

# INFLUENCING FACTORS OF EMPLOYABILITY AMONG STUDENTS IN HIGH-LEVEL UNIVERSITIES IN GUANGDONG: AN EMPIRICAL ANALYSIS BASED ON THE USEM MODEL

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**Abstract:** With the continuous advancement of China's Double First-Class initiative, high-level universities in Guangdong have been playing an increasingly prominent role in promoting regional economic development and cultivating high-level talent. Employability has become a key indicator for evaluating the quality of talent training in higher education and a critical issue in the development of high-level universities. Based on the USEM model, this study examines the influence mechanism of four dimensions, namely understanding, skills, self-efficacy, and metacognition, on university students' employability by constructing a structural equation model. Data were collected through 361 valid questionnaires from students in Guangdong and analyzed using partial least squares structural equation modeling (PLS-SEM) for hypothesis testing and path analysis. The results show that skills and self-efficacy have a significant direct positive impact on employability. Although understanding and metacognition do not exhibit a direct significant effect on employability, they exert important indirect influences through the mediating role of skills. The model demonstrates a good fit, supporting the applicability of the USEM model in this research context. This study not only expands the empirical application of employability theory in the context of higher education but also provides a basis and practical recommendations for high-level universities in Guangdong to optimize talent training models, enhance skill development and self-efficacy, and improve employability support systems.

**Keywords:** High-level universities; Employability; USEM model

## 1 INTRODUCTION

As China's higher education enters a new stage of high-quality development, building a group of high-level universities has become a key initiative to enhance national competitiveness and strengthen strategic talent support[1]. As a leading province in economic and innovative development, Guangdong has continuously implemented the high-level university construction plan, aiming to establish talent cultivation hubs with international influence[2]. Against this backdrop, the employment quality of university graduates has gradually replaced traditional employment rate metrics, becoming a core criterion for evaluating the effectiveness of higher education institutions. Employability, reflecting graduates' career adaptability and development potential, has garnered increasing attention from the government, universities, and society at large[3]. Current research on university students' employability has evolved from a narrow focus on knowledge and skill acquisition to a more comprehensive emphasis on integrated competencies and psychological cognitive resources[4]. The USEM model (Understanding, Skills, Self efficacy, Metacognition), which encompasses the four dimensions of Understanding, Skills, Self efficacy, and Metacognition, provides a well-established theoretical framework for explaining the formation mechanism of employability[5]. This model not only addresses the development of explicit skills but also highlights the role of deeper cognitive foundations, motivational regulation, and metacognitive strategies, aligning with the growing demand for versatile and adaptive talents in a rapidly changing society. Nevertheless, empirical studies based on the USEM model remain relatively limited in China, particularly those focusing on students in high-level universities. This study targets students from high-level universities in Guangdong Province and, based on the USEM model, proposes the following hypotheses: Understanding and Metacognition indirectly affect Employability by promoting Skills development, while Skills and Self-efficacy exert a direct positive influence on Employability. The study employs partial least squares structural equation modeling (PLS-SEM) to empirically examine the path relationships among these variables. The aim is to clarify the mechanisms through which these four dimensions affect employability, thereby providing a theoretical basis and empirical support for optimizing talent cultivation systems in high-level universities.

## 2 LITERATURE REVIEW

### 2.1 Research on the Construction of High-Level University Groups

In recent years, China's Double First-Class initiative has facilitated a shift in the national higher education system from quantitative expansion to qualitative enhancement. As a key government-supported talent development program, the "High-Level University Development Plan" in Guangdong Province aims to establish a group of universities with international competitiveness and regional influence, thereby providing intellectual and talent support for regional

