skill Advantage (f^2 = 0.242). Digital Skill Advantage exhibited a large effect on Career Readiness (f^2 = 0.726), indicating that it represents the strongest predictor within the structural model.

Predictive relevance was assessed using the PLSpredict procedure. As shown in Table 8, the Q^2predict values for Digital Skill Advantage (0.510) and Career Readiness (0.323) were greater than zero, indicating satisfactory predictive relevance. These findings suggest that the proposed model possesses acceptable predictive capability for explaining the endogenous constructs.

Tabel 6. R^2

	R-square	R-square adjusted
Career Readiness	0.421	0.415
Digital Skill Advantage	0.539	0.530

Tabel 7. f^2

	f-square
Career Efficacy -> Digital Skill Advantage	0.154
Digital Mindset -> Digital Skill Advantage	0.242
Digital Skill Advantage -> Career Readiness	0.726

Tabel 8. Q^2predict

	Q^2predict	RMSE	MAE
Digital Skill Advantage	0.510	0.736	0.598
Career Readiness	0.323	0.852	0.677

After confirming the adequacy of the measurement model and the explanatory and predictive capabilities of the structural model, the bootstrapping procedure was conducted to test the proposed hypotheses. The results presented in Table 9 indicate that all hypothesized relationships were statistically significant, as evidenced by p-values below 0.05 and t-statistics exceeding the recommended threshold of 1.96. Career efficacy was found to have a positive and significant effect on career readiness ($\beta = 0.231$, $t = 2.788$, $p = 0.005$), indicating that students with higher confidence in their career-related abilities tend to exhibit stronger career readiness. Career efficacy also positively influenced digital skill advantage ($\beta = 0.357$, $t = 3.131$, $p = 0.002$), suggesting that self-confidence encourages students to develop superior digital competencies. Likewise, digital mindset exerted a positive and significant influence on career readiness ($\beta = 0.290$, $t = 3.454$, $p = 0.001$) and digital skill advantage ($\beta = 0.447$, $t = 4.097$, $p < 0.001$). These findings indicate that students who are more adaptive, open to technological change, and willing to engage with digital innovation tend to demonstrate higher levels of digital competency and career preparedness. Furthermore, digital skill advantage showed the strongest positive effect on career readiness ($\beta = 0.649$, $t = 8.233$, $p < 0.001$). This result suggests that digital skill advantage is the most influential predictor in the proposed model, highlighting the importance of advanced digital competencies in enhancing students' readiness to enter the workforce.

The mediation analysis presented in Table 10 demonstrates that digital skill advantage significantly mediates the relationship between career efficacy and career readiness (β = 0.083, t = 2.788, p = 0.005). This finding indicates that students with stronger confidence in their career-related capabilities tend to develop superior digital competencies, which subsequently enhance their readiness to enter the workforce.

Furthermore, digital skill advantage significantly mediates the relationship between digital mindset and career readiness (β = 0.084 t = 3.454, p = 0.001). This result suggests that a positive orientation toward technology contributes to career readiness primarily through the development of strategically valuable digital skills. These findings support the SCCT perspective that cognitive resources influence career outcomes through competency development processes.

Tabel 9. Hypothesis test result

Hypothesis	Path	Standardized Path Coefficient (β)	t-Statistic	p-Value	Result
H1	Career Efficacy → Career Readiness	0.231	2.788	0.005	Supported
H2	Career Efficacy → Digital Skill Advantage	0.357	3.131	0.002	Supported
H3	Digital Mindset → Career Readiness	0.290	3.454	0.001	Supported
H4	Digital Mindset → Digital Skill Advantage	0.447	4.097	0.000	Supported
H5	Digital Skill Advantage → Career Readiness	0.649	8.233	0.000	Supported

Table 10. Specific indirect effect

Path	Standardized path coefficient	*t*-Statistics	*p-values**
Career Efficacy → Digital Skill Advantage→ Career Readiness	0.083	2,788	0.005

Digital Mindset → Digital Skill Advantage → Career Readiness	0.084	3,454	0.001

Discussion

This investigation centers on how career efficacy and digital mindset shape career readiness among Generation Z students, with digital skill advantage positioned as a mediating construct. Respondent profile analysis revealed that the predominant age bracket was 21–23 years, with most participants enrolled in their final academic semester. These demographic characteristics confirm that the majority of respondents are actively navigating the transitional period between academic study and professional employment, lending strong contextual relevance to the career readiness focus of this research. Students at this stage characteristically begin consolidating their professional competency base, establishing their career identities, and orienting themselves toward the competency demands of an increasingly digitalized working world.

