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A Study on Factors Enhancing Perceived Employability Among Students in Yunnan, China

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Received: March 5, 2025. Revised: April 23, 2025. Accepted: May 2, 2025.

Abstract

Purpose: This study aims to explore the impact of four independent variables, career self-management, proactive personality, self-efficacy, and career adaptability, on a dependent variable, perceived employability. Additionally, this study seeks to identify significant differences among these variables. **Research design, data and methodology:** The research employed the Index of Item-Objective Congruence (IOC) to assess validity and Cronbach's Alpha in a pilot test (n=30) to evaluate reliability. A multiple linear regression analysis was conducted on 128 valid questionnaires from students at Yunnan Vocational College of Agriculture to examine significant relationships between variables. Subsequently, a 14-week strategic plan (SP) was implemented for 30 students. Afterward, the quantitative results from actual-SP and expected-SP were compared and analyzed using a paired sample t-test. **Results:** Multivariate linear regression analysis revealed that career self-management, proactive personality, self-efficacy, and career adaptability significantly influence students' perceived employability. The results of paired-sample t-tests indicated significant differences between the actual-SP and expected-SP stages in career self-management, proactive personality, self-efficacy, career adaptability, and perceived employability. **Conclusions:** The objective of this study is to enhance students' career development and school employment rates by fostering students' career self-management, proactive personality, self-efficacy, and career adaptability. This approach is expected to enhance perceived employability.

Keywords: Perceived Employability, Career Self-management, Proactive Personality, Self-efficacy, Career Adaptability

JEL Classification Code: A22, D91, E24, I23, J20

1. Introduction

Engineering students at Yunnan Vocational College of Agriculture are increasingly facing employment pressures, resulting from both macroeconomic changes and systemic challenges in the higher education landscape. First, the rapid expansion of college graduates has intensified competition in the labor market, particularly disadvantaging vocational college students whose credentials are often perceived as less competitive (Wang et al., 2024). Compounding this issue, a global economic slowdown has led to hiring freezes or reduced recruitment in key sectors such as tourism, catering, and service industries, diminishing job opportunities for fresh graduates.

In addition, labor market discrimination based on academic pedigree, especially employers' preference for first-tier university graduates, continues to limit access to equal employment opportunities for students from non-key institutions (Ma & Bennett, 2021). Such disparities can undermine graduates' confidence and motivation, further exacerbating employment-related stress. Many students also lack awareness of effective career planning strategies, and struggle with low psychological resilience and inadequate self-regulation. These internal limitations diminish their readiness to confront labor market uncertainties and hinder their perceived employability.

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This study focuses on four independent variables, career planning awareness, self-efficacy, psychological resilience, and proactive personality, as predictors of perceived employability. These variables are grounded in established theoretical models. Career planning awareness is supported by Ma and Bennett (2021), who emphasized proactive career management as essential for employability development. Self-efficacy is drawn from Ngo et al. (2017), who demonstrated its impact on career adaptability and job search outcomes. Psychological resilience aligns with Wang et al. (2024), who highlighted its role in helping graduates adapt to employment uncertainty. Proactive personality, also referenced by Ma and Bennett (2021), contributes to employability by promoting initiative and adaptability in career-related behaviors. Together, these variables capture cognitive, emotional, and behavioral aspects essential to employability development.

While existing studies have independently examined these variables, few have integrated them within a single model, particularly in the context of rural vocational colleges in China. Most research focuses on students in comprehensive universities or urban vocational institutions, leaving a gap in understanding the employability challenges of engineering students from agricultural vocational backgrounds.

Therefore, this study contributes to the literature by developing a comprehensive framework that investigates how these internal attributes influence perceived employability. By targeting an underserved student population, it aims to provide actionable insights for educational institutions and policy-makers to improve employment outcomes in rural vocational education.

2. Literature Review

2.1 Perceived Employability (PE)

Perceived employability refers to an individual's self-assessed ability to obtain, retain, and secure new employment when necessary. Hillage and Pollard (1998) initially defined it as a person's perception of their capacity to gain and sustain employment. Building on this, Rothwell et al. (2008) emphasized that students' perceived employability is closely tied to their competencies and is shaped by their anticipation of future labor market conditions. They highlighted that perceived employability is not static, but rather a dynamic, future-oriented concept that evolves over time. Similarly, Kim et al. (2015) stressed the importance of subjective judgment in employability perceptions. More recently, López-Miguens et al. (2021) described perceived employability as graduates' evaluation of their strengths in relation to external employment conditions. This concept integrates both internal competencies and external labor market realities, reflecting individuals' confidence in their ability to navigate employment opportunities over time.