socioeconomic development[6]. Existing studies have largely focused on macro-level approaches such as elevating institutional prestige, optimizing disciplinary structures, and strengthening research innovation capabilities. Nevertheless, systematic research remains scarce regarding how talent cultivation in higher education aligns with the needs of regional economic development and industrial upgrading, particularly from the perspective of core student competency development and employment orientation. In the current context where “high-quality employment” has become a central objective and performance indicator in higher education, improving students’ employability has transcended individual development and become a crucial measure of institutional educational quality and collective competitiveness[7]. Therefore, integrating the development of high-level universities with the cultivation of employability, and further investigating the intrinsic relationship and interactive mechanisms between the two, will not only contribute to the theoretical discourse on higher education management but also hold significant practical value for optimizing regional talent supply and facilitating university-industry collaboration in education. This study, grounded in the USEM model and adopting a multidimensional capability framework, systematically explores the formation pathways and enhancement strategies of employability among students in high-level universities.

## 2.2 Research on the Structural Connotation and Measurement of College Students' Employability

Employability, first proposed by British scholars Yorke and Knight, refers to the integrated manifestation of the knowledge, skills, attitudes, and traits that individuals require to obtain, maintain, and develop their careers[8]. Academic perspectives on the construct’s dimensionality are diverse and can be broadly categorized into three approaches: (1) a skill-oriented perspective, which emphasizes observable and trainable elements such as hard skills (e.g., professional knowledge and language proficiency) and soft skills (e.g., communication and teamwork); (2) a competency integration perspective, which views employability as a composite of knowledge, ability, emotion, and attitude, focusing on the coherence between personal qualities and career adaptability, and (3) a developmental perspective, which conceptualizes employability as a dynamic process involving self-awareness, self-regulation, and environmental adaptation[9]. In the Chinese context, existing research generally emphasizes the importance of aligning employability with the quality of higher education, curriculum design, and career guidance services[10]. However, current explorations into the internal structure of employability remain somewhat abstract and lack operational clarity, underscoring the need for systematic theoretical modeling and empirical validation. To address this gap, this study adopts the USEM model (Understanding, Skills, Self-efficacy, Metacognition) and constructs a multidimensional framework of employability based on these four dimensions. The aim is to provide a theoretical foundation and empirical pathway for the systematic evaluation and cultivation of employability among students in high-level universities.

## 2.3 Theoretical and Applied Research on the USEM Model

Knight and Yorke proposed the USEM model, which conceptualizes employability through four core dimensions: (1) Understanding, referring to the comprehensive grasp and practical application of professional knowledge; (2) Skills, encompassing both general and discipline-specific capabilities; (3) Self-efficacy, defined as an individual’s confidence and perceived control in successfully accomplishing tasks; and (4) Metacognition, which includes the ability to monitor, regulate, and reflect on one’s cognitive processes[8]. The model emphasizes that these dimensions are not isolated but interact synergistically to enhance students’ capacity to navigate complex professional environments and achieve sustainable development. Rather than focusing solely on what students “can do,” the USEM model also highlights their potential for performance improvement and future adaptability. Globally, the USEM model has been extensively applied in higher education curriculum evaluation, vocational education reform, and longitudinal research on student competency development[11]. In contrast, empirical studies within the Chinese context remain limited, particularly those examining the model’s full structural pathways using analytical methods such as structural equation modeling. Although some scholars have drawn on certain dimensions of the USEM framework to investigate the relationship between educational quality and employability, the integrated structure and multidimensional mechanisms of the model have not yet been systematically tested. Furthermore, within the specific setting of high-level university groups, empirical evidence regarding the application of the USEM model to analyze and enhance student employability is still lacking. Therefore, this study targets students from high-level universities in Guangdong and employs structural equation modeling to examine the mechanisms through which the four USEM dimensions influence employability. The findings aim to provide both theoretical support and practical insights for the localization of the USEM model and its application in fostering employability within high-level universities.