The study's empirical outcomes confirm that career efficacy exerts a positive effect on career readiness. Specifically, this finding establishes that students who hold strong beliefs in their professional capabilities exhibit greater readiness to engage with the demands of the workforce. Individuals scoring highly on career efficacy measures are characteristically more vigorous in pursuing career-relevant information, more dedicated to competency development, and more resilient when confronting the challenges inherent to the school-to-work transition. This result aligns squarely with Social Cognitive Career Theory (SCCT), which foregrounds self-efficacy as an indispensable factor in driving career exploration behaviors, sustaining persistence through obstacles, and building individual readiness to achieve professional goals (Kelly, 2009). The outcomes of this investigation further corroborate prior scholarly work that has established a positive relationship between self-efficacy and career readiness (Gerçek, 2024; Tung & Huong, 2023; Zhou et al., 2023).

This study additionally establishes that digital mindset exerts a favorable influence on career readiness, indicating that students who embrace a technology-receptive and change-oriented cognitive stance tend to exhibit stronger career preparedness. A digital mindset captures an individual's orientation toward perpetual learning, adaptive responsiveness, and the productive deployment of technology in navigating the evolving dynamics of professional environments. In an era of pervasive digital transformation, an adaptive mindset is indispensable, as contemporary workplaces demand not merely technical proficiency but also the sustained capacity for learning and behavioral flexibility in responding to shifting conditions. Therefore, this study can strengthen previous research (Höyng & Lau, 2023b; Imjai, Promma, et al., 2025; Valta et al., 2024c)

The analysis further reveals that career efficacy produces a positive effect on digital skill advantage, indicating that an individual's confidence in their professional

capabilities not only shapes direct job readiness but also serves as an impetus for more vigorous pursuit of industry-relevant digital skills. Students with higher career efficacy characteristically show heightened learning motivation, greater responsiveness to technological shifts, and increased confidence in acquiring emerging digital competencies. These results lend additional support to the SCCT perspective and corroborate prior research establishing that cognitive factors channel their effects on career outcomes through the intermediary mechanisms of learning processes and competency development (Lent et al., 1994; Malodia et al., 2023; Shaikh et al., 2023; Zhan et al., 2024).

The research additionally confirms that digital mindset exerts a positive influence on digital skill advantage. This finding reveals that students who maintain a constructive orientation toward technology are better positioned to cultivate advanced digital skills relative to their peers. Those with strong digital mindsets are generally more welcoming of innovation, integrate new technologies at a faster pace, and engage more purposefully with technology as an instrument for self-advancement. These results underscore that digital mindset should not be reduced to a mere attitudinal disposition; rather, it constitutes an indispensable cognitive foundation for the development of genuinely superior digital competencies. Therefore, the findings of this study can strengthen previous research (Conte et al., 2023; Shaikh et al., 2023).

The empirical results further reveal that digital skill advantage exerts the most powerful effect on career readiness among all variables examined in this study, identifying it as the most decisive factor in shaping student career preparedness within the digital era. Proficiency in digital skills encompasses not merely foundational technical abilities but more critically the capacity to employ technology in strategically oriented, contextually adaptive, and productive ways that satisfy industry-specific requirements (Dwifani & Fajar Hendarman, 2023; L. Li, 2024). These outcomes demonstrate that students capable of cultivating meaningful digital skill advantages are significantly better equipped to withstand competitive pressures in the job market and to navigate the ongoing transformations characterizing digitally based work environments.

This finding may be explained by the increasing demand for digitally enabled work practices across industries. While career efficacy and digital mindset represent important psychological resources, employers ultimately evaluate graduates based on their ability to apply knowledge and technology to real-world tasks. Consequently, students who possess superior digital communication, content creation, problem-solving, and data management competencies are more likely to meet labor market expectations and adapt successfully to digitally transformed workplaces. This result reinforces the argument that digital competencies have evolved from complementary skills into core employability assets in the contemporary workforce.

From a practical perspective, this finding suggests that higher education institutions should place greater emphasis on strengthening students' digital competencies through structured learning interventions. Universities may integrate project-based learning, digital certification programs, data analytics training, AI literacy initiatives, and technology-enhanced internships into the curriculum. Such initiatives can help students develop not only technical digital skills but also the strategic competencies required to adapt to rapidly evolving workplace demands.

The study further substantiates that digital skill advantage mediates the association between career efficacy and career readiness. This implies that career-related self-confidence alone is insufficient to produce optimal career readiness in the absence of commensurate digital skill mastery. Stated differently, career efficacy functions as a generative force encouraging individuals to build digital competencies, which subsequently translate into enhanced job readiness. These findings reinforce the view that the psychological factor–career readiness relationship is not characterized by direct causation, but rather unfolds through a sequential process of specific competency cultivation.

From the perspective of Social Cognitive Career Theory (SCCT), this result provides empirical support for the proposition that cognitive factors do not automatically translate into career outcomes. Instead, their influence is often realized through learning-related competencies developed over time. By positioning digital skill advantage as a mediating mechanism, this study extends SCCT into the digital transformation context and demonstrates that digital competencies function as an important pathway through which career efficacy and digital mindset contribute to career readiness.