2.2 Career Self-management (CA)

Career self-management refers to the ongoing process by which individuals actively shape their career paths through self-awareness, goal setting, and continuous self-regulation. It involves understanding one's personal traits, defining career-related attitudes and values, and engaging in self-motivation and evaluation to achieve long-term career development (Liu, 2013). Research has consistently demonstrated a positive relationship between career self-management and perceived employability. For example, Ma and Bennett (2021) found that Chinese university students who engage in career self-management are better equipped to proactively acquire the skills needed for successful job searching.

Similarly, Jackson and Wilton (2017), in a comparative study involving students from the UK and Australia, reported a significant correlation between career self-management and perceived employability, suggesting that enhancing these skills can improve students' employment outcomes. Yang and Zeng (2015) also observed that students with stronger career self-management practices exhibited higher levels of perceived employability and were more active in their job search behaviors. Santos et al. (2019) further confirmed this link, identifying a strong positive association between career self-management and perceived employability. These findings underscore the importance of career self-management in not only increasing students' perceived employability but also supporting their successful transition into the workforce. Therefore, the following hypothesis is proposed:

H1: Career Self-management has a significant impact on students Perceived Employability.

2.3 Proactive Personality (PP)

Proactive personality refers to an individual's behavioral tendency to continuously seek new approaches, identify opportunities, and take initiative to change the external environment without being constrained by external resistance (Bateman & Crant, 1993). Research has shown that a proactive personality significantly predicts college students' career exploration and job search behavior, ultimately enhancing their perceived employability (Cao & Dai, 2016). Wang and Cheng (2022) found that individuals with a high level of proactive personality exhibit proactive behavioral traits that influence their emotional responses and psychological states when making career choices,

thereby impacting their perceived employability. Additionally, studies by Yan and Su (2023) and Ma and Bennett (2021) identified a positive relationship between proactive personality and perceived employability. Therefore, the following hypothesis is proposed:

H2: Proactive Personality has a significant impact on students Perceived Employability.

2.4 Self-efficacy (SE)

The concept of self-efficacy was first introduced by psychologist Bandura in 1977. According to Bandura (1997), self-efficacy refers to an individual's belief in their ability to mobilize motivation, cognitive resources, and courses of action to successfully complete a given task. Research has shown that self-efficacy influences college students' employment mindset, job preparation, career decision-making, and resilience in overcoming challenges. It is also one of the key factors affecting perceived employability (Yang, 2013). Rothwell et al. (2009) found a positive correlation between self-efficacy and perceived employability. Similarly, Ye et al. (2016) demonstrated that self-efficacy has a significant positive effect on perceived employability. Therefore, the following hypothesis is proposed:

H3: Self-efficacy has a significant impact on students Perceived Employability.

2.5 Career Adaptability (CA)

Career adaptability, from a psychological perspective, refers to a relatively stable personality trait and cognitive-emotional process through which individuals continuously adjust to changes in their occupational environment, ultimately striving for balance and career success (Fugate et al., 2004). It encompasses attitudes, intentions, and behaviors that enable individuals to effectively manage career-related tasks and transitions. Monteiro et al. (2020) identified a significant positive relationship between career adaptability and self-perceived employability, suggesting that adaptable individuals are better prepared for labor market demands. Rahma et al. (2023) further confirmed this link by finding that career adaptability was a key determinant of perceived employability among student interns. Similarly, Wang et al. (2024), in a study of Fine Arts graduates in Guangxi, China, found that higher levels of career adaptability were positively associated with perceived employability. These findings underscore the role of adaptability in enhancing students' confidence in their employment capabilities. Therefore, the following hypothesis is proposed:

H4: Career Adaptability has a significant impact on students Perceived Employability.

3. Research Methods and Materials

3.1 Research Framework

The researcher applied three theoretical models from Ma and Bennett (2021), Ngo et al. (2017), and Wang et al. (2024). Ma and Bennett (2021) explored the relationship between career self-management and perceived employability, emphasizing the role of proactive behaviors in career development. Ngo et al. (2017) examined the influence of self-efficacy and career adaptability on employability, highlighting their impact on job search success. Wang et al. (2024) investigated the effects of occupational adaptability on perceived employability, particularly in the context of graduates in creative fields. All three theoretical frameworks supported and contributed to the development of the conceptual framework presented in Figure 1.