## 2.4 Research Innovation

Overall, existing research exhibits notable limitations in the following aspects: (1) Weak theoretical integration: (2) Limited empirical methodologies: There is a scarcity of in-depth research employing structural equation modeling—such as partial least squares SEM (PLS-SEM), to analyze pathways and weigh the influence of various dimensions on employability; (3) Inadequate contextual and population adaptation: Current discussions are predominantly situated within general higher education institutions or macro-level policy analyses, with a lack of empirical focus on the specific context of high-level university groups. In response to these research gaps, this study adopts the USEM model as its theoretical foundation to construct a structural model of the influencing mechanisms of

college students' employability and conducts empirical validation using a sample of students from high-level universities in Guangdong. The innovation of this research lies in its systematic examination of the explanatory power of the USEM model within the context of high-level universities in China. By applying PLS-SEM, the study elucidates both the direct and indirect pathways through which various dimensions affect employability, thereby providing empirical support for the localized application of the model. Furthermore, the findings offer quantitatively grounded insights and practical guidance for enhancing talent cultivation systems and employability development strategies in high-level universities.

### 3 THEORETICAL FOUNDATION AND RESEARCH HYPOTHESES

#### 3.1 Theoretical Foundation

The USEM model, proposed by Knight and Yorke, is a widely adopted theoretical framework for assessing employability in higher education[8]. The model posits that the employability of university students is not merely a reflection of isolated skills, but a multi-dimensional structure consisting of four core elements: understanding, skills, self-efficacy, and metacognition. These components collectively shape an individual's employment outcomes and career adaptability (variables are presented in Table 1. A key strength of the USEM model lies in its integrated and developmental perspective, it focuses not only on whether students possess certain competencies, but also on their capacity to further develop those abilities, highlighting the role of agency and potential. This aligns particularly well with the talent development goals of high-level universities that emphasize high-quality employment. Based on this model, this study targets students from high-level universities in Guangdong Province and employs a structural equation modeling (SEM) approach to investigate the mechanisms through which the four constructs—understanding (U), skills (S), self-efficacy (E), and metacognition (M), collectively influence employability (E).

**Table 1** Variable

Target	Dimensions	Evaluation of recognition points
CEmployability(EM)	Understanding (U)	Professional knowledge (U1)
		Identify the problem (U2)
		Logical analysis (U3)
		Professional Transformation (U4)
		Broad knowledge (U5)
	Skills (S)	Organization and Coordination (S1)
		Data analysis (S2)
		Innovation ability (S3)
		Communication skills (S4)
		Teamwork (S5)
	Self efficacy (E)	Adaptability (E1)
		Self-adjustment (E2)
		Continuous action (E3)
		Stress resistance (E4)
		Self-confidence (E5)
	Metacognition (M)	Self-reflection (M1)
		Career Planning (M2)
		Inner cultivation (M3)
		Self-control (M4)
		Self-awareness (M5)

#### 3.2 Understanding and Skills

Understanding refers to students' comprehensive grasp and systematic integration of professional knowledge, principles, and real-world application contexts. In high-level universities, where disciplinary knowledge systems are both complex and advanced, a deep understanding of subject matter, coupled with the ability to transfer such understanding to practical situations can significantly enhance the development of comprehensive skills[12]. Existing research indicates that understanding serves as a cognitive foundation that substantially contributes to skill formation[8].

H1: Understanding has a significant positive effect on university students' skills.

#### 3.3 Metacognition and Skills

Metacognition denotes an individual's awareness, regulation, and reflection on their own cognitive processes, encompassing goal setting, strategy selection, progress monitoring, and self-evaluation[13]. In the educational context of high-level universities, metacognitive ability enables students to plan learning pathways more effectively, optimize the use of resources, and adapt to complex tasks, thereby facilitating improvement in practical skills such as communication, collaboration, and innovation[14].

H2: Metacognition has a significant positive effect on university students' skills.

### 3.4 Skills and Employability

Skills represent the core observable components of employability, including the application of professional knowledge, organizational coordination, data analysis, teamwork, and innovative practice, among others[15]. Through teaching systems that integrate theory and practice, high-level universities aim to equip students with transferable and applicable composite skills, which directly influence their competitiveness and adaptability in the job market.