Additionally, digital skill advantage has been confirmed as a mediator in the relationship between digital mindset and career readiness. This finding implies that the possession of a constructive digital mindset must be actualized through the development of concrete, measurable skills if it is to meaningfully enhance career readiness. Individuals who exhibit strong digital mindsets yet fail to convert this orientation into demonstrably superior digital skills may not achieve optimal levels of career preparedness (Ndubuisi et al., 2022; Priddis et al., 2026). This result reinforces the argument that career readiness in the digital era is determined not solely by the beliefs and mindsets individuals hold, but equally by the concrete, demonstrable capabilities they possess that are directly applicable to workplace needs.

Taken together, the research model substantiates that digital skill advantage constitutes an indispensable mechanism linking individual internal factors to career readiness outcomes. From a theoretical standpoint, this study makes a meaningful contribution by extending the applicability of the SCCT perspective to the digital transformation context, most notably through the formal incorporation of digital skill advantage as a mediating construct. The study's practical implications further direct higher education institutions to broaden their focus beyond cultivating student

motivation and cognitive dispositions toward systematically developing digital competencies that are aligned with contemporary labor market requirements. Universities are encouraged to integrate digital communication, content creation, problem-solving, and data management competencies into curriculum design through project-based learning approaches, interdisciplinary digital innovation projects, industry collaboration programs, and technology-oriented internships. In addition, institutions should provide opportunities for students to obtain professional digital certifications and participate in AI literacy and digital analytics training programs. Such initiatives can strengthen students' digital skill advantage and ultimately enhance their career readiness in increasingly digitalized work environments.

Theoretical implications

The theoretical contribution of this study lies in its expansion of Social Cognitive Career Theory (SCCT) into the domain of digital transformation, achieved through the formal positioning of digital skill advantage as a mediating construct bridging career efficacy, digital mindset, and career readiness. The findings establish that career readiness does not result solely from direct psychological and cognitive influences, but is also mediated by the process through which individuals cultivate superior digital competencies that satisfy industry demands. Furthermore, this study enriches the career readiness literature by advancing the concept of digital skill advantage as a distinctive form of competitive differentiation that transcends basic digital literacy and entry-level technical proficiency. By doing so, the study offers a more holistic and integrative explanatory model of how self-efficacy and digital mindset translate into career readiness through the strategic mastery of digital skills in the contemporary era of digital transformation.

At the policy level, higher education institutions may consider redesigning career development curricula by integrating digital competency frameworks such as digital communication, content creation, problem-solving, and data management into graduate learning outcomes. Universities may also establish digital career incubators, strengthen partnerships with technology-oriented industries, and expand access to digital certification programs. Such initiatives would help reduce the mismatch between graduates' competencies and labor market expectations while enhancing students' long-term employability.

Managerial implications

From a managerial standpoint, the findings underscore the imperative for universities and educational institutions to develop a thorough understanding of the variables that shape student career readiness in an increasingly digital environment. Educational institutions should prioritize the enhancement of student career efficacy through well-designed career development initiatives, structured mentoring schemes,

soft skills training programs, and meaningful learning experiences that build students' confidence in professional contexts. Simultaneously, cultivating a robust digital mindset among students should be treated as a strategic institutional priority, requiring the creation of learning environments that are inherently adaptive to technological innovation and digitally integrated pedagogical approaches. Universities must also act decisively to strengthen students' digital skill advantage by embedding digital competency development throughout the curriculum, offering industry-recognized digital certification pathways, implementing project-based learning models, and fostering substantive collaboration with industry partners to ensure students acquire competencies that are genuinely relevant to current labor market demands. Ultimately, the most consequential practical implication arising from this research is that commanding superior digital skills represents the single most important determinant of career readiness improvement. Universities should therefore commit to equipping students not only with traditional academic knowledge but with the strategically oriented, adaptive, and competitively differentiated digital capabilities required to thrive in a progressively digitalized global workforce.

Conclusion

The cross-sectional design employed in this study constrains the analysis to a single temporal snapshot of respondent conditions. This is a meaningful limitation given that career readiness, career efficacy, and digital mindset are inherently dynamic constructs that evolve in response to shifting learning experiences, technological developments, and changing industry demands. Future investigations are therefore encouraged to adopt longitudinal designs capable of tracing the developmental trajectories of student career readiness over extended time periods. The geographic scope of this study restricted to student populations in Indonesia additionally limits the generalizability of the findings across different cultural frameworks and educational systems. Cross-national and cross-cultural comparative studies would provide valuable insights into how students in varied national contexts navigate career readiness challenges amid digital transformation.