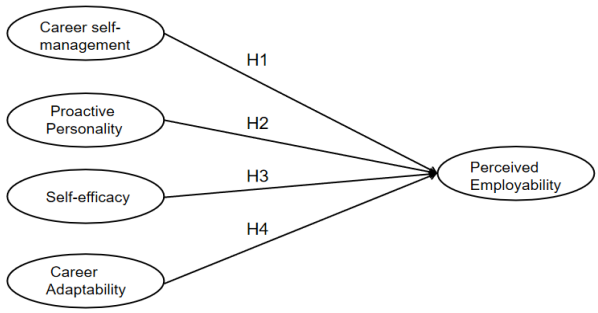

Figure 1: Conceptual Framework

3.2 Research Methodology

The research process consisted of four main stages. First, a questionnaire was administered to all study participants (n=140), and data were collected to develop the conceptual framework. Next, all hypotheses were rigorously tested for significance using multiple linear regression, with a significance level set at $p < 0.05$. The hypotheses that were supported were retained.

Phase II involved administering a pre-SP survey to the same 140 students within the scope of the supported hypotheses. This was followed by Phase III, where the strategic plan (SP) was implemented for 30 selected participants.

The SP was conducted over 14 weeks to align with the academic semester and ensure consistent participation, following evidence from prior studies (e.g., Monteiro et al., 2020; Santos et al., 2019) that 12–16 weeks is effective for fostering behavioral change and improving employability competencies.

In the final stage, the 30 SP participants completed a post-SP survey, generating data for a paired-sample t-test analysis to compare the actual-SP and expected-SP results. This comprehensive process enabled a thorough examination of the research objectives and hypotheses.

3.3 Research Population, Sample Size, and Sampling Procedures

3.3.1 Research Population

The researcher selected 140 students from Yunnan Vocational College of Agriculture (YVCA) as pre-survey participants. The study specifically targeted freshmen and sophomores enrolled in the Engineering Surveying Technology, Engineering Costing, Water Resources Engineering, and Automotive Inspection and Maintenance Technology programs, as juniors were excluded due to off-campus internships. A total of 140 students received the questionnaire via the Questionnaire Star platform. The researcher then reviewed all responses and confirmed that 128 were valid for further analysis.

3.3.2 Sample Size

The researchers randomly conducted a pilot survey with 30 students to verify the reliability of the questionnaire. Subsequently, 140 students from Yunnan Vocational College of Agriculture (YVCA) were identified as research participants, resulting in 128 valid responses. Next, multiple linear regression analysis was used to determine the relationship between the independent and dependent variables. Finally, 30 students who volunteered were selected to participate in the strategic plan.

3.3.3 Sampling Procedure

The researcher conducted several sampling procedures as follows:

For Sampling 1 (Pilot Survey and Pilot Test), 30 students were randomly selected and asked to complete the survey questionnaire and provide feedback for the pilot survey and pilot test.

For Sampling 2 (Pre-Survey Sampling), the researcher selected 140 students from four engineering majors at Yunnan Vocational College of Agriculture (YVCA) and distributed the questionnaires via the "Wenjuanxing" platform. After reviewing the responses, the researchers confirmed that 128 answer sheets were valid.

For Sampling 3 (Strategic Plan Implementation), 30 students who voluntarily participated were randomly selected for the implementation of the strategic plan (SP).

3.4 Research Instruments

3.4.1 Questionnaire Design

The researcher designed the survey questionnaire following three steps:

Step 1 – Identifying Questionnaire Sources: The researcher selected questionnaire items from five openly published articles (Chen et al., 2001; Ma & Bennett, 2021; Rottinghaus et al., 2005; Wang et al., 2024; Zhao, 2021).

Step 2 – Adjusting and Presenting the Questionnaire: The survey questionnaire was modified to align with the context of Chinese university students.

Step 3 – Implementing the Index of Item-Objective Congruence (IOC): The questionnaire was assessed for validity using the IOC method.

3.4.2 Questionnaire Components

The survey questionnaire consisted of three parts:

Part 1 – Screening Questions: These questions were designed to filter out individuals who did not belong to the research population.

Part 2 – Basic Information Questions: This section gathered demographic details of the research participants, including gender, age, birthplace, and other relevant information.