**H3: Skills have a significant positive effect on university students' employability.**

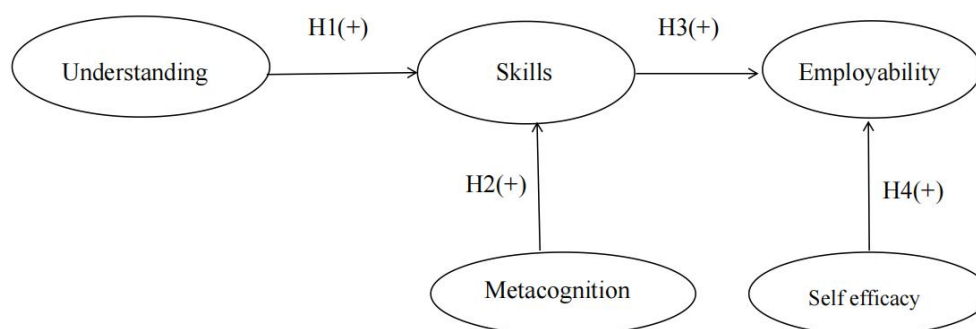
### 3.5 Self Efficacy and Employability

Self-efficacy refers to an individual's belief in their capability to accomplish specific tasks or respond to challenges. During employment preparation, students with higher self-efficacy tend to set more ambitious career goals, sustain proactive job-search behaviors, and demonstrate greater psychological resilience and adaptability, all of which contribute positively to their overall employability[16].

**H4: Self-efficacy has a significant positive effect on university students' employability.**

### 3.6 Theoretical Model Framework

Based on the theoretical and hypothesis analysis presented above, this study proposes the theoretical model illustrated in Figure 1. Grounded in the USEM model, this framework positions understanding (U) and metacognition(M) as antecedent variables of skills(S), and identifies both skills (S) and self-efficacy (E) as direct predictors of employability(E). The model aims to systematically explain the internal mechanisms through which these variables interact. Using partial least squares structural equation modeling (PLS-SEM), this research will perform path analysis and hypothesis testing to clarify the specific influence pathways and relative contributions of understanding, metacognition, skills, and self-efficacy in shaping college students' employability. The findings are expected to provide a theoretical foundation and empirical support for optimizing employability development systems in high-level universities.



**Figure 1** Research Model

## 4 DATA ANALYSIS

### 4.1 Descriptive Statistical Analysis

A total of 361 valid questionnaires were collected in this study. As shown in Table 2, among the respondents, 67.9% were female and 32.1% were male. This reflects the gender distribution pattern in certain university majors, particularly those in liberal arts fields, where female students tend to outnumber males. In terms of grade distribution, the sample was predominantly composed of senior students, with juniors and seniors together accounting for 62.3% of the total. Since senior students are at a critical stage of seeking employment or contemplating future career paths, their perceptions and needs regarding employability are more immediate and pronounced. This suggests that the sample well represents students at the employment preparation stage. Regarding major distribution, management (27.1%), economics (24.9%), and literature (21.9%) were predominant, while practical disciplines such as science, engineering, agriculture, and medicine accounted for a relatively lower proportion. This indicates that the sample is characterized by a strong representation of liberal arts and management majors. In terms of teaching methods, nearly half of the students (49.3%) believed that current instruction is primarily theoretical. In contrast, the most favored approach of combination of theory and practice was received by only 37.4% of the students. This suggests a possible imbalance in current teaching practices, with an emphasis on theory over practical application. This is highly relevant to the research topic of employability, as practical skills constitute a core component of employability. With respect to future career directions, more than half of the students (52.4%) chose company employee as their intended career path, making it the most

common choice. This was followed by pursuing a master's degree (24.7%) and becoming a civil servant (17.7%). The proportion of students opting for self-employment was very low (3.6%), which may be related to factors such as risk aversion, limited entrepreneurship education, and insufficient institutional support for start-ups.