Additional limitations relate to the sample size, sampling technique, research design, and scope of variables incorporated within the research framework. Although the sample size satisfies the minimum requirements for PLS-SEM analysis, the study involved only 100 respondents from Central Java and the Special Region of Yogyakarta. Therefore, caution should be exercised when generalizing the findings to the broader population of Generation Z students in Indonesia. Furthermore, the use of purposive sampling may introduce representation bias, as respondents were selected based on specific criteria and may not fully reflect the diversity of Indonesian students.

The theoretical model in the present study was limited to four key constructs career efficacy, digital mindset, digital skill advantage, and career readiness within the

Social Cognitive Career Theory (SCCT) framework. Future research may expand the model by incorporating complementary variables such as career adaptability, employability orientation, learning agility, internship experience, artificial intelligence readiness, and technological readiness to provide a more comprehensive understanding of career readiness formation in the digital era. Given that digital skill advantage emerged as the strongest predictor of career readiness, future studies should also investigate effective educational interventions for developing digital competencies, including project-based learning, digital certification programs, AI literacy training, industry collaboration initiatives, and technology-enhanced internship programs that align with evolving labor market requirements.

References

Adamska, K. M., Solberg, E., & Wong, S. I. (2025). On Digital Mindset: How Our Beliefs Can Shape Perceptions of and Responses to Digital Change. In Humanizing the Digital Workspace: Creativity, Innovation and Leadership in the Age of Technology (pp. 39–61). Springer.

Adebusuyi, AS, Adebusuyi, OF, & Kolade, O. (2022). Development and validation of sources of entrepreneurial self-efficacy and outcome expectations: A social cognitive career theory perspective. The International Journal of Management Education, 20(2), 100572. https://doi.org/10.1016/j.ijme.2021.100572

Adegbite, W. M. (2024a). Unpacking mediation and moderating effects of digital literacy and life-career knowledge in the relationship between work-integrated learning and graduate employability. Social Sciences & Humanities Open, 10, 101161. https://doi.org/10.1016/j.ssaho.2024.101161

Adegbite, W. M. (2024b). Unpacking mediation and moderating effects of digital literacy and life-career knowledge in the relationship between work-integrated learning and graduate employability. Social Sciences & Humanities Open, 10, 101161.

Adegbite, W.M. (2024c). Unpacking mediation and moderating effects of digital literacy and life-career knowledge in the relationship between work-integrated learning and graduate employability. Social Sciences & Humanities Open, 10, 101161. https://doi.org/10.1016/j.ssaho.2024.101161

Adhiatma, A., Fachrunnisa, O., Nurhidayati, & Rahayu, T. (2023). Creating digital ecosystems for small and medium enterprises: the role of dynamic capability, agile leadership and change readiness. Journal of Science and Technology Policy Management, 14(5), 941–959.

Alabdali, M.A., Yaqub, M.Z., Agarwal, R., Alofaysan, H., & Mohapatra, A.K. (2024). Unveiling green digital transformational leadership: Nexus between green digital culture, green digital mindset, and green digital transformation. Journal of Cleaner Production, 450, 141670.

Borg, J., Scott-Young, C. M., & Borg, N. (2023). Early career project managers' work readiness: Adopting a self-efficacy lens. International Journal of Project Management, 41(2), 102454. https://doi.org/10.1016/j.ijproman.2023.102454

Caputa, W., Krawczyk-Sokołowska, I., Paździor, A., & Sozanskyy, L. (2025). Digital thinking as a navigator of the progressive digitalization process in an enterprise. Technological

Forecasting and Social Change, 210, 123862. https://doi.org/10.1016/j.techfore.2024.123862

Caroline, A., Coun, MJH, Gunawan, A., & Stoffers, J. (2025). A systematic literature review on digital literacy, employability, and innovative work behavior: emphasizing the contextual approaches in HRM research. Frontiers in Psychology, 15. https://doi.org/10.3389/fpsyg.2024.1448555

Chemli, S., Toanoglou, M., & Roman, JLDV (2024). Skills mismatch and digital skill shortages in tourism: impact on graduate employment and implications for higher education. International Journal of Technology Enhanced Learning, 16(4), 447–465.

Conte, G., Arrigoni, C., Magon, A., Pittella, F., Stievano, A., & Caruso, R. (2023). A stepwise methodological approach to develop and validate the digital and technological self-efficacy scale for healthcare workers among nurses and nursing students. Nurse Education in Practice, 72, 103778. https://doi.org/10.1016/j.nepr.2023.103778

Costa, R.F. da, Brauer, M., Victorino, L., & Abreu, L. (2024). Clave Digital Mindset Scale: Development and validity evidence. RAM. Revista de Administrção Mackenzie, 25(1). https://doi.org/10.1590/1678-6971/eramc240124.en

de Villiers Scheepers, M., Mulcahy, R., Fleishman, D., English, P., Burgess, J., & Crimmins, G. (2024). Digital career competencies: A co-created scale for the digital employability competencies we've overlooked. Industry and Higher Education, 38(5), 411–422. https://doi.org/10.1177/09504222241231265

Dwifani, D., & Fajar Hendarman, A. (2023). Relationship among Self-Efficacy, Digital Mindset, and Resilience towards Work Readiness in Industry 4.0. American International Journal of Business Management, 6(12), 12.