Part 3 – Pre-Survey Questions: These questions aimed to assess the current levels of independent variables (IV) and dependent variables (DV) among the 140 YVCA students.

3.4.3 IOC Results

The researchers invited five independent expert scholars or Ph.D. holders to conduct the Index of Item-Objective Congruence (IOC) assessment. Among them, three were educational administrators, while the other two held Ph.D.s in Educational Administration and Leadership, bringing valuable insights into the study of perceived student employability.

In IOC process, experts evaluated each questionnaire item using the following scale: +1 for Congruent, 0 for Questionable, and -1 for Incongruent. In this study, all questionnaire items achieved a score greater than 0.67, leading the researcher to retain all items.

3.4.4 Reliability and Validity

The researcher conducted a pilot survey with 30 randomly selected students, asking them to complete the survey questionnaire and provide feedback. Afterward, Cronbach's Alpha internal consistency reliability test was performed to assess the reliability of the questionnaire. According to Cronbach (1951), the reliability coefficient should be equal to or greater than 0.7.

The Table 1 below presents the results, demonstrating high reliability for each construct.

Table 1: Pilot Test Result

Variable	Source of Questionnaire (Measurement Indicator)	No. of Items	Cronbach's Alpha	Strength of Association
PE	Wang et al. (2024)	7	0.873	Good
CS	Zhao (2021)	11	0.833	Good
PP	Ma and Bennett (2021)	3	0.852	Good
SE	Chen et al. (2001)	8	0.931	Excellent
CA	Rottinghaus et al. (2005)	11	0.814	Good

4. Results and Discussion

4.1 Demographic Profile

The researcher presented the demographic profile of the entire research population (n=128), followed by the selected group of students (n=30) who participated in the in-depth interview (IDI), as shown in Table 2.

Table 2: Demographic Profile

Entire Research Population (n=128)		Frequency	Percentage
Gender	Male	95	74.2
	Female	33	25.8
Grade	Freshman	56	43.8
	Sophomore	72	56.2
Major	Engineering Surveying Technology	50	39.1
	Engineering Costing	43	33.6
	Water Resources Engineering	24	18.7
	Automotive Inspection and Maintenance Technology	11	8.6
Work Experience	Yes	22	17.2
	No	106	82.8
IDI Participants (n=30)		**Frequency**	**Percentage**
Gender	Male	23	76.7
	Female	7	23.3
Major	Engineering Surveying Technology	7	23.3
	Engineering Costing	8	26.7
	Water Resources Engineering	6	20.0
	Automotive Inspection and Maintenance Technology	9	30.0

4.2 Multiple Linear Regression

The researchers conducted a multiple linear regression (MLR) analysis on the results of 128 questionnaires to determine whether each hypothesis was supported. There were a total of four research hypotheses, and all independent variables had p-values less than 0.05, indicating a significant effect on perceived employability.

The standardized regression coefficients for all independent variables were greater than 0, and the p-values were less than 0.05, confirming that the independent variables had a significant positive effect on perceived employability. Based on the variance inflation factor (VIF) analysis, no multicollinearity issues were detected, as the VIF values were below 5 (Hair et al., 1995).

At the overall regression model level, the R-square value was 0.337, indicating that the four independent variables, including occupational self-management, collectively explained 33.7% of the variance in the dependent variable. Additionally, 95% confidence intervals were calculated for each standardized coefficient to provide a more robust interpretation of the relationships.

Table 3: The Multiple Linear Regression of Four Independent Variables on Perceived Employability

Variable	β	*t*	*p*	VIF	R^2
Career Self-Management	0.28	3.60	0.00*	1.11	0.34
Proactive Personality	0.18	2.39	0.02*	1.05	
Self-efficacy	0.24	3.01	0.01*	1.16	
Career Adaptability	0.21	2.59	0.01*	1.13	
Dependent Variable: Perceived Employability					

Note: β = Standardized Coefficient; VIF = Variance Inflation Factor. R^2 refers to the overall model explanatory power. $p < .05$*

In summary, all four initial hypotheses were supported based on the multiple linear regression analysis. Consequently, stage hypotheses were formulated to guide the subsequent strategic plan (SP) analysis.

The following hypotheses were proposed:

H5: There is a significant difference between the current and expected situations in the strategic plan for career self-management.

H6: There is a significant difference between the current and expected situations in the strategic plan for proactive personality.

H7: There is a significant difference between the current and expected situations in the strategic plan for self-efficacy.