**Table 2** Descriptive Analysis

Characteristics	Valid	Frequency (n =361)	Percent (%)
Gender	Male	116	32.1
	female	245	67.9
Grade	Freshman	74	20.5
	Sophomore	62	17.2
	Junior	96	26.6
	Senior	129	35.7
Major	Philosophy	1	0.3
	Law	5	1.4
	Literature	79	21.9
	Science	11	3.0
	Engineering	42	11.6
	Agriculture	6	1.7
	Medicine	10	2.8
	Economics	90	24.9
	Pedagogy	3	0.8
	History	2	0.6
	Management	98	27.1
	Arts	14	3.9
	theoretical teaching	178	49.3
	practical teaching	48	13.3
Teaching Method	Theory and practice are equally divided	135	37.4
Future Direction	Master Degree Candidate	89	24.7
	Civil Servant	64	17.7
	Company Employee	189	52.4
	Self-Employment	13	3.6
	Others	6	1.7

## 4.2 Reliability and Validity

Before conducting the analysis using Partial Least Squares Structural Equation Modeling (PLS-SEM), it is essential to assess the reliability and validity of the measurement tools for each latent variable to ensure the scale exhibits satisfactory internal consistency and convergent validity. The results are presented in Table 3. The Cronbach's Alpha ( $\alpha$ ) values for all constructs exceed 0.9 (ranging from 0.916 to 0.939), well above the accepted threshold of 0.7, indicating very good internal consistency of the scale[17]. In terms of composite reliability, both rho\_a and rho\_c values are above 0.9 (ranging from 0.916 to 0.953), substantially exceeding the 0.7 benchmark. This further confirms that the items within each dimension are highly correlated, demonstrating excellent reliability. Regarding convergent validity, all constructs show Average Variance Extracted (AVE) values greater than 0.7 (ranging from 0.748 to 0.804), significantly surpassing the 0.5 criterion[17]. This indicates that each latent variable effectively captures most of the variance in its corresponding items, reflecting strong convergent validity. In summary, the scale used in this study meets all necessary reliability and validity standards for PLS-SEM analysis and is suitable for subsequent model testing.

**Table 3** Construct Reliability and Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Employability	0.916	0.916	0.937	0.748
Metacognition	0.925	0.926	0.943	0.768
Self efficacy	0.920	0.923	0.940	0.757
Skills	0.916	0.916	0.937	0.748
Understanding	0.939	0.939	0.953	0.804

## 4.3 Model Fit

**Table 4** Model Fit

Indicator	Saturated model	Estimated model
SRMR	0.042	0.049
d_ULS	0.584	0.790
d_G	0.483	0.522
Chi-square	1037.836	1068.980

NFI

0.886

0.883

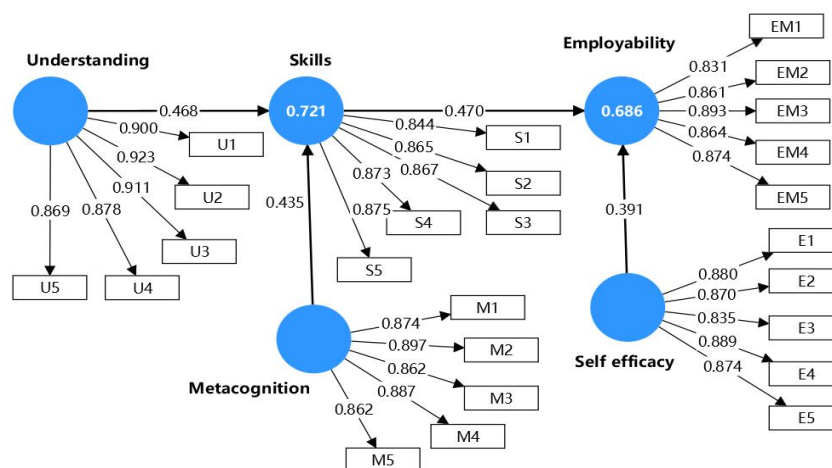
To further evaluate the fit between the structural equation model based on the USEM model and the sample data, this study used Smart PLS software to assess model fit. The results are presented in Table 4. Regarding the main fit indices, the standardized root mean square residual (SRMR) value is 0.049, which is below the commonly accepted threshold of 0.08, indicating small overall residuals and a good model fit[18]. Both  $d_{ULS}$  (0.584) and  $d_G$  (0.483) also fall within acceptable ranges, further supporting the adequacy of the measurement and structural models in representing the observed data. In addition, the normed fit index (NFI) is 0.886, approaching the recommended standard of 0.90 for excellent fit[18]. This suggests that the model exhibits considerable explanatory power and structural rationality, and is able to reasonably represent the relational structure among the variables.