Forsythe, J., & Rafoth, J. (2022). Being digital: Why addressing culture and creating a digital mindset are critical to successful transformation. Insights, 25(1), 25–28.

Ganefri, G., Kamdi, W., Makky, M., Hidayat, H., & Rahmawati, Y. (2024). Entrepreneurship education and entrepreneurial intention among university students: The roles of entrepreneurial mindset, digital literacy, and self-efficacy. Journal of Social Studies Education Research, 15(4), 85–134.

Ganefri, Waras, Trisno, B., Nordin, NM, Hidayat, H., Rahmawati, Y., & Nurhidayatulloh. (2025). Cultivating digital entrepreneurs: Unraveling factors shaping digital entrepreneurship intention among engineering students in higher education. The International Journal of Management Education, 23(2), 101100. https://doi.org/10.1016/j.ijme.2024.101100

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

Goldmann, P., Schäfer, B., & Altendorfer, C. (2025). Development and validation of the digital mindset scale. Journal of Business Research, 199, 115554.

Hair, J.F., Risher, J.J., Sarstedt, M., & Ringle, C.M. (2019). When to use and how to report the results of PLS-SEM. European Business Review, 31(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Hair Jr, J.F. (2020). Next-generation prediction metrics for composite-based PLS-SEM. Industrial Management & Data Systems, 121(1), 5–11.

Hair Jr, J.F., LDS Gabriel, M., Silva, D. da, & Braga, S. (2019). Development and validation of attitudes measurement scales: fundamental and practical aspects. RAUSP Management Journal, 54(4), 490–507.

Hazni, E., & Nurhaida, I. (2024). The Influence of Digital Mindset, Digital Competence and Leadership Style on Employee Career Development. Cyber International Journal of Educational Technology (SIJET), 1(3), 90–108.

Höyng, M., & Lau, A. (2023a). Being ready for digital transformation: How to enhance employees' intentional digital readiness. Computers in Human Behavior Reports, 11, 100314. https://doi.org/10.1016/j.chbr.2023.100314

Höyng, M., & Lau, A. (2023b). Being ready for digital transformation: How to enhance employees' intentional digital readiness. Computers in Human Behavior Reports, 11, 100314. https://doi.org/10.1016/j.chbr.2023.100314

Hu, X., Xu, W., Wan, Z., Liu, M., & Xu, W. (2025). Bridging self-efficacy and digital competence: A comprehensive scoping review of teachers' readiness for the digital age. SAGE Open, 15(3), 21582440251363716.

Husin, MH, Ibrahim, NF, Abdullah, NA, Syed-Mohamad, SM, Samsudin, NH, & Tan, L. (2023). The impact of industrial revolution 4.0 and the future of the workforce: a study on Malaysian IT professionals. Social Science Computer Review, 41(5), 1671–1690.

Imjai, N., Chansamran, S., Sungthong, S., Usman, B., & Aujirapongpan, S. (2025a). Developing employability digital competencies of Thai Gen Z business students: The role and matter of digital learning environments and digital adaptation skills. The International Journal of Management Education, 23(3), 101219. https://doi.org/10.1016/j.ijme.2025.101219

Imjai, N., Chansamran, S., Sungthong, S., Usman, B., & Aujirapongpan, S. (2025b). Developing employability digital competencies of Thai Gen Z business students: The role and matter of digital learning environments and digital adaptation skills. The International Journal of Management Education, 23(3), 101219. https://doi.org/10.1016/j.ijme.2025.101219

Imjai, N., Promma, W., Chanatup, S., Usman, B., & Aujirapongpan, S. (2025). Emerging roles of AI mindset, experiential learning and soft skills in developing career readiness for accountants 5.0 of Gen Z accounting students. The International Journal of Management Education, 23(3), 101208. https://doi.org/10.1016/j.ijme.2025.101208

Imjai, N., Promma, W., Usman, B., & Aujirapongpan, S. (2024). The intertwined effects of digital literacy, agile mindset on design thinking skills and management control competency: Insights from Thai young accountants. International Journal of Information Management Data Insights, 4(2), 100244. https://doi.org/10.1016/j.jjimei.2024.100244

Ireland, G. W., & Lent, R. W. (2018). Career exploration and decision-making learning experiences: A test of the career self-management model. Journal of Vocational Behavior, 106, 37–47. https://doi.org/10.1016/j.jvb.2017.11.004

Jemini Gashi, L., Bërxulli, D., Konjufca, J., & Cakolli, L. (2023). Effectiveness of career guidance workshops on the career self-efficacy, outcome expectations, and career goals of adolescents: an intervention study. International Journal of Adolescence and Youth, 28(1). https://doi.org/10.1080/02673843.2023.2281421

Justyna Berniak-Woźny, Marlena Plebańska, & Magdalena Wójcik-Jurkiewicz. (2023). University students' perception of employability and workability skills for the workplace in the digital era. Scientific Journal of Bielsko-Biala School of Finance and Law.