H8: There is a significant difference between the current and expected situations in the strategic plan for career adaptability.

H9: There is a significant difference between the current and expected situations in the strategic plan for perceived employability.

4.3 Strategic Plan Implementation Stage

The strategic plan (SP) was implemented over a period of 14 weeks, based on the quantitative and qualitative data collected during the pre-SP phase. The primary objective was to enhance students' career self-management, proactive personality, self-efficacy, and career adaptability to improve

their perceived employability. The researcher presented the implementation of the SP in chronological order, as illustrated in Figure 2.

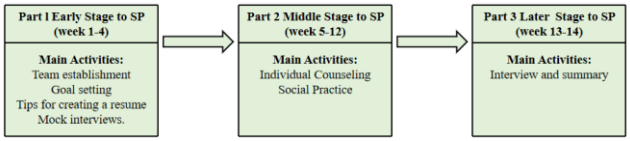

Figure 2: SP Activities

4.3 Results Comparison between Actual-SP and Expected-SP

The researcher conducted a paired-sample t-test analysis for all five variables to determine whether there was a significant difference in the independent and dependent variables before and after the implementation of the strategic plan (SP). The following table presents the paired-sample t-test analysis results for the five variables:

Table 4: Paired-sample T-test Results

Variable		$\bar{x}$	SD	t(29)	p
Career Self-management	Actual-SP	2.57	0.26	-9.66	<.001
	Expected-SP	4.02	0.83		
Proactive Personality	Actual-SP	2.77	0.35	-7.38	<.001
	Expected-SP	3.93	0.82		
Self-efficacy	Actual-SP	2.41	0.24	-10.51	<.001
	Expected-SP	3.95	0.83		
Career Adaptability	Actual-SP	2.60	0.23	-8.81	<.001
	Expected-SP	3.85	0.78		
Perceived Employability	Actual-SP	2.50	0.22	-10.50	<.001
	Expected-SP	3.95	0.80		

Note: $\bar{x}$ = sample mean; *SD* = standard deviation; $t(29)$ = t-value with 29 degrees of freedom; p = significance value. $p < .05$ indicates statistical significance.

Table 4 illustrates the results of the paired-sample t-test analysis comparing actual-SP and expected-SP:

H5 Career Self-Management: There was a significant increase between actual-SP (M = 2.57, SD = 0.26) and expected-SP (M = 4.02, SD = 0.83); t(29) = -9.66, p < .001 (< 0.05), with a mean difference of -1.45. Therefore, H5 was supported, confirming a significant mean difference in career self-management between actual-SP and expected-SP.

H6 Proactive Personality: There was a significant increase between actual-SP (M = 2.77, SD = 0.35) and expected-SP (M = 3.93, SD = 0.82); t(29) = -7.38, p < .001 (< 0.05), with a mean difference of -1.16. Therefore, H6 was supported, confirming a significant mean difference in proactive personality between actual-SP and expected-SP.

H7 Self-Efficacy: There was a significant increase between actual-SP (M = 2.41, SD = 0.24) and expected-SP (M = 3.95, SD = 0.83); t(29) = -10.51, p < .001 (< 0.05), with a mean difference of -1.54. Therefore, H7 was supported, confirming a significant mean difference in self-efficacy between actual-SP and expected-SP.

H8 Career Adaptability: There was a significant increase between actual-SP (M = 2.60, SD = 0.23) and expected-SP (M = 3.85, SD = 0.78); t(29) = -8.81, p < .001 (< 0.05), with a mean difference of -1.25. Therefore, H8 was supported, confirming a significant mean difference in career adaptability between actual-SP and expected-SP.

H9 Perceived Employability: There was a significant increase between actual-SP (M = 2.59, SD = 0.22) and expected-SP (M = 3.95, SD = 0.80); t(29) = -10.50, p < .001 (< 0.05), with a mean difference of -1.45. Therefore, H9 was supported, confirming a significant mean difference in perceived employability between actual-SP and expected-SP.

According to the paired-sample t-test results presented above, all five variables showed a significant mean difference between the actual-SP stage and expected-SP stage. Hence, the results indicate that students' perceived employability significantly improved between the actual-SP and expected-SP stages.

5. Conclusions and Recommendation

5.1 Conclusions

This study investigated the psychological and behavioral factors influencing perceived employability among engineering students at Yunnan Vocational College of Agriculture. The results showed that career self-management, proactive personality, self-efficacy, and career adaptability all had a significant positive effect on students' perceived employability. Among these, career self-management had the strongest influence, underscoring the importance of students taking active control of their career development through goal setting, skill enhancement, and engagement with labor market trends.