#### 4.4 Path Analysis and Hypothesis Testing

Given the satisfactory model fit, this study further estimated the structural paths to examine the effects of latent variables on university students' employability. The path coefficients, t-values, and p-values obtained through PLS-SEM analysis are presented in Table 5.

**Table 5** Path Analysis and Hypothesis Testing

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ( O/STDEV )	P values	Supported
H1: Understanding -> Skills	0.468	0.468	0.065	7.206	0.000	Yes
H2: Metacognition -> Skills	0.435	0.436	0.066	6.564	0.000	Yes
H3: Skills -> Employability	0.470	0.469	0.071	6.658	0.000	Yes
H4: Self efficacy -> Employability	0.391	0.394	0.076	5.164	0.000	Yes



**Figure 2** Structural Model with Path Coefficients

Based on the path analysis results shown in Table 5 and Figure 2, H1 and H2 are supported: both Understanding and Metacognition have a significant positive impact on Skills ( $\beta_1 = 0.468$ ,  $p < 0.001$ ;  $\beta_2 = 0.435$ ,  $p < 0.001$ ). This suggests that students' ability to comprehend new knowledge and their capacity to monitor and regulate their own thinking processes serve as important foundations for developing professional skills. Similarly, H3 and H4 are also supported: Skills and Self-efficacy show significant positive effects on Employability ( $\beta_3 = 0.470$ ,  $p < 0.001$ ;  $\beta_4 = 0.391$ ,  $p < 0.001$ ). This indicates that both the specific skills acquired by students and their confidence in performing tasks effectively are core components of employment competitiveness. All path coefficients (Original Sample) range between 0.39 and 0.47, indicating moderate to strong effect sizes. These values suggest that the relationships are not only statistically significant but also practically meaningful. All T-statistics exceed the critical value of 1.96 (at  $p < 0.05$ ), and p-values are all 0.000, confirming that the paths are highly significant. The results fully support the theoretical framework of the USEM model. The model clearly illustrates the mechanism through which employability is formed: deep cognitive abilities (Understanding and Metacognition) jointly enhance Skills, which together with Self-efficacy directly improve Employability. In conclusion, the constructed model demonstrates strong explanatory power and provides empirical support and a theoretical basis for enhancing students' employability by strengthening their cognitive foundations, professional skills, and self-confidence.