Kee, D.M.H., Anwar, A., Gwee, S.L., & Ijaz, M.F. (2023). Impact of Acquisition of Digital Skills on Perceived Employability of Youth: Mediating Role of Course Quality. Information, 14(1), 42. https://doi.org/10.3390/info14010042

Kelly, M.E. (2009). Social cognitive career theory as applied to the school-to-work transition. Seton Hall University.

Kholifah, N., Nurtanto, M., Sutrisno, VLP, Majid, NWA, Subakti, H., Daryono, RW, & Achmadi, A. (2025a). Unlocking workforce readiness through digital employability skills in vocational education graduates: A PLS-SEM analysis based on human capital theory. Social Sciences & Humanities Open, 11, 101625. https://doi.org/10.1016/j.ssaho.2025.101625

Kholifah, N., Nurtanto, M., Sutrisno, VLP, Majid, NWA, Subakti, H., Daryono, RW, & Achmadi, A. (2025b). Unlocking workforce readiness through digital employability skills in vocational education graduates: A PLS-SEM analysis based on human capital theory. Social Sciences & Humanities Open, 11, 101625. https://doi.org/10.1016/j.ssaho.2025.101625

Kock, N., & Hadaya, P. (2018). Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. Information Systems Journal, 28(1), 227–261.

Kvasková, L., Hlado, P., Palíšek, P., Šašinka, V., Hirschi, A., Ježek, S., & Macek, P. (2023). A Longitudinal Study of Relationships Between Vocational Graduates' Career Adaptability, Career Decision-Making Self-Efficacy, Vocational Identity Clarity, and Life Satisfaction. Journal of Career Assessment, 31(1), 27–49. https://doi.org/10.1177/10690727221084106

Lent, R. W., & Brown, S. D. (2006). On conceptualizing and assessing social cognitive constructs in career research: A measurement guide. Journal of Career Assessment, 14(1), 12–35.

Lent, R. W., & Brown, S. D. (2019). Social cognitive career theory at 25: Empirical status of the interest, choice, and performance models. Journal of Vocational Behavior, 115, 103316. https://doi.org/10.1016/j.jvb.2019.06.004

Lent, R. W., Brown, S. D., & Hackett, G. (1994a). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. Journal of Vocational Behavior, 45(1), 79–122.

Lent, R. W., Brown, S. D., & Hackett, G. (1994b). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. Journal of Vocational Behavior, 45(1), 79–122.

Lent, R. W., & Hackett, G. (1987). Career self-efficacy: Empirical status and future directions. Journal of Vocational Behavior, 30(3), 347–382. https://doi.org/10.1016/0001-8791(87)90010-8

Li, C.S., Goering, D.D., Montanye, M.R., & Su, R. (2022). Understanding the career and job outcomes of contemporary career attitudes within the context of career environments: An integrative meta-analysis. Journal of Organizational Behavior, 43(2), 286–309. https://doi.org/10.1002/job.2510

Li, L. (2024). Reskilling and upskilling the future-ready workforce for industry 4.0 and beyond. Information Systems Frontiers, 26(5), 1697–1712.

Ma, Y., Hou, L., Cai, W., Gao, X., & Jiang, L. (2024). Linking undergraduates' future work self and employability: a moderated mediation model. BMC Psychology, 12(1), 160. https://doi.org/10.1186/s40359-024-01530-1

Malodia, S., Mishra, M., Fait, M., Papa, A., & Dezi, L. (2023). To digits or to head? Designing digital transformation journey of SMEs among digital self-efficacy and professional leadership. Journal of Business Research, 157, 113547. https://doi.org/10.1016/j.jbusres.2022.113547

Mazurchenko, A., & Maršíková, K. (2019). Digitally-powered human resource management: Skills and roles in the digital era. Acta Informatica Pragensia, 8(2), 72–87.

Mirhabibi, A., Shayan, A., & Sahraei, S. (2025). Improving digital entrepreneurship readiness of business students: The moderating role of digital mindset and digital education. The International Journal of Management Education, 23(2), 101151.