While each of these variables has been explored in past studies, this research provides new insights by integrating all four into a single model and applying it to a specific and underrepresented context: rural vocational college students in China. Unlike many prior studies that focus on students from comprehensive or urban institutions (e.g., Jackson & Wilton, 2017; Ma & Bennett, 2021), this study highlights the unique challenges and career development needs of vocational students in agriculture-related engineering programs.

The findings align with and extend previous research. For instance, Ngo et al. (2017) emphasized the importance of self-efficacy and adaptability in shaping employability, while Wang et al. (2024) identified the role of occupational adaptability in creative industries. However, this study reveals that career self-management may play a more

dominant role in rural vocational settings, where institutional support and industry access are often limited.

Additionally, the role of proactive personality in enhancing perceived employability was confirmed, not only through job-seeking behaviors, as noted by Cao and Dai (2016), but also through increased readiness to navigate a dynamic labor market. The study also reinforces the value of career adaptability in helping students manage change and uncertainty, particularly in fast-evolving technical fields.

This study both confirms and expands existing theoretical frameworks by applying them to a new educational context. The results offer practical implications for educators and policymakers aiming to strengthen employability outcomes. By promoting career self-management, building students' confidence, and encouraging proactive and adaptable mindsets, institutions can better prepare students for successful transitions into the workforce. Future research could explore these relationships in other vocational disciplines or compare rural and urban educational settings for broader applicability.

5.2 Recommendations

Based on the findings and discussion of the factors affecting perceived employability, this study makes the following targeted recommendations:

First, institutions should integrate structured career self-management into academic programming. As career self-management emerged as the most influential factor in this study, colleges are encouraged to implement systems that support students in setting career goals, identifying development pathways, and tracking progress. Career services should offer regular workshops on labor market trends, personalized career counseling, and mentorship programs that help students align their strengths and interests with industry needs.

Second, creating a proactive learning environment is essential for developing students' initiative and independence. Vocational institutions should promote experiential learning through project-based assignments, real-world case studies, and cross-disciplinary collaborations. Partnerships with local industries can provide internship opportunities and guest lectures that expose students to practical workplace expectations. These experiences help nurture proactive behavior, which is vital for navigating today's competitive job market.

Building students' self-confidence and sense of efficacy should also be a strategic focus. Institutions can support this by incorporating peer mentoring, constructive feedback systems, and reflection-based activities into the learning process. These approaches allow students to recognize their progress, learn from setbacks, and build confidence through small, achievable goals. Creating a psychologically supportive environment where students feel safe to experiment and grow can significantly enhance their self-belief and career readiness.

Promoting career adaptability through diverse learning experiences is another key recommendation. Colleges should offer flexible internship models, simulation-based training, and exposure to multiple work contexts. Embedding transferable skills such as communication, collaboration, and digital literacy into the curriculum will prepare students to adjust effectively to evolving job roles and technological changes.

Finally, institutions should foster a culture of lifelong learning and resilience. Offering modular short courses, certification programs, and upskilling opportunities will enable students to stay relevant in rapidly changing industries. Administrators should also support resilience training programs that help students cope with career uncertainty and develop adaptive strategies for personal and professional challenges.

Improving students' perceived employability requires more than individual effort, it calls for institutional commitment and policy support. By embedding employability-enhancing practices into vocational education, administrators and policymakers can play a transformative role in preparing students for sustainable success in the workforce.

5.3 Limitation and Further Study

There are limitations that should be addressed in future research to enhance the understanding of perceived employability and strengthen strategic planning in education, ultimately improving students' job market competitiveness.

The first limitation is the generalizability of the findings. This study focused on engineering students from a single higher education institution, limiting its representativeness. To generalize the results to other programs, faculties, or institutions, further validation with a larger and more diverse sample is needed. A small sample size may lower statistical power, making conclusions more susceptible to extreme values.

The second limitation is the measurability of the strategic plan. In this study, the plan was broadly defined as 'improving students' perceived employability' without specifying key competency dimensions. Future research should refine its measurement by incorporating distinct competence indicators.

The third limitation is the periodicity of the strategic plan. The 14-week implementation period may have been too short for significant skill development and practical application. Extending the duration could yield deeper learning and more substantial improvements in employability.

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