## 5 CONCLUSIONS AND IMPLICATIONS

### 5.1 Research Conclusions



This study employs the USEM model as its theoretical framework, focusing on four core dimensions (understanding, skills, self-efficacy, and metacognition) to investigate the employability of students from high-level universities in Guangdong Province. Based on 361 valid questionnaire responses and using partial least squares structural equation modeling (PLS-SEM), the mechanisms through which these variables influence employability were systematically examined. The main findings are as follows: First, the model demonstrates a good overall fit. The SRMR value of 0.042 is below the threshold of 0.08, and the NFI value of 0.886 is close to the excellence benchmark of 0.90. These results indicate that the model fits the sample data well, confirming that the USEM model is suitable for explaining the structure of employability among students in high-level universities. Secondly, path analysis reveals that skills and self-efficacy exert significant direct positive effects on employability. Among these, skills ( $\beta = 0.470$ ,  $p < 0.001$ ) are the strongest predictor, suggesting that students' accumulation of professional knowledge, applied skills, and comprehensive competencies constitutes their core advantage in the competitive job market. Self-efficacy ( $\beta = 0.391$ ,  $p < 0.001$ ) also shows a significant positive effect, indicating that individuals' confidence in their own abilities and their psychological preparedness during job seeking play essential roles in securing employment. On the other hand, while understanding and metacognition do not exhibit a direct significant impact on employability, both exert important indirect effects mediated through skills. The path coefficient from understanding to skills is 0.468 ( $p < 0.001$ ), and from metacognition to skills is 0.435 ( $p < 0.001$ ). This implies that although higher-order cognitive abilities do not directly enhance employability, they form a crucial foundation for acquiring and developing practical skills. These findings suggest that current employers may prioritize tangible capabilities, being able to get things done over cognitive potential such as strong thinking skills. They also reflect a possible bias in employment-oriented education within universities that emphasizes practical training at the expense of cognitive development.

In summary, this study not only validates the explanatory power of the USEM model in the Chinese context but also elucidates the multi-path formation mechanism of employability among students in high-level Guangdong universities: understanding and metacognition serve as underlying cognitive frameworks that facilitate skill development, while skills and self-efficacy act as direct drivers that collectively enhance employability. It is recommended that universities strengthen both practical skill training and the cultivation of metacognitive and comprehensive abilities to improve students' long-term adaptive capacity, thereby promoting sustainable development of their employability in a more systematic and holistic manner.

## 5.2 Suggestions for the Construction of High-Level University Groups

Based on the empirical findings regarding the factors influencing employability among students in Guangdong's high-level universities, the following recommendations are proposed to enhance students' employment competitiveness and adaptability:

### 5.2.1 Enhance practical teaching and emphasize the central role of skills

Empirical results indicate that skills ( $\beta = 0.470$ ) exert the most significant impact on employability. Universities should further increase the weight of practical instruction and improve the "theory-practice integrated" curriculum system. Through project-based learning, industry-academia collaboration, and interdisciplinary hands-on projects, students' comprehensive application abilities and technical operational skills can be strengthened in real-world contexts, thereby effectively boosting their core employment competitiveness[19].

### 5.2.2 Implement systematic self-efficacy enhancement programs to support students' psychological career readiness

Given the significant positive influence of self-efficacy ( $\beta = 0.391$ ) on employability, universities should establish structured and modular systems for career education and psychological counseling. Activities such as mock interviews, career planning workshops, and resilience training can help students build positive self-perception and career confidence, improving their psychological adaptability and resilience in complex employment environments.

### 5.2.3 Recognize the foundational supporting roles of understanding and metacognition, and improve mechanisms for cultivating cognitive abilities

Although understanding and metacognition do not directly affect employability, both exert meaningful indirect effects (path coefficients: 0.468 and 0.435, respectively). It is recommended to integrate critical thinking, metacognitive strategy training, and deep learning guidance into specialized courses to help students improve knowledge integration and self-regulation capabilities, providing sustained momentum for long-term career development.

### 5.2.4 Promote targeted employment guidance and adopt differentiated support strategies for various student groups

Universities should utilize data analysis to provide tailored guidance based on students' majors, grade levels, and career aspirations. Emphasis should be placed on precision and customization in resource allocation and service design. For instance, liberal arts students may benefit from enhanced practical skill training, while science and engineering students could receive more training in communication and collaborative skills. Such strategies will help optimize employment support services and strengthen the leading role of high-level universities within the regional talent supply structure.

Through these measures, a four-dimensional framework for employability development—"skills empowerment, psychological reinforcement, cognitive support, and precision services"—can be established, holistically improving the employability and social adaptability of students in high-level universities.

## COMPETING INTERESTS

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