Mkhize, S., & Reddy, T. (2025). Work Readiness in an Emergency Digital Learning Environment: Students' Self-Perception and Employer Expectations. African Journal of Inter/Multidisciplinary Studies, 7(si1), 1–15.

Ndubuisi, IS, Ezeani, CF, & Ile, CM (2022). Integrating digital skills in business education curriculum in tertiary institutions for digital economic development. Nigerian Journal of Business Education (NIGJBED), 9(1), 107–117.

Nyale, D., Karume, S., Kipkebut, A., & Mukudi, F. (2026). Digital skills landscape: A systematic review of current academic programs, industry demands, and the digital divide's impact on graduate competencies. Industry and Higher Education, 40(2), 229–241.

OECD. (2019). OECD skills outlook 2019: Thriving in a digital world. OECD.

Priddis, D., Brinthaupt, T., Hayes, H., Green, G., Maynor, J., Buckner, L., Calahan, P., Spooner, H., & Eady, E. (2026). High impact practices for career readiness: A cross-disciplinary framework for college career courses. Industry and Higher Education, 40(1), 109–120.

Rahmat, AM, Mohd, IH, Omar, MK, Kamalludeen, R., Zahari, W., Azmy, N., & Adnan, A. (2022). Integrating Socio-Digital Skills in the Industry 4.0 era for graduates' employability: An employers' perspective. Journal of Positive School Psychology, 6(3), 8493–8507.

Raut, S. K., Alon, I., Rana, S., & Kathuria, S. (2024). Knowledge management and career readiness: a review and synthesis. Journal of Knowledge Management, 28(7), 1821–1866.

Riyanto, F., & Astuti, SD (2023). The Role of Digital Skills Advantage Enhancing Gen Z Work Readiness for the Future Digital Workplace: Evidence from Indonesia. 4th Borobudur International Symposium on Science and Technology 2022 (BIS-STE 2022), 409–419.

Rodrigues, R., van Harten, J., De Cuyper, N., Grosemans, I., & Butler, C. (2024). On your marks, get set, go! Jumping the hurdles of employability development at an early career stage. Journal of Vocational Behavior, 151, 103999. https://doi.org/10.1016/j.jvb.2024.103999

Salim, RMA, Istiasih, MR, Rumalutur, NA, & Situmorang, DDB (2023). The role of career decision self-efficacy as a mediator of peer support on students' career adaptability. Heliyon, 9(4).

Scheel, L., Vladova, G., & Ullrich, A. (2022). The influence of digital competences, self-organization, and independent learning abilities on students' acceptance of digital learning. International Journal of Educational Technology in Higher Education, 19(1), 44.

Schiuma, G., Schettini, E., Santarsiero, F., & Carlucci, D. (2022). The transformative leadership compass: six competencies for digital transformation entrepreneurship. International Journal of Entrepreneurial Behavior & Research, 28(5), 1273–1291.

Shaikh, IM, Alsharief, A., Amin, H., Noordin, K., & Shaikh, J. (2023). Inspiring academic confidence in university students: perceived digital experience as a source of self-efficacy. On the Horizon: The International Journal of Learning Futures, 31(2), 110–122. https://doi.org/10.1108/OTH-05-2022-0028

Sharma, S. K., & Akram, U. (2023). Assessing subjective career success: the role of career commitment, career resilience and self-efficacy: an evidence from the hospitality industry. International Journal of Quality and Service Sciences, 16(1), 44–62.

Shen, Y., Deng, Y., Xiao, Z., Zhang, Z., & Dai, R. (2025). Driving green digital innovation in higher education: the influence of leadership and dynamic capabilities on cultivating a green digital mindset and knowledge sharing for sustainable practices. BMC Psychology, 13(1), 288.

Sheu, H.-B. (2023). Temporal precedence between and mediating effects of career decision self-efficacy and career exploratory behavior among first-year college students: Within-person and between-person analyzes by race/ethnicity and gender. Journal of Vocational Behavior, 144, 103882. https://doi.org/10.1016/j.jvb.2023.103882

Sinring, A., & Umar, NF (2023). Other People in Career Choice Influence Career Self-Efficacy and Individual Career Self-Management. European Journal of Educational Research, volume-12-2023(volume-12-issue-2-april-2023), 1045–1057. https://doi.org/10.12973/eu-jer.12.2.1045

Skinner, E., & Dancis, J. (2026). Descriptive and explanatory designs. Human Development-Revision.

Solberg, E., Traavik, L.E.M., & Wong, S.I. (2020). Digital Mindsets: Recognizing and Leveraging Individual Beliefs for Digital Transformation. California Management Review, 62(4), 105–124. https://doi.org/10.1177/0008125620931839

Stofkova, J., Poliakova, A., Stofkova, K.R., Malega, P., Krejnus, M., Binasova, V., & Daneshjo, N. (2022). Digital skills as a significant factor of human resources development. Sustainability, 14(20), 13117.

Tee, P.K., Wong, L.C., Dada, M., Song, B.L., & Ng, C.P. (2024). Demand for digital skills, skill gaps and graduate employability: Evidence from employers in Malaysia. F1000Research, 13, 389.

Tinmaz, H., Lee, Y.-T., Fanea-Ivanovici, M., & Baber, H. (2022). A systematic review on digital literacy. Smart Learning Environments, 9(1), 21. https://doi.org/10.1186/s40561-022-00204-y

Tung, D., & Huong, B.T.T. (2023). The role of social self-efficacy and psychological capital in IT graduates' employability and subjective career success. Cogent Social Sciences, 9(1). https://doi.org/10.1080/23311886.2023.2204630

Uwakwe, R.C., Okolie, U.C., Ehiobuche, C., Ochinanwata, C., & Idike, I.M. (2023). A Multi-Group Study of Psychological Capital and Job Search Behaviors Among University Graduates With and Without Work Placement Learning Experience. Journal of Career Assessment, 31(2), 321–339. https://doi.org/10.1177/10690727221118376

Valta, M., Hildebrandt, Y., & Maier, C. (2024a). Fostering the digital mindset to mitigate technostress: an empirical study of empowering individuals for using digital technologies. Internet Research, 34(6), 2341–2369. https://doi.org/10.1108/INTR-09-2022-0766

Valta, M., Hildebrandt, Y., & Maier, C. (2024b). Fostering the digital mindset to mitigate technostress: an empirical study of empowering individuals for using digital technologies. Internet Research, 34(6), 2341–2369. https://doi.org/10.1108/INTR-09-2022-0766

van Laar, E., van Deursen, AJAM, van Dijk, JAGM, & de Haan, J. (2020). Determinants of 21st-Century Skills and 21st-Century Digital Skills for Workers: A Systematic Literature Review. In SAGE Open (Vol. 10, Number 1). SAGE Publications Inc. https://doi.org/10.1177/2158244019900176

Vuorikari, R., Jerzak, N., Karpinski, Z., Pokropek, A., & Tudek, J. (2022). Measuring Digital Skills across the EU: Digital Skills Indicator 2.0. Available in: Https://Dx. Doi. Org/10.2760/897803.

Xin, L., Zhang, S., Tang, F., Zhu, J., & Ding, Y. (2023a). How Career Exploration Affects Employment Outcomes: A Two-Wave Study Among Young Chinese Adults. Journal of Career Development, 50(5), 1019–1037. https://doi.org/10.1177/08948453221142562

Xin, L., Zhang, S., Tang, F., Zhu, J., & Ding, Y. (2023b). How Career Exploration Affects Employment Outcomes: A Two-Wave Study Among Young Chinese Adults. Journal of Career Development, 50(5), 1019–1037. https://doi.org/10.1177/08948453221142562

Yeoh, H.B., Wei, C.Y., Kaur, S., & Kaur, M. (2025a). Examining inter-relationships among 21st century learning skills and their impacts on tertiary learners' readiness for careers in Industry Revolution 4.0 era. Higher Education, Skills and Work-Based Learning, 15(3), 500–515. https://doi.org/10.1108/HESWBL-03-2024-0086

Yeoh, H.B., Wei, C.Y., Kaur, S., & Kaur, M. (2025b). Examining inter-relationships among 21st century learning skills and their impacts on tertiary learners' readiness for careers in Industry Revolution 4.0 era. Higher Education, Skills and Work-Based Learning, 15(3), 500–515.

Yusoff, N.R.N., Mahfar, M., Saud, M.S., & Monday, A.A. (2024). Effects of career readiness module on career self-efficacy among university students. International Journal of Evaluation and Research in Education, 13(1), 311–320. https://doi.org/10.11591/ijere.v13i1.25257

Zhan, H., Cheng, K.M., Wijaya, L., & Zhang, S. (2024a). Investigating the mediating role of self-efficacy between digital leadership capability, intercultural competence, and employability among working undergraduates. Higher Education, Skills and Work-Based Learning, 14(4), 796–820. https://doi.org/10.1108/HESWBL-02-2024-0032

Zhan, H., Cheng, K.M., Wijaya, L., & Zhang, S. (2024b). Investigating the mediating role of self-efficacy between digital leadership capability, intercultural competence, and employability among working undergraduates. Higher Education, Skills and Work-Based Learning, 14(4), 796–820. https://doi.org/10.1108/HESWBL-02-2024-0032

Zhou, D., Peng, Z., & Zhou, H. (2023). The influence of career decision-making self-efficacy on employability of higher vocational students: mediated by emotional intelligence. Frontiers in Education, 8. https://doi.org/10.3389/feduc.2023.1